

13 December 2021 Ref: E34430BTlet-ASSMP

Swell Trading Pty Ltd 4206/2 Quay Street Haymarket NSW 2000

Attention: Guirong Zhang Email: jackyc812@pm.me

ACID SULFATE SOIL MANAGEMENT PLAN PROPOSED MOTOR VEHICLE DISPLAY/SALES SHOWROOM AND SERVICING WAREHOUSE DEVELOPMENT 8 GROSVENOR PLACE, BROOKVALE, NSW

1 INTRODUCTION

Swell Trading Pty Ltd ('the client') commissioned JK Environments (JKE) to prepare an acid sulfate soil management plan (ASSMP) for the proposed motor vehicle display/sales showroom and servicing warehouse development at 8 Grosvenor Place, Brookvale, NSW. The site is identified as Lot 1 in DP599064. The site location is shown on Figure 1 and the ASSMP is confined to the site boundaries as shown on Figure 2.

The ASSMP has been prepared generally in accordance with a JKE proposal (Ref: EP54821BT) of 18 August 2021 and written acceptance from the client of 25 August 2021. The objective of the ASSMP is to reduce the potential on-site and off-site environmental impacts associated with disturbance of potential acid sulfate soils (PASS). Arcadis has investigated the soil conditions at the site and have prepared a Preliminary Site Investigation (PSI)¹ report including an ASS assessment. JKE has investigation the site and prepared a Groundwater Contamination Screening (GCS)² and Remediation Action Plan (RAP)³. Relevant information from these reports is summarised in this ASSMP. This ASSMP is to be implemented concurrently with the RAP.

General information on ASS is presented in Appendix B.

Warehouse Development at 8 Grosvenor Place, Brookvale, NSW. Ref: E34430BTrp, dated 10 December 2021 (referred to as the RAP)



¹ Arcadis, (2021). *Preliminary Site Investigation, 8 Grosvenor Place, Brookvale, NSW to Swell Trading Pty Ltd.* (report ref: 30090774_R01_0, dated 1 September 2021) (referred to as Arcadis PSI)

 ² JKE, (2021a). Report to Swell Trading Pty Ltd on Groundwater Contamination Screening for Proposed Motor Vehicle Display/Sales Showroom and Servicing Warehouse Development at 8 Grosvenor Place, Brookvale, NSW. Ref: E34430BTrptRev1, dated 10 December 2021 (referred to as the GCS)
 ³ JKE, (2021b). Report to Swell Trading Pty Ltd on Remediation Action Plan (RAP) for Proposed Motor Vehicle Display/Sales Showroom and Servicing



1.1 Proposed Development Details

It is understood the proposed development includes demolition of the existing site structures and construction of a new motor vehicle display/sales showroom and servicing warehouse. It is understood excavation of up to 4m Below Ground Level (BGL) is required for installation of a water tank for the sprinkler system. Shallow excavations will also be required for a lift pit and an inground hoist. Other localised excavations are likely to be required for the installation of shallow underground services. It is expected that the proposed buildings will be supported by piles, however the piling method and depths have not been provided at this stage.

The proposed development also includes remediation under the RAP. Remediation requires removal of the underground storage tank (UST) and limited excavation of residual contamination in the surrounding tank pit backfill soils and groundwater if encountered.

1.2 Guidelines

The ASS assessment and preparation of this report were undertaken with reference to the National Acid Sulfate Soil Guidance (2018) documents and the Acid Sulfate Soil Management Advisory Committee (ASSMAC) Acid Sulfate Soil Manual (1998)⁴.

ASS materials include potential acid sulfate soils (PASS or sulfidic soil materials) and actual acid sulfate soils (AASS or sulfuric soil materials). These are often found in the same profile, with AASS overlying PASS. AASS and PASS are defined further as follows:

- PASS are soil materials which contain Reduced Inorganic Sulfur (RIS) such as pyrite. The field pH of these soils in their undisturbed state is usually more than pH 4 and is commonly neutral to alkaline (pH 7–9). These soil materials are invariably saturated with water in their natural state. Their texture may be peat, clay, loam, silt or sand and is often dark grey in colour and soft in consistence, but these materials may also exhibit colours that are dark brown, or medium to pale grey to white; and
- AASS are soil materials which contained RIS such as pyrite that have undergone oxidation. This oxidation results in low pH (that is pH less than 4) and often a yellow (jarosite) and/or orange to red mottling (ferric iron oxides) in the soil profile. Actual ASS contains Actual Acidity, and commonly also contains RIS (the source of Potential Sulfuric Acidity) as well as Retained Acidity.

2 SITE INFORMATION

2.1 Site Information and Description

Table 2-1: Site Identification

Site Address:	8 Grosvenor Place, Brookvale, NSW							
Lot & Deposited Plan:	Lot 1 in DP599064							

⁴ Acid Sulfate Soils Management Advisory Committee (ASSMAC), (1998). Acid Sulfate Soils Manual (ASS Manual 1998)





Site Address:	8 Grosvenor Place, Brookvale, NSW
Current Land Use:	Commercial/industrial (cement batching plant)
Site Area (m ²) (approx):	1,060
Site Elevation (metres	10-12
Australian Height Datum –	
Geographical Location	Latitude: -33.7685671
(approx.):	Longitude: 151.2693331
Site Plans:	Appendix A

The site is located in a mixed-use area of Brookvale and is bound by Grosvenor Place to the west. The site is located approximately 320m to the east of Brookvale Creek. The regional topography is characterised by a gently undulating topography with a localised north-east facing hillside. The site itself is relatively flat with the exception of the driveway and western portion of the site, which slopes down to the west at approximately 1-2°. Parts of the site appear to have been levelled to account for the slope and accommodate the existing development.

At the time of the site inspection on 5 October 2021 for the GCS, the site was utilised as the Brookvale Mini-Crete cement batching facility. The site was entirely hardstand (asphaltic concrete/concrete) paved with two storey brick and block site office located in the south-west of the site, and a maintenance shed was located in the north-west of the site. Other cement mixing infrastructure, including concrete bunded sediment pond, batching plant and silo and storage bays were also located around the site and generally along the north, east and south boundaries keeping the central section open for vehicle access.

A UST was identified in the central north of the site during the site walkover (refer to Figure 2). The majority of surface water on site appeared to be captured and pumped through a series of unlined cement bunded sedimentation ponds then utilised in the cement mixtures. Surface water flows in the western section of the site appeared to be captured by a sediment trap prior to exiting the site onto Grosvenor Place as stormwater. Sensitive environments such as wetlands, ponds, creeks or extensive areas of natural vegetation were not identified on site or in the immediate surrounds.

2.2 Summary of Geology, Soils and Hydrogeology

2.2.1 Regional Geology

A review of the regional geological map of Sydney (1983)⁵ indicated that the site is underlain by Quaternary aged deposits of silty to peaty quartz sand, silt and clay. Ferruginous and humic cementation in places, and common shell layers.

E34430BTlet-ASSMP

⁵ Department of Mineral Resources, (1983). 1:100,000 Geological Map of Sydney (Series 9130)



2.2.2 Acid Sulfate Soil (ASS) Risk and Planning

A review of the acid sulfate soil (ASS) risk map prepared by Department of Land and Water Conservation (1997)⁶ indicated that the site is located in an area classed as having a 'low risk' of ASS occurrence at depths of greater than 3mBGL.

ASS information presented in the Arcadis PSI indicated that the site is located within a Class 4 ASS risk area. Works in a Class 4 risk area that could pose an environmental risk in terms of ASS include works at depths beyond 2m below existing ground level or works by which the water table is likely to be lowered beyond 2m below existing ground level.

During the Arcadis PSI, selected soils at the site were indicated to be PASS based on observations and laboratory results. Arcadis recommended that a ASSMP be prepared to manage disturbance to soils and/or generation of spoil from below 1.0 mBGL at the site during the proposed development.

2.2.3 Hydrogeology

Hydrogeological information presented in the Arcadis PSI indicated that saturated soils were observed at a depth of approximately 1.0mBGL. Arcadis considered this to be shallow or perched groundwater beneath the concrete slab in disturbed or reclaimed ground based on anecdotal information that indicated that the site may be located in an area which was formerly a lagoon.

The information reviewed for the JKE GCS indicates that the subsurface conditions at the site are expected to consist of moderate to high permeability (alluvial) soils overlying relatively deep bedrock, however we not that bedrock was not encountered by the JKE GCS.

Standing water levels (SWLs) measured in the monitoring wells installed at the site for the JKE GCS were between 1.1m and 1.39m at the time of sampling. These SWLs broadly correlate with a water table at between approximately RL 9.19-9.67m AHD. Groundwater field measurements recorded during the JKE GCS were approximately as follows:

- pH ranged from 4.91 to 6.11;
- Electrical conductivity (EC) ranged from 164.6µS/cm to 649µS/cm;
- Redox potential (Eh) ranged from -8.9mV to 75mV; and
- Dissolved oxygen (DO) ranged from 0.7mg/L to 1.5mg/L.

2.2.4 Receiving Water Bodies

The closest surface water body is Brookvale Creek located approximately 320m to the west of the site. This is cross to down-gradient from site and is not considered to be a potential receptor.



⁶ Department of Land and Water Conservation, (1997). 1:25,000 Acid Sulfate Soil Risk Map (Series 9130N3, Ed 2)



3 CONCEPTUAL SITE MODEL FOR ASS MATERIALS

The Arcadis PSI ASS summary data, including pH_F, pH_{FOX} and acid base accounting results (chromium reducible sulfur method), are shown on Figure 2 attached in Appendix A. A visual cross section plan/conceptual site model (CSM) for the occurrence of PASS is presented on Figure 3 in Appendix A. A copy of the borehole and test pit logs from the Arcadis PSI and JKE GCS is included in Appendix C.

In summary:

- None of the Arcadis PSI pH_F results were below pH 4 and therefore were not indicative of actual ASS (AASS);
- All Arcadis PSI pH_{FOX} results recorded changes in pH greater than 2.9 pH units;
- The Arcadis PSI net acidity results for the eight natural soil samples analysed exceeded the action criterion of 0.03%w/w S. Where exceedances occurred, appreciable oxidisable sulfur concentrations (indicated by the chromium reducible sulfur %) were reported which confirms that Reduced Inorganic Sulfur (RIS) is likely to be present;
- Observations made during fieldwork indicated that the fill material at the site did not comprise dredged material. However, based on the Arcadis PSI, all material including fill, 1m below existing ground level is considered to be potential ASS (PASS); and
- The liming rates calculated as part of the acid base accounting analysis were up to 18kgCaCO₃/t.

Considering the above, for the purpose of management under this ASSMP, fill material below a depth of 1m and natural soil at the site is considered to be PASS.

4 MANAGEMENT PLAN

4.1 Application

Management requirements are triggered under this ASSMP for all soil disturbance that results in exposure of PASS to air. For this project, this may include (but is not limited to) excavation of the fill or natural soils deeper than 1m (approximately RL 9m AHD).

4.2 Roles and Responsibilities

The primary role and responsibility for implementing this ASSMP is the construction contractor (including the remediation contractor, should these be different entities). The construction contractor is responsible for obtaining a copy of this ASSMP and taking reasonable steps so that it is adequately implemented.

The construction contractor (or the client) is to engage a validation consultant to monitor the works and validate the implementation of this ASSMP. The validation consultant must be a 'Certified Environmental Practitioner' (CEnvP) under the Environment Institute of Australia and New Zealand scheme or a 'Certified Professional Soil Scientist' (CPSS CSAM) under the Soil Science Australia scheme. The construction contractor and validation consultant are also to refer to any specific requirements of Northern Beaches Council.



4.3 Preferred Strategies for Management

The preferred strategy for managing environmental risks associated with PASS is to eliminate disturbance of the PASS. Where this cannot occur, disturbance is to be limited to the extent practicable and the disturbance is to be managed under this ASSMP. The strategy for excavated PASS will include ex-situ treatment, followed by waste classification and off-site disposal.

The strategy for exposed, in-situ ASS materials will be to eliminate disturbance to the extent possible. In-situ ASS materials at the site are generally located beneath the groundwater level, and therefore, prolonged exposure to air is unlikely.

Based on the proposed development and remediation details, disturbance of the PASS is likely during remediation and development works. The following works have been identified that may involve the disturbance of PASS:

- Excavation of soils below 1m for installation of the water tank for the sprinkler system, the lift pit and the inground hoist;
- Excavation of soils below 1m for remediation of the UST and any associated buried infrastructure;
- Potentially, excavations for installation of services; and
- Piling methods which generate spoil.

Once the design and construction methodologies are finalised (including details of groundwater dewatering from excavations), the validation consultant is to undertake a review of these details in consultation with the client/construction contractor. If the scope of the ASSMP is not considered to be adequate to address the potential environmental risks associated with the disturbance of PASS during the development, an addendum or revised ASSMP is to be prepared (reference should also be made to Section 4.5 of this ASSMP in this regard). This must be submitted to the consent authority (Northern Beaches Council) prior to commencement of works that disturb or expose PASS.

4.4 Management of PASS

4.4.1 Exposed PASS Surfaces (in-situ treatment)

For any excavations that expose PASS, these exposed PASS surfaces should be immediately 'dusted' with lime. A slightly alkaline, low solubility product such as agricultural lime should be used. This form of lime is chemically stable and any excess lime takes a significant period of time (years) to influence soil pH beyond the depth of application. The lime particles eventually become coated with an insoluble layer of ferrihydrite (Fe[OH]3) that inhibits further reaction. Long term alteration of groundwater conditions is not expected to occur as a result of the use of lime during the proposed development works.

The construction contractor is to ensure that an appropriate Work Health and Safety Plan (WHSP) is prepared prior to the use of lime.



4.4.2 Excavated PASS (ex-situ treatment)

Excavated PASS will be managed by the addition of lime to neutralise acid that may be generated during and after the excavation works. The treated material is then be assigned a waste classification in accordance with the NSW EPA Waste Classification Guidelines - Part 1: Classifying Waste (2014)⁷ and NSW EPA Waste Classification Guidelines - Part 4: Acid Sulfate Soils (2014)⁸, and disposed off-site to landfill.

Reference is to be made to the following table for the ex-situ treatment and management procedure:

Procedure	Details
Step 1: Lime selection and Liming Rate Calculations	A suitable lime product is to be selected as discussed in Section 4.4.1. A neutralising value (NV), effective neutralising value (ENV) and overall liming rate for ex-situ treatment of PASS is to be calculated based on the type of lime (and its properties) selected, the acid base accounting results presented in the PSI and in accordance with the ASS Manual 1998.
<u>Step 2</u> : Set up treatment area/s	A treatment area for the mixing of excavated soil with agricultural lime should be established. Where only small quantities of PASS require treatment, the treatment area could include a leak-proof skip bin. If treatment does not occur in a skip bin, the treatment area must include a relatively impermeable surface for treatment or alternatively be covered with a pad of lime to act as a guard layer.
	The pad of time should be at least 100mm thick and this thickness should be maintained for the duration of treatment works. The purpose of this guard layer is to minimise the risk of acidic water leaching from the base of the treatment area into the groundwater. Dependent upon the rate of spoil generation, several bunded treatment areas may be necessary for stockpiling and treatment. An earthworks strategy should be prepared to ensure that sufficient space is available on-site to accommodate treatment of the PASS.
<u>Step 3</u> : Manage water run-off	Excavated materials are expected to be generated from at or below the water table and, therefore, the PASS being treated on this project is likely to be wet. Surface water management will be required to prevent acid leachate. The treatment area is to be bunded and excavated PASS covered with builder's plastic so that further water is not collected during rain events. If a skip bin is used, the skip bin should be covered.
	Reference should be made to Section 4.5 for details of groundwater seepage and dewatering considerations, if required.
Step 4: Excavation & handling	PASS disturbed during development works should be immediately transferred to the designated treatment area and spread out in 150mm to 300mm thick layers. If possible, the layers should be allowed to dry in order to aid the mixing process. The layers should then be interspersed with the appropriate amount of lime to aid in the effective mixing of lime and soil. Lime should be applied to the excavated material within the treatment area as soon as possible.

Table 4-1: Ex-situ Treatment/Management of PASS

⁷ NSW EPA, (2014). *Waste Classification Guidelines, Part 1: Classifying Waste*. (referred to as Part 1 of the Waste Classification Guidelines 2014) ⁸ NSW EPA, (2014). *Waste Classification Guidelines, Part 4: Acid Sulfate Soils*. (referred to as Part 4 of the Waste Classification Guidelines 2014)



Procedure	Details						
	If circumstances prevent the spreading and treatment of the material, the surface area of the stockpile should be minimised by forming a relatively high coned shape and avoiding 'spreading-out' of the stockpile. This will limit the surface area exposed to oxidation. Water infiltration should be minimised by covering the stockpile during wet weather as noted in Step 3. This will limit the formation and transport of acid leachate due to rainfall. The stockpile should be bunded to prevent erosion of the PASS and any movement of potentially acid leachate. Upstream surface runoff water should also be diverted around the stockpile.						
Step 5: Lime treatment & validation testing	An excavator or other suitable equipment (as deemed appropriate by the construction contractor) should be used to thoroughly mix the lime through the soil.						
	Once treatment occurs, samples are to be collected from the treated soil at the rates required in the National Acid Sulfate Soil Guidance: National acid sulfate soils sampling and identification methods manual (2018). A minim of one sample is required per skip bin/batch of treated soil prior to off-site disposal, and the overall validation frequency must be as follows: • <250m ³ , two samples • 251-500m ³ , three samples • 1,000m ³ , four samples • >1,000 m ³ , four samples plus one sample per additional 500m ³ Field pH may be used as a preliminary indicator where deemed appropriate by the validation consultant. Validation testing is to occur at a NATA accredited laboratory and will include acid base accounting using the chromium reducible sulfur method described in the National Acid Sulfate Soil Guidance: National acid sulfate soils identification and laboratory methods manual (2018). The validation net acidity results should be less than the laboratory practical quantitation limits (PQL)						
Step 6: Waste classification and off- site disposal	Following treatment, the material should be tested and assigned a waste classification in accordance with the Parts 1 and 4 of the Waste Classification Guidelines 2014. All neutralised material should be disposed of off-site to a facility licensed by the NSW EPA to accept treated PASS. Waste disposal is to be tracked in accordance with the RAP where relevant.						

4.5 Groundwater Seepage and Dewatering

The development works will require excavations that extend to and beneath the water table. Localised dewatering of excavations may be required, however, this has yet to be confirmed.

Once the details of dewatering are confirmed, a Dewatering Management Plan (DMP) is to be submitted to the consent authorities (e.g. Northern Beaches Council and NSW Office of Water/Water NSW, as required) for approval prior to the commencement of works. We note that Water NSW should be contacted for advice in relation to obtaining relevant approvals for dewatering, prior to preparation of the management plan.



The DMP should also include information on the management, treatment and monitoring requirements for excavations within PASS. This aspect of the DMP is to be designed with reference to the *National Acid Sulfate Soil Guidance: Guidance for the dewatering of acid sulfate soils in shallow groundwater environments* (2018).

4.6 Contingency Plan

If soil monitoring indicates the presence of significantly more acidic material than expected, all excavation works should be placed on hold (where it is safe to do so) until further action is taken to limit the oxidation of PASS in the area of disturbance. Contingency works will be undertaken as follows:

- The pH of soils exposed to oxygen within the excavation will be measured to establish the source of the acidic conditions;
- Under the direction of the validation consultant, material found to be acidic may be selectively excavated and neutralised in accordance with the ex-situ treatment methods in Section 4.4.2. Exposed surfaces will be immediately treated in accordance with Section 4.4.1; and
- Where suitable, in-situ treatment involving lime addition and shallow in-situ mixing may be adopted.

4.7 Documentation

On completion of the works requiring management under this ASSMP, a validation report is to be prepared by the validation consultant. The validation report is to document the works completed, present the validation testing results and comment on the adequacy of the overall compliance with the ASSMP. Any other specific conditions imposed by Northern Beaches Council and/or other consent authorities on the development consent must also be adequately addressed.

5 LIMITATIONS

The report limitations are outlined below:

- JKE accepts no responsibility for any unidentified AASS or PASS issues at the site. Any unexpected problems/subsurface features that may be encountered during development works should be inspected by an environmental consultant as soon as possible;
- This report has been prepared based on site conditions which existed at the time of the investigation; scope of work and limitation outlined in the JKE proposal; and terms of contract between JKE and the client (as applicable);
- The conclusions presented in this report are based on investigation of conditions at specific locations, chosen to be as representative as possible under the given circumstances, visual observations of the site and immediate surrounds and documents reviewed as described in the report;
- Subsurface soil and rock conditions encountered between investigation locations may be found to be different from those expected. Groundwater conditions may also vary, especially after climatic changes;
- The investigation and preparation of this report have been undertaken in accordance with accepted practice for environmental consultants, with reference to applicable environmental regulatory authority and industry standards, guidelines and the assessment criteria outlined in the report;
- Where information has been provided by third parties, JKE has not undertaken any verification process, except where specifically stated in the report;



- JKE accept no responsibility for potentially asbestos containing materials that may exist at the site. These materials may be associated with demolition of pre-1990 constructed buildings or fill material at the site;
- JKE have not and will not make any determination regarding finances associated with the site;
- Additional investigation work may be required in the event of changes to the proposed development or landuse. JKE should be contacted immediately in such circumstances;
- This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose;
- Copyright in this report is the property of JKE. JKE has used a degree of care, skill and diligence normally exercised by consulting professionals in similar circumstances and locality. No other warranty expressed or implied is made or intended. Subject to payment of all fees due for the investigation, the client alone shall have a licence to use this report;
- If the client, or any person, provides a copy of this report to any third party, such third party must not rely on this report except with the express written consent of JKE; and
- Any third party who seeks to rely on this report without the express written consent of JKE does so entirely at their own risk and to the fullest extent permitted by law, JKE accepts no liability whatsoever, in respect of any loss or damage suffered by any such third party.

If you have any questions concerning the contents of this letter please do not hesitate to contact us.

Kind Regards

Katrina Taylor Associate | Environmental Scientist

Mitchell Delaney Senior Associate

Appendices:

Appendix A: Report Figures Appendix B: Information on Acid Sulfate Soils Appendix C: Laboratory Results Summary Table Appendix D: Arcadis & JKE Borehole Logs Appendix E: Laboratory Reports and COC Documents



Appendix A: Report Figures





JKEnvironments

This plan should be read in conjunction with the Environmental report.

© JK ENVIRONMENTS





K ENVIRONMENTS

APPROXIMATE SITE BOUNDARY

BH01 (2.0) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (ARCADIS, 2021)

BH/MW101 (2.0) MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, 2021)

RESULT ABOVE ACTION CRITERIA



Potential Sulfidic	a-Net Acidit without ANC	s-Net Acidity E without ANCE	Liming Rate - without ANCE
Acidity 0.061	(mol H+/t) 238.0	(Xwiw S) 0.38	(kg CaCO3/tonne) 18
dity s ICE vi It)	-Net Acidity thout ANCE [2wiw S] 0.04 0.32	Liming Rate - without ANCE (kg CaCO3/tonne) 2 15	
LOCAT	ION PLAN	& ASS DATA	
/ENOR PL	ACE, BROOK	(VALE, NSW	
)BT		Figure No: 2	
K ENV	IRONME	NTS	

Concrete pavement across surface

Grey to brown imported fill, silty clayey sandy material with inclusions. Typical depth in west of around 1.4m and up to 2m in the east. Up to 2.6m in the vicinity of the UST (below 1mBGL to be treated as PASS) Groundwater table at approximatey 1.1-1.39mBGL (approximately RL 9.19-9.67m AHD) Black clayey silt, traces of plant roots (PASS)

Pale grey sand/clayey sand (PASS) West of site only, at approx 5.6mBGL

Not to scale

Notes: Reference should be made to the report text for a full understanding of this plan. Plan is Conceptual only.

Title:	SSMP
Location:	8 GRO
Project No:	E3443

© JK ENVIRONMENTS

CONCEPTUAL SITE MODEL

OSVENOR PLACE, BROOKVALE, NSW Figure No: 3

30BT

JK ENVIRONMENTS





Appendix B: Information on Acid Sulfate Soils





A. <u>Background</u>

Acid Sulfate Soil (ASS) is formed from iron rich alluvial sediments and sulfate (found in seawater) in the presence of sulfate reducing bacteria and plentiful organic matter. These conditions are generally found in mangroves, salt marsh vegetation or tidal areas and at the bottom of coastal rivers and lakes. ASS materials are distinguished from other soil or sediment materials (referred to as 'soil materials' throughout the National Acid Sulfate Soils Guidance) by having properties and behaviour that have either:

- 1) Been affected considerably by the oxidation of Reduced Inorganic Sulfur (RIS), or
- 2) The capacity to be affected considerably by the oxidation of their RIS constituents.

Acid sulfate soil materials include potential acid sulfate soils (PASS or sulfidic soil materials) and actual acid sulfate soils (AASS or sulfuric soil materials). These are often found in the same profile, with AASS overlying PASS. PASS and AASS are defined further below:

- PASS are soil materials which contain RIS such as pyrite. The field pH of these soils in their undisturbed state is usually more than pH 4 and is commonly neutral to alkaline (pH 7–9). These soil materials are invariably saturated with water in their natural state. Their texture may be peat, clay, loam, silt or sand and is often dark grey in colour and soft in consistence, but these materials may also exhibit colours that are dark brown, or medium to pale grey to white; and
- AASS are soil materials which contained RIS such as pyrite that have undergone oxidation. This oxidation results in low pH (that is pH less than 4) and often a yellow (jarosite) and/or orange to red mottling (ferric iron oxides) in the soil profile. Actual ASS contains Actual Acidity, and commonly also contains RIS (the source of Potential Sulfuric Acidity) as well as Retained Acidity.

B. <u>The ASS Planning Maps</u>

The ASS planning maps provide an indication of the relative potential for disturbance of ASS to occur at locations within the council area. These maps do not provide an indication of the actual occurrence of ASS at a site or the likely severity of the conditions.

The maps are divided into five classes dependent upon the type of activities/works that if undertaken, may represent an environmental risk through the development of acidic conditions associated with ASS:

Risk Class	Description
Class 1	All works.
Class 2	All works below existing ground level and works by which the water table is likely to be lowered.
Class 3	Works at depths beyond 1m below existing ground level or works by which the water table is likely to be lowered beyond 1m below existing ground level.
Class 4	Works at depths beyond 2m below existing ground level or works by which the water table is likely to be lowered beyond 2m below existing ground level.
Class 5	Works within 500m of adjacent Class 1, 2, 3, 4 land which are likely to lower the water table below 1m AHD on the adjacent land.

Table 1: Risk Classes

JKEnvironments



C. The ASS Risk Maps

The ASS risk maps provide an indication of the probability of occurrence of ASS materials at a particular location based on interpretation from geological and soil landscape maps. The maps provide classes based on high probability, low probability, no known occurrence and areas of disturbed terrain (site specific assessment necessary) and the likely depth at which ASS materials are likely to be encountered.

D. Interpretation of ASS Field Tests

Tables A1 and A2 below provide some guidance on the interpretation of pH_F and pH_{FOX} test results, as detailed in the *National Acid Sulfate Soil Guidance: National acid sulfate soils sampling and identification methods manual* (2018):

pH value	Result	Comments
pH _F ≤ 4, jarosite not observed in the soil layer/horizon	May indicate an AASS indicating previous oxidation of RIS or may indicate naturally occurring, non ASS soils.	Generally not conclusive as naturally occurring, non ASS soils, such as many organic soils (for example peats) and heavily leached soils, often also return $pH_F \le 4$.
pH _F ≤ 4, jarosite observed in the soil layer/horizon	The soil material is an AASS.	Jarosite and other iron precipitate minerals in ASS such as schwertmannite require a pH < 4 to form and indicate prior oxidation of RIS.
pH _F > 7	Expected in waterlogged, unoxidised, or poorly drained soils.	Marine muds commonly have a pH > 7 which reflects a seawater (pH 8.2) influence. Oxidation of samples with H_2O_2 can help indicate if the soil materials contain RIS.

Table A1: Interpretation of some pH_F test ranges

Source: Adapted from DER (2015a).

pH value and reaction	Result	Comments
Strong reaction of soil with H ₂ O ₂ (that is X or V)	Useful indicator of the presence of RIS but cannot be used alone	Organic rich substrates such as peat and coffee rock, and soil constituents like manganese oxides, can also cause a reaction. Care must be exercised in interpreting these results. Laboratory analyses are required to confirm if appreciable RIS is present.
pH _{FOX} value at least one unit below field pH _F and strong reaction with H ₂ O ₂ (that is X or V)	May indicate PASS	The difference between pH _F and pH _{FOX} is termed the Δ pH. Generally the larger the Δ pH the more indicative of PASS. The lower the final pH _{FOX} the better the likelihood of an appreciable RIS content. For example, a change from pH _F of 8 to pH _{FOX} of 7 (that is a Δ pH of 1) would not indicate PASS, however, a unit change from pH _F of 3.5 to pH _{FOX} of 2.5 would be indicative of PASS. Laboratory analyses are required to confirm if appreciable RIS is present.
pH_{FOX} < 3, large ΔpH and a strong reaction with H_2O_2 (that is X or V)	Strongly indicates PASS	The lower the pH_{FOX} below 3, the greater the likelihood that appreciable RIS is present. A combination of all three parameters – pH_{FOX} , ΔpH and reaction strength – gives the

Table A2: Interpretation of pHFOX test results

JKEnvironments



pH value and reaction	Result	Comments
		best indication of PASS. Laboratory analyses are required to confirm that appreciable RIS is present.
A pH _{FOX} 3–4 and Low, Medium or Strong reaction with H ₂ O ₂	Inconclusive	RIS may be present; however, organic matter may also be responsible for the decrease in pH. Laboratory analyses are required to confirm the presence of RIS.
pH _{FOX} 4–5	Inconclusive	RIS may be present in small quantities, or poorly reactive under rapid oxidation, or the sample may contain shell/ carbonate which neutralises some or all acid produced on oxidation. Equally, the pHFOX value may be due to the production of organic acids with no RIS present. Laboratory analyses are required to confirm if appreciable RIS is present.
$pH_{FOX} > 5$, small or no ΔpH , but Low, Medium or Strong reaction with H_2O_2	Inconclusive	For neutral to alkaline pHF with shell or white concretions, the fizz test with 1 M HCl can be used to identify the presence of carbonates. Laboratory analyses are required to confirm if appreciable RIS is present and further testing is required to confirm that effective self- neutralising materials are present.

Source: Adapted from DER (2015a).





Appendix C: Arcadis & JKE Borehole Logs

















Client:	SWEL	L TRADI	NG PTY					
Project:	PROP	OSED PF	RIVATE	CAR STORAGE FACILITY DE	VELOP	MENT	-	
Location:	8 GRC	DSVENOF	R PLACE	E, BROOKVALE, NSW				
Job No.:	E34430BT		Meth	od: SPIRAL AUGER		R	.L. Surf	ace: N/A
Date: 5/10)/2021 • IK205			red/Checked by: NM/MD		Datum: -		
ு பிராசு			LOG					
Groundwater Record ES ASB SAMPLE	PBL DB Field Tests	Depth (m)	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.	Remarks
	N = 17 3,4,13		СІ-СН	Silty CLAY: medium to high plasticity, grey mottled light red.	w>PL			-
COPYRIGHT				END OF BOREHOLE AT 8.0m				Groundwater monitoring well installed to 8.0m. Class 18 machine slotted 50mm dia. PVC standpipe 8.0m to 2.0m. Casing 2.0m to 0.0m. 2mm sand filter pack 8.0m to 1.4m. Bentonite seal 1.4m to 0.4m. Backfilled with sand to the surface. Completed with a concreted gatic cover.







Γ	Clier	nt:		SWEL	SWELL TRADING PTY LTD							
	Project: PROPOSED PRIVATE CAR STORAGE FACILITY DEVELO							VELOP	MENT	-		
	Location: 8 GROSVENOR PLACE, BROOKVALE, NSW											
Γ	Job No.: E34430BT						Meth	od: SPIRAL AUGER		R	.L. Surf	ace: N/A
	Date	: 5	/10/	2021			_			D	atum:	-
	Plant Type: JK205			Logo	ged/Checked by: N.M./M.D.							
	Groundwater Record	ES ASS	ASB SAMPLES SAL DD	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
				N = 18 2,5,13	- - -		СН	Silty CLAY: high plasticity, grey mottled light red.	w>PL			-
COPYRIGHT					8 - - - - - - - - - - - - -			END OF BOREHOLE AT 8.0m				Groundwater monitoring well installed to 8.0m. Class 18 machine slotted 50mm dia. PVC standpipe 8.0m to 2.0m. Casing 2.0m to 0.0m. 2mm sand filter pack 8.0m to 0.4m. Bentonite seal 0.5m to 0.15m. Backfilled to the surface. Completed with a concreted gatic cover







Client:	SWE	SWELL TRADING PTY LTD							
Project:	PRC	PROPOSED PRIVATE CAR STORAGE FACILITY DEVELOPMENT							
Job No.:	Location: 8 GROSVENOR F			PLACE, BROOKVALE, NSW			R I Surface: N/A		
Date: 5/2	10/2021					D	atum:	•	
Plant Typ	be: JK208	5	Logg	Logged/Checked by: N.M./M.D.					
Groundwater Record ES ASB SAMDIFS	SAL DB Field Tests	Depth (m)	Graphic Log Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks	
	N = 18 4,2,16		CI-CH	as above, but grey mottled light red.	w>PL			-	
COPYRIGHT				END OF BOREHOLE AT 8.0m				Groundwater monitoring well installed to 8.0m. Class 18 machine slotted 50mm dia. PVC standpipe 8.0m to 2.0m. Casing 2.0m to 0.0m. 2mm sand filter pack 8.0m to 1.0m. Bentonite seal 1.0m to 0.4m. Backfilled with sand to the surface. Completed with a concreted gatic cover	



ENVIRONMENTAL LOGS EXPLANATION NOTES

INTRODUCTION

These notes have been provided to amplify the environmental report in regard to classification methods, field procedures and certain matters relating to the logging of soil and rock. Not all notes are necessarily relevant to all reports.

Where geotechnical borehole logs are utilised for environmental purpose, reference should also be made to the explanatory notes included in the geotechnical report. Environmental logs are not suitable for geotechnical purposes.

The ground is a product of continuing natural and man-made processes and therefore exhibits a variety of characteristics and properties which vary from place to place and can change with time. Environmental studies include gathering and assimilating limited facts about these characteristics and properties in order to understand or predict the behaviour of the ground on a particular site under certain conditions. This report may contain such facts obtained by inspection, excavation, probing, sampling, testing or other means of investigation. If so, they are directly relevant only to the ground at the place where and time when the investigation was carried out.

DESCRIPTION AND CLASSIFICATION METHODS

The methods of description and classification of soils and rocks used in this report are based on Australian Standard 1726:2017 *'Geotechnical Site Investigations'*. In general, descriptions cover the following properties – soil or rock type, colour, structure, strength or density, and inclusions. Identification and classification of soil and rock involves judgement and the Company infers accuracy only to the extent that is common in current geoenvironmental practice.

Soil types are described according to the predominating particle size and behaviour as set out in the attached soil classification table qualified by the grading of other particles present (eg. sandy clay) as set out below:

Soil Classification	Particle Size
Clay	< 0.002mm
Silt	0.002 to 0.075mm
Sand	0.075 to 2.36mm
Gravel	2.36 to 63mm
Cobbles	63 to 200mm
Boulders	> 200mm

Non-cohesive soils are classified on the basis of relative density, generally from the results of Standard Penetration Test (SPT) as below:

Relative Density	SPT 'N' Value (blows/300mm)
Very loose (VL)	< 4
Loose (L)	4 to 10
Medium dense (MD)	10 to 30
Dense (D)	30 to 50
Very Dense (VD)	> 50

Cohesive soils are classified on the basis of strength (consistency) either by use of a hand penetrometer, vane shear, laboratory testing and/or tactile engineering examination. The strength terms are defined as follows.

Classification	Unconfined Compressive Strength (kPa)	Indicative Undrained Shear Strength (kPa)	
Very Soft (VS)	≤25	≤12	
Soft (S)	> 25 and \leq 50	> 12 and \leq 25	
Firm (F)	> 50 and \leq 100	> 25 and \leq 50	
Stiff (St)	$>$ 100 and \leq 200	> 50 and ≤ 100	
Very Stiff (VSt)	$>$ 200 and \leq 400	$>$ 100 and \leq 200	
Hard (Hd)	> 400	> 200	
Friable (Fr)	Strength not attainable – soil crumbles		

Rock types are classified by their geological names, together with descriptive terms regarding weathering, strength, defects, etc. Where relevant, further information regarding rock classification is given in the text of the report. In the Sydney Basin, 'shale' is used to describe fissile mudstone, with a weakness parallel to bedding. Rocks with alternating inter-laminations of different grain size (eg. siltstone/claystone and siltstone/fine grained sandstone) are referred to as 'laminite'.

INVESTIGATION METHODS

The following is a brief summary of investigation methods currently adopted by the Company and some comments on their use and application. All methods except test pits, hand auger drilling and portable Dynamic Cone Penetrometers require the use of a mechanical rig which is commonly mounted on a truck chassis or track base.

Test Pits: These are normally excavated with a backhoe or a tracked excavator, allowing close examination of the insitu soils and 'weaker' bedrock if it is safe to descend into the pit. The depth of penetration is limited to about 3m for a backhoe and up to 6m for a large excavator. Limitations of test pits are the problems associated with disturbance and difficulty of reinstatement and the consequent effects on close-by structures. Care must be taken if construction is to be carried out near test pit locations to either properly recompact the backfill during construction or to design and construct the



structure so as not to be adversely affected by poorly compacted backfill at the test pit location.

Hand Auger Drilling: A borehole of 50mm to 100mm diameter is advanced by manually operated equipment. Refusal of the hand auger can occur on a variety of materials such as obstructions within any fill, tree roots, hard clay, gravel or ironstone, cobbles and boulders, and does not necessarily indicate rock level.

Continuous Spiral Flight Augers: The borehole is advanced using 75mm to 115mm diameter continuous spiral flight augers, which are withdrawn at intervals to allow sampling and insitu testing. This is a relatively economical means of drilling in clays and in sands above the water table. Samples are returned to the surface by the flights or may be collected after withdrawal of the auger flights, but they can be very disturbed and layers may become mixed. Information from the auger sampling (as distinct from specific sampling by SPTs or undisturbed samples) is of limited reliability due to mixing or softening of samples by groundwater, or uncertainties as to the original depth of the samples. Augering below the groundwater table is of even lesser reliability than augering above the water table.

Rock Augering: Use can be made of a Tungsten Carbide (TC) bit for auger drilling into rock to indicate rock quality and continuity by variation in drilling resistance and from examination of recovered rock cuttings. This method of investigation is quick and relatively inexpensive but provides only an indication of the likely rock strength and predicted values may be in error by a strength order. Where rock strengths may have a significant impact on construction feasibility or costs, then further investigation by means of cored boreholes may be warranted.

Wash Boring: The borehole is usually advanced by a rotary bit, with water being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be assessed from the cuttings, together with some information from "feel" and rate of penetration.

Mud Stabilised Drilling: Either Wash Boring or Continuous Core Drilling can use drilling mud as a circulating fluid to stabilise the borehole. The term 'mud' encompasses a range of products ranging from bentonite to polymers. The mud tends to mask the cuttings and reliable identification is only possible from intermittent intact sampling (eg. from SPT and U50 samples) or from rock coring, etc.

Continuous Core Drilling: A continuous core sample is obtained using a diamond tipped core barrel. Provided full core recovery is achieved (which is not always possible in very low strength rocks and granular soils), this technique provides a very reliable (but relatively expensive) method of investigation. In rocks, NMLC or HQ triple tube core barrels, which give a core of about 50mm and 61mm diameter, respectively, is usually used with water flush. The length of core recovered is compared to the length drilled and any length not recovered is shown as NO CORE. The location of NO CORE recovery is determined on site by the supervising engineer; where the location is uncertain, the loss is placed at the bottom of the drill run.

Standard Penetration Tests: Standard Penetration Tests (SPT) are used mainly in non-cohesive soils, but can also be used in cohesive soils, as a means of indicating density or strength and also of obtaining a relatively undisturbed sample. The test procedure is

described in Australian Standard 1289.6.3.1–2004 (R2016) 'Methods of Testing Soils for Engineering Purposes, Soil Strength and Consolidation Tests – Determination of the Penetration Resistance of a Soil – Standard Penetration Test (SPT)'.

The test is carried out in a borehole by driving a 50mm diameter split sample tube with a tapered shoe, under the impact of a 63.5kg hammer with a free fall of 760mm. It is normal for the tube to be driven in three successive 150mm increments and the 'N' value is taken as the number of blows for the last 300mm. In dense sands, very hard clays or weak rock, the full 450mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form:

• In the case where full penetration is obtained with successive blow counts for each 150mm of, say, 4, 6 and 7 blows, as

N = 13 4, 6, 7

 In a case where the test is discontinued short of full penetration, say after 15 blows for the first 150mm and 30 blows for the next 40mm, as

> N > 30 15, 30/40mm

The results of the test can be related empirically to the engineering properties of the soil.

A modification to the SPT is where the same driving system is used with a solid 60° tipped steel cone of the same diameter as the SPT hollow sampler. The solid cone can be continuously driven for some distance in soft clays or loose sands, or may be used where damage would otherwise occur to the SPT. The results of this Solid Cone Penetration Test (SCPT) are shown as 'N_c' on the borehole logs, together with the number of blows per 150mm penetration.

LOGS

The borehole or test pit logs presented herein are an interpretation of the subsurface conditions, and their reliability will depend to some extent on the frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will enable the most reliable assessment, but is not always practicable or possible to justify on economic grounds. In any case, the boreholes or test pits represent only a very small sample of the total subsurface conditions.

The terms and symbols used in preparation of the logs are defined in the following pages.

Interpretation of the information shown on the logs, and its application to design and construction, should therefore take into account the spacing of boreholes or test pits, the method of drilling or excavation, the frequency of sampling and testing and the possibility of other than 'straight line' variations between the boreholes or test pits. Subsurface conditions between boreholes or test pits may vary significantly from conditions encountered at the borehole or test pit locations.



GROUNDWATER

Where groundwater levels are measured in boreholes, there are several potential problems:

- Although groundwater may be present, in low permeability soils it may enter the hole slowly or perhaps not at all during the time it is left open.
- A localised perched water table may lead to an erroneous indication of the true water table.
- Water table levels will vary from time to time with seasons or recent weather changes and may not be the same at the time of construction.
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must be washed out of the hole or 'reverted' chemically if reliable water observations are to be made.

More reliable measurements can be made by installing standpipes which are read after the groundwater level has stabilised at intervals ranging from several days to perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from perched water tables or surface water.

FILL

The presence of fill materials can often be determined only by the inclusion of foreign objects (eg. bricks, steel, etc) or by distinctly unusual colour, texture or fabric. Identification of the extent of fill materials will also depend on investigation methods and frequency. Where natural soils similar to those at the site are used for fill, it may be difficult with limited testing and sampling to reliably assess the extent of the fill.

The presence of fill materials is usually regarded with caution as the possible variation in density and material type is much greater than with natural soil deposits. Consequently, there is an increased risk of adverse environmental characteristics or behaviour. If the volume and nature of fill is of importance to a project, then frequent test pit excavations are preferable to boreholes.

LABORATORY TESTING

Laboratory testing has not been undertaken to confirm the soil classification and rock strengths indicated on the environmental logs unless noted in the report.



SYMBOL LEGENDS



CLASSIFICATION OF COARSE AND FINE GRAINED SOILS

Major Divisions		Group Symbol Typical Names		Field Classification of Sand and Gravel	Laboratory Classification	
SAND (more than half of coarse fraction is larger than 2.36mm SAND (more than half of coarse fraction is larger than 2.36mm SAND (more than half of coarse fraction is larger than 2.36mm	GRAVEL (more than half	GW	Gravel and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	C _u >4 1 <c<sub>c<3</c<sub>
	of coarse fraction is larger than 2.36mm	GP	Gravel and gravel-sand mixtures, little or no fines, uniform gravels	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
		GM	Gravel-silt mixtures and gravel- sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	Fines behave as silt
		GC	Gravel-clay mixtures and gravel- sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	Fines behave as clay
	SAND (more than half	SW	Sand and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Cu>6 1 <cc<3< td=""></cc<3<>
	fraction is smaller than	SP	Sand and gravel-sand mixtures, little or no fines	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
	2.36mm)	SM	Sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	
Coarse		SC	Sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	N/A

Major Divisions		Group			Laboratory Classification		
		Symbol	Typical Names	Dry Strength	Dilatancy	Toughness	% < 0.075mm
egrained solls (more than 35% of soil excluding oversize fraction is less than 0.075mm)	SILT and CLAY (low to medium	ML	Inorganic silt and very fine sand, rock flour, silty or clayey fine sand or silt with low plasticity	None to low	Slow to rapid	Low	Below A line
	plasticity)	CL, CI	Inorganic clay of low to medium plasticity, gravelly clay, sandy clay	Medium to high	None to slow	Medium	Above A line
		OL	Organic silt	Low to medium	Slow	Low	Below A line
	SILT and CLAY (high plasticity)	MH	Inorganic silt	Low to medium	None to slow	Low to medium	Below A line
		(high plasticity)	СН	Inorganic clay of high plasticity	High to very high	None	High
		ОН	Organic clay of medium to high plasticity, organic silt	Medium to high	None to very slow	Low to medium	Below A line
.=	Highly organic soil Pt Peat, highly organic soil		-	-	-	-	

Laboratory Classification Criteria

A well graded coarse grained soil is one for which the coefficient of uniformity Cu > 4 and the coefficient of curvature $1 < C_c < 3$. Otherwise, the soil is poorly graded. These coefficients are given by:

$$C_U = \frac{D_{60}}{D_{10}}$$
 and $C_C = \frac{(D_{30})^2}{D_{10}D_{60}}$

Where D_{10} , D_{30} and D_{60} are those grain sizes for which 10%, 30% and 60% of the soil grains, respectively, are smaller.

NOTES:

- 1 For a coarse grained soil with a fines content between 5% and 12%, the soil is given a dual classification comprising the two group symbols separated by a dash; for example, for a poorly graded gravel with between 5% and 12% silt fines, the classification is GP-GM.
- 2 Where the grading is determined from laboratory tests, it is defined by coefficients of curvature (C_c) and uniformity (C_u) derived from the particle size distribution curve.
- 3 Clay soils with liquid limits > 35% and ≤ 50% may be classified as being of medium plasticity.
- 4 The U line on the Modified Casagrande Chart is an approximate upper bound for most natural soils.



JKEnvironments



LOG SYMBOLS

Log Column	Symbol	Definition				
Groundwater Record		Standing water level. Time delay following completion of drilling/excavation may be shown				
	— c —	Extent of borehole/test pit	collapse shortly after drill	ing/excavation.		
		Groundwater seepage into	borehole or test pit noted	d during drilling or excavation.		
Samples	ES U50 DB DS ASB ASS SAL PFAS	Sample taken over depth indicated, for environmental analysis. Undisturbed 50mm diameter tube sample taken over depth indicated. Bulk disturbed sample taken over depth indicated. Small disturbed bag sample taken over depth indicated. Soil sample taken over depth indicated, for asbestos analysis. Soil sample taken over depth indicated, for acid sulfate soil analysis. Soil sample taken over depth indicated, for salinity analysis. Soil sample taken over depth indicated, for analysis of Per- and Polyfluoroalkyl Substances.				
Field Tests	N = 17 4, 7, 10	Standard Penetration Test (SPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration. 'Refusal' refers to apparent hammer refusal within the corresponding 150mm depth increment.				
	N _c = 5 7 3R		Solid Cone Penetration Test (SCPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration for 60° solid cone driven by SPT hammer. 'R' refers to apparent hammer refusal within the corresponding 150mm depth increment.			
	VNS = 25 PID = 100	Vane shear reading in kPa of undrained shear strength. Photoionisation detector reading in ppm (soil sample headspace test).				
Moisture Condition (Fine Grained Soils)	Ioisture Condition $w > PL$ Fine Grained Soils) $w \approx PL$ $w < PL$ $w \approx LL$ $w > LL$		Moisture content estimated to be greater than plastic limit. Moisture content estimated to be approximately equal to plastic limit. Moisture content estimated to be less than plastic limit. Moisture content estimated to be near liquid limit. Moisture content estimated to be wet of liquid limit.			
(Coarse Grained Soils)	(Coarse Grained Soils) D M W		 DRY – runs freely through fingers. MOIST – does not run freely but no free water visible on soil surface. WET – free water visible on soil surface. 			
Strength (Consistency)VSCohesive SoilsSFStStVStHdFr()		VERY SOFT– unconfined compressive strength ≤ 25kPa.SOFT– unconfined compressive strength > 25kPa and ≤ 50kPa.FIRM– unconfined compressive strength > 50kPa and ≤ 100kPa.STIFF– unconfined compressive strength > 100kPa and ≤ 200kPa.VERY STIFF– unconfined compressive strength > 200kPa and ≤ 400kPa.HARD– unconfined compressive strength > 400kPa.FRIABLE– strength not attainable, soil crumbles.Bracketed symbol indicates estimated consistency based on tactile examination or other assessment.				
Density Index/ Relative Density (Cohesionless Soils) VL		VERY LOOSE	Density Index (I _D) Range (%) ≤ 15	SPT 'N' Value Range (Blows/300mm) 0 – 4		
	L	LOOSE	> 15 and \leq 35	4-10		
	MD	MEDIUM DENSE	> 35 and \leq 65	10-30		
	D	DENSE	$> 65 \text{ and } \le 85$	30 - 50		
	VD	VERY DENSE	> 85	> 50		
	()	Bracketed symbol indicate	s estimated density based	on ease of drilling or other assessment.		



Log Column	Symbol	Definition		
Hand Penetrometer Readings	300 250	Measures reading in kPa of unconfined compressive strength. Numbers indicate individual test results on representative undisturbed material unless noted otherwise.		
Remarks	'V' bit	Hardened steel 'V' shaped bit.		
	'TC' bit	Twin pronged tungsten carbide bit.		
	T_{60}	Penetration of auger string in mm under static load of rig applied by drill head hydraulic without rotation of augers.		
	Soil Origin	The geological ori	gin of the soil can generally be described as:	
		RESIDUAL	 soil formed directly from insitu weathering of the underlying rock. No visible structure or fabric of the parent rock. 	
		EXTREMELY WEATHERED	 soil formed directly from insitu weathering of the underlying rock. Material is of soil strength but retains the structure and/or fabric of the parent rock. 	
		ALLUVIAL	- soil deposited by creeks and rivers.	
		ESTUARINE	 soil deposited in coastal estuaries, including sediments caused by inflowing creeks and rivers, and tidal currents. 	
		MARINE	 soil deposited in a marine environment. 	
		AEOLIAN	 soil carried and deposited by wind. 	
		COLLUVIAL	 soil and rock debris transported downslope by gravity, with or without the assistance of flowing water. Colluvium is usually a thick deposit formed from a landslide. The description 'slopewash' is used for thinner surficial deposits. 	
		LITTORAL	 beach deposited soil. 	


Classification of Material Weathering

Term		Abbre	viation	Definition					
Residual Soil		RS		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.					
Extremely Weathered		xw		Material is weathered to such an extent that it has soil properties. Mas structure and material texture and fabric of original rock are still visible.					
Highly Weathered	Distinctly Weathered	HW	DW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.					
Moderately Weathered	(Note 1)	MW		The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable, but shows little or no change of strength from fresh rock.					
Slightly Weathered		S	W	Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.					
Fresh		FR		Rock shows no sign of decomposition of individual minerals or colour changes.					

NOTE 1: The term 'Distinctly Weathered' is used where it is not practicable to distinguish between 'Highly Weathered' and 'Moderately Weathered' rock. 'Distinctly Weathered' is defined as follows: '*Rock strength usually changed by weathering.* The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores'. There is some change in rock strength.

Rock Material Strength Classification

				Guide to Strength
Term	Abbreviation	Uniaxial Compressive Strength (MPa)	Point Load Strength Index Is ₍₅₀₎ (MPa)	Field Assessment
Very Low Strength	VL	0.6 to 2	0.03 to 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30mm thick can be broken by finger pressure.
Low Strength	L	2 to 6	0.1 to 0.3	Easily scored with a knife; indentations 1mm to 3mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150mm long by 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium Strength	М	6 to 20	0.3 to 1	Scored with a knife; a piece of core 150mm long by 50mm diameter can be broken by hand with difficulty.
High Strength	н	20 to 60	1 to 3	A piece of core 150mm long by 50mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High Strength	VH	60 to 200	3 to 10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely High Strength	EH	> 200	> 10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.



Appendix D: Laboratory Results Summary Table



					Acid Neutralising Capacity		Actual Acidity		Potential Acidity		Acid Base Accounting SPOCAS					s						
	рн (F)	pH (Fox)	Net Acid Soluble Sulfur (in acid units)	Net Acid Soluble Sulfur (in sulfur units)	Acid Neutralising Capacity	ANCBT	sulfidic-Acid Neutral	рн (ксі)	sulfidic - Titratable Actual Acidity	Titratable Actual Acidity	Chromium Reducible Sulfur	Chromium Reducible Sulphur	a-Net Acidity without ANCE	Net Acidity excluding ANC (sulfur units)	ANC Fineness Factor	Liming Rate	Liming rate without ANCE	Net Acidity (acidity units)	Net Acidity (sulfur units)	KCl Extractable Sulfur	HCl Extractable Sulfur	Net Acid Soluble Sulfur
	pH Unit		mole H+/t	%S	%CaCO3	mole H+/t	%S	pH Unit	%S	mole H+/t	%S 🔺	mole H+/t	moles H+/t	%S	-	kg CaCO3/t	kg CaCO3/t	mole H+/t	%S	%	%S	%S
EQL	0.1		10	0.02	0.01	10	0.01	0.1	0.02	2	0.005	10	10	0.02	0.5	1	1	10	0.02	0.02	0.02	0.02
ASSMAC 1998 Action criteria, medium texture									0.03	18												
Field ID Sampled Date Lab Report Number													$\boldsymbol{\cdot}$							-		

Field ID	Sampled Date	Lab Report Number																						
BH01_2.0	07-Jun-21	ES2121325	6.7	2.7	-	-	4.05	810	1.3	7.3	< 0.02	<2	0.041	25	25	0.04	1.5	<1	2	<10	< 0.02	-	-	-
BH01_5.0	07-Jun-21	ES2121325	6	2.9	<10	< 0.02	-	-	-	4.2	0.26	159	0.06	38	197	0.32	1.5	15	15	197	0.32	< 0.02	< 0.02	< 0.02
BH02_3.0	07-Jun-21	ES2121325	5.8	2.2	<10	< 0.02	-	-	-	4.1	0.32	200	0.061	38	238	0.38	1.5	18	18	238	0.38	< 0.02	< 0.02	< 0.02
BH02_5.0	07-Jun-21	ES2121325	6.2	2.3	-	-	-	-	-	5	0.09	56	0.042	26	83	0.13	1.5	6	6	83	0.13	-	-	-
BH03_3.0	07-Jun-21	ES2121325	6.1	3.2	<10	< 0.02	-	-	-	4.2	0.15	96	0.041	25	122	0.2	1.5	9	9	122	0.2	< 0.02	< 0.02	< 0.02
BH03_5.0	07-Jun-21	ES2121325	5.8	2.9	<10	< 0.02	-	-	-	4.3	0.29	180	0.057	36	216	0.35	1.5	16	16	216	0.35	< 0.02	< 0.02	< 0.02
BH04_2.0	07-Jun-21	ES2121325	7	2.2	-	-	-	-	-	6.2	<0.b.	7	0.037	23	30	0.05	1.5	2	2	30	0.05	-	-	-
BH04_5.0	07-Jun-21	ES2121325	6	2.9	<10	< 0.02	-	-	-	4.2	0.25	156	0.041	26	182	0.29	1.5	14	14	182	0.29	< 0.02	< 0.02	< 0.02





Appendix E: Laboratory Reports and COC Documents





CERTIFICATE OF ANALYSIS

Work Order	: ES2121325	Page	: 1 of 24
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD	Laboratory	Environmental Division Svdnev
Contact	: LOEK MUNNICHS	Contact	Loren Schiavon
Address	LEVEL 16 580 GEORGE STREET	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
	SYDNEY NSW 2000		
Telephone	:	Telephone	: +61 2 8784 8555
Project	: PSI 8 Grosvenor St	Date Samples Received	: 07-Jun-2021 22:40
Order number	: 30090774	Date Analysis Commenced	d : 08-Jun-2021
C-O-C number	:	Issu <u>e</u> Date	: 15-Jun-2021 19:44
Sampler	: MICHAEL ASHELFORD	\sim	Hac-MRA NAIA
Site	:		
Quote number	: EN/091		The Column
No. of samples received	: 33		Accreditation No. 825 Accredited for compliance with
No. of samples analysed	: 16		ISO/IEC 17025 - Testing
This Certificate of Analysi General Comme Analytical Result Descriptive Resu Surrogate Contro Additional information Quality Review and Sam	is contains the following information: nts is ults ol Limits pertinent to this report will be found in the ple Receipt Notification.	e following separate attachments: Quality	r Control Report, QA/QC Compliance Assessment to assist with
Signatories	electronically signed by the authorized signatories belo	ow Electronic signing is carried out in complian	ce with procedures specified in 21 CER Part 11
Signatories	Position	Accreditation Ca	tegory
Alana Smylie	Asbestos Identifier	Newcastle - As	bestos, Mayfield West, NSW
Ashesh Patel	Senior Chemist	Sydney Inorga	nics, Smithfield, NSW
Ben Felgendrejeris	Senior Acid Sulfate Soil	Chemist Brisbane Acid	Sulphate Soils, Stafford, QLD
Celine Conceicao	Senior Spectroscopist	Sydney Inorga	nics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorga	nics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organi	ics, Smithfield, NSW
Kim McCabe	Senior Inorganic Chemi	st Brisbane Acid	Sulphate Soils, Stafford, QLD



General Comments

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

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

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

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

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

purposes.

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

- Key: CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society. LOR = Limit of reporting
 - ^ = This result is computed from individual analyte detections at or above the level of reporting
 - ø = ALS is not NATA accredited for these tests
 - ~ = Indicates an estimated value.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3-& 4-Methylphenol at or above the LOR.
- ASS: EA033 (CRS Suite): Laboratory determinations of ANC needs to be corroborated by effectiveness of the measured ANC in relation to incubation ANC. Unless corroborated, the results of ANC testing should be discounted when determining Net Acidity for comparison with action criteria, or for the determination of the acidity hazard and required liming amounts.
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.
- ASS: EA003 (NATA Field and F(ox) screening): pH F(ox) Reaction Rate: 1 Slight; 2 Moderate; 3 Strong; 4 Extreme
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.

 Page
 : 3 of 24

 Work Order
 : ES2121325

 Client
 : ARCADIS AUSTRALIA PACIFIC PTY LTD

 Project
 : PSI 8 Grosvenor St



EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.



Page : 4 of 24 Work Order : ES2121325 Client : ARCADIS AUSTRALIA PACIFIC PTY LTD Project : PSI 8 Grosvenor St



Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH01_0.2	BH01_2.0	BH01_5.0	BH02_0.1	BH02_2.0
		Sampli	ng date / time	07-Jun-2021 00:00				
Compound	CAS Number	LOR	Unit	ES2121325-001	ES2121325-004	ES2121325-007	ES2121325-008	ES2121325-011
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
рН (F)		0.1	pH Unit		6.7	6.0		
pH (Fox)		0.1	pH Unit		2.7	2.9		
Reaction Rate		1	Reaction Unit		3	2		
EA033-A: Actual Acidity						$\cap V$		
pH KCI (23A)		0.1	pH Unit		7.3	4.2		
Titratable Actual Acidity (23F)		2	mole H+ / t		<2	159		
sulfidic - Titratable Actual Acidity (s-23F)		0.02	% pyrite S		<0.02	0.26		
EA033-B: Potential Acidity				C		V		
Chromium Reducible Sulfur (22B)		0.005	% S		0.041	0.060		
acidity - Chromium Reducible Sulfur (a-22B)		10	mole H+ / t		25	38		
EA033-C: Acid Neutralising Capacity								
Acid Neutralising Capacity (19A2)		0.01	% CaCO3		4.05			
acidity - Acid Neutralising Capacity (a-19A2)		10	mole H+ / t	C	810			
sulfidic - Acid Neutralising Capacity		0.01	% pyrite S		1.30			
(s-19A2)					•			
EA033-D: Retained Acidity								
KCI Extractable Sulfur (23Ce)		0.02	% S			<0.02		
HCI Extractable Sulfur (20Be)		0.02	% S			<0.02		
Net Acid Soluble Sulfur (20Je)		0.02	% S			<0.02		
acidity - Net Acid Soluble Sulfur (a-20J)		10	mole H+ / t			<10		
sulfidic - Net Acid Soluble Sulfur (s-20J)		0.02	% pyrite S			<0.02		
EA033-E: Acid Base Accounting								
ANC Fineness Factor		0.5	-		1.5	1.5		
Net Acidity (sulfur units)		0.02	% S		<0.02	0.32		
Net Acidity (acidity units)		10	mole H+ / t		<10	197		
Liming Rate		1	kg CaCO3/t		<1	15		
Net Acidity excluding ANC (sulfur units)		0.02	% S		0.04	0.32		
Net Acidity excluding ANC (acidity units)		10	mole H+ / t		25	197		
Liming Rate excluding ANC		1	kg CaCO3/t		2	15		
EA055: Moisture Content (Dried @ 105-110	°C)							
Moisture Content		1.0	%	10.2	37.8			15.4
EA200: AS 4964 - 2004 Identification of Asl	bestos in Soils							

Page : 5 of 24 Work Order : ES2121325 Client : ARCADIS AUSTRALIA PACIFIC PTY LTD Project : PSI 8 Grosvenor St



Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH01_0.2	BH01_2.0	BH01_5.0	BH02_0.1	BH02_2.0
		Sampli	ng date / time	07-Jun-2021 00:00				
Compound	CAS Number	LOR	Unit	ES2121325-001	ES2121325-004	ES2121325-007	ES2121325-008	ES2121325-011
				Result	Result	Result	Result	Result
EA200: AS 4964 - 2004 Identification of A	sbestos in Soils	- Continue	ed					
Asbestos Detected	1332-21-4	0.1	g/kg	No			No	
Asbestos (Trace)	1332-21-4	5	Fibres	No			No	
Asbestos Type	1332-21-4	-		-			-	
Synthetic Mineral Fibre		0.1	g/kg	No			No	
Organic Fibre		0.1	g/kg	No		+	No	
Sample weight (dry)		0.01	g	407			305	
APPROVED IDENTIFIER:		-		A. SMYLIE			A. SMYLIE	
EG005(ED093)T: Total Metals by ICP-AES	;			~		V		
Arsenic	7440-38-2	5	mg/kg	<5	<5			<5
Cadmium	7440-43-9	1	mg/kg	<1	<1			<1
Chromium	7440-47-3	2	mg/kg	14	13			9
Copper	7440-50-8	5	mg/kg	7	8			<5
Lead	7439-92-1	5	mg/kg	21	32			36
Nickel	7440-02-0	2	mg/kg	8	3			5
Zinc	7440-66-6	5	mg/kg	34	22			46
EG035T: Total Recoverable Mercury by F	IMS							
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1			0.1
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls		0.1	mg/kg	<0.1	<0.1			<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05			<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05			<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05			<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05			<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05			<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05			<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05			<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05			<0.05
^ Total Chlordane (sum)		0.05	mg/kg	<0.05	<0.05			<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05			<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05			<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05			<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05			<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05			<0.05

Page : 6 of 24 Work Order : ES2121325 Client : ARCADIS AUSTRALIA PACIFIC PTY LTD Project : PSI 8 Grosvenor St



Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH01_0.2	BH01_2.0	BH01_5.0	BH02_0.1	BH02_2.0
		Sampli	ng date / time	07-Jun-2021 00:00				
Compound	CAS Number	LOR	Unit	ES2121325-001	ES2121325-004	ES2121325-007	ES2121325-008	ES2121325-011
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticid	es (OC) - Continued							
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05			<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05			<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05			<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05			<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	+		<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05			<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2			<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05			<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2			<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05			<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5	0.05	mg/kg	<0.05	<0.05			<0.05
	0-2							
EP068B: Organophosphorus Pest	ticides (OP)							
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05			<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05			<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2			<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05			<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05			<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05			<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2			<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05			<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05			<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05			<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2			<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05			<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05			<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05			<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05			<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05			<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05			<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05			<0.05
Azınphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05			<0.05
EP075(SIM)B: Polynuclear Aroma	tic Hydrocarbons							
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5			<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5			<0.5

Page : 7 of 24 Work Order : ES2121325 Client : ARCADIS AUSTRALIA PACIFIC PTY LTD Project : PSI 8 Grosvenor St



Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH01_0.2	BH01_2.0	BH01_5.0	BH02_0.1	BH02_2.0
		Samplii	ng date / time	07-Jun-2021 00:00				
Compound	CAS Number	LOR	Unit	ES2121325-001	ES2121325-004	ES2121325-007	ES2121325-008	ES2121325-011
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic H	ydrocarbons - Cont	inued						
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5			<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5			<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5			1.6
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5			0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	0.6			3.9
Pyrene	129-00-0	0.5	mg/kg	<0.5	0.5			4.2
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5			1.9
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5			1.8
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5			2.3
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5			0.9
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5			2.2
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5			1.1
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5			<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5			1.4
^ Sum of polycyclic aromatic hydrocarbor	IS	0.5	mg/kg	<0.5	1.1			21.8
^ Benzo(a)pyrene TEQ (zero)		0.5	mg/kg	<0.5	<0.5			2.8
^ Benzo(a)pyrene TEQ (half LOR)		0.5	mg/kg	0.6	0.6			3.1
^ Benzo(a)pyrene TEQ (LOR)		0.5	mg/kg	1.2	1.2			3.4
EP080/071: Total Petroleum Hydrocar	bons		X	\sim				
C6 - C9 Fraction		10	mg/kg	<10	<10			<10
C10 - C14 Fraction		50	mg/kg	<50	<50			<50
C15 - C28 Fraction		100	mg/kg	<100	580			<100
C29 - C36 Fraction		100	mg/kg	<100	570			<100
^ C10 - C36 Fraction (sum)		50	mg/kg	<50	1150			<50
EP080/071: Total Recoverable Hydroc	arbons - NEPM 201	3 Fractio	าร					
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10			<10
[^] C6 - C10 Fraction minus BTEX	C6_C10-BTEX	10	mg/kg	<10	<10			<10
(F1)								
>C10 - C16 Fraction		50	mg/kg	<50	<50			<50
>C16 - C34 Fraction		100	mg/kg	<100	970			<100
>C34 - C40 Fraction		100	mg/kg	<100	360			<100
^ >C10 - C40 Fraction (sum)		50	mg/kg	<50	1330			<50
^ >C10 - C16 Fraction minus Naphthalene (F2)		50	mg/kg	<50	<50			<50

Page : 8 of 24 Work Order : ES2121325 Client : ARCADIS AUSTRALIA PACIFIC PTY LTD Project : PSI 8 Grosvenor St



Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH01_0.2	BH01_2.0	BH01_5.0	BH02_0.1	BH02_2.0
		Sampli	ng date / time	07-Jun-2021 00:00				
Compound	CAS Number	LOR	Unit	ES2121325-001	ES2121325-004	ES2121325-007	ES2121325-008	ES2121325-011
				Result	Result	Result	Result	Result
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2			<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5			<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5			<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5			<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5			<0.5
^ Sum of BTEX		0.2	mg/kg	<0.2	<0.2			<0.2
^ Total Xylenes		0.5	mg/kg	<0.5	<0.5			<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1			<1
EP066S: PCB Surrogate				+ C				
Decachlorobiphenyl	2051-24-3	0.1	%	74.4	73.9			76.5
EP068S: Organochlorine Pesticide S	urrogate							
Dibromo-DDE	21655-73-2	0.05	%	63.0	65.6			50.9
EP068T: Organophosphorus Pesticid	le Surrogate							
DEF	78-48-8	0.05	%	71.0	93.7			69.7
EP075(SIM)S: Phenolic Compound S	urrogates							
Phenol-d6	13127-88-3	0.5	%	81.8	80.3			81.2
2-Chlorophenol-D4	93951-73-6	0.5	%	86.6	85.7			84.8
2.4.6-Tribromophenol	118-79-6	0.5	%	63.2	81.8			81.5
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	100	95.1			97.7
Anthracene-d10	1719-06-8	0.5	%	107	93.1			104
4-Terphenyl-d14	1718-51-0	0.5	%	94.2	86.9			92.3
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	127	113			112
Toluene-D8	2037-26-5	0.2	%	108	95.5			95.2
4-Bromofluorobenzene	460-00-4	0.2	%	98.6	83.1			88.4

Page : 9 of 24 Work Order : ES2121325 Client : ARCADIS AUSTRALIA PACIFIC PTY LTD Project : PSI 8 Grosvenor St



Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH02_3.0	BH02_5.0	BH03_0.5	BH03_3.0	BH03_5.0
		Sampl	ing date / time	07-Jun-2021 00:00				
Compound	CAS Number	LOR	Unit	ES2121325-012	ES2121325-014	ES2121325-016	ES2121325-019	ES2121325-021
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)		0.1	pH Unit	5.8	6.2		6.1	5.8
pH (Fox)		0.1	pH Unit	2.2	2.3		3.2	2.9
Reaction Rate		1	Reaction Unit	3	3		3	3
EA033-A: Actual Acidity						N V		
pH KCI (23A)		0.1	pH Unit	4.1	5.0		4.2	4.3
Titratable Actual Acidity (23F)		2	mole H+ / t	200	56		96	180
sulfidic - Titratable Actual Acidity (s-23F)		0.02	% pyrite S	0.32	0.09		0.15	0.29
EA033-B: Potential Acidity				C		V		
Chromium Reducible Sulfur (22B)		0.005	% S	0.061	0.042		0.041	0.057
acidity - Chromium Reducible Sulfur		10	mole H+ / t	38	26		25	36
(a-22B)								
EA033-D: Retained Acidity								
KCI Extractable Sulfur (23Ce)		0.02	% S	<0.02			<0.02	<0.02
HCI Extractable Sulfur (20Be)		0.02	% S	<0.02			<0.02	<0.02
Net Acid Soluble Sulfur (20Je)		0.02	% S	<0.02			<0.02	<0.02
acidity - Net Acid Soluble Sulfur (a-20J)		10	mole H+ / t	<10			<10	<10
sulfidic - Net Acid Soluble Sulfur (s-20J)		0.02	% pyrite S	<0.02			<0.02	<0.02
EA033-E: Acid Base Accounting								
ANC Fineness Factor		0.5	-	1.5	1.5		1.5	1.5
Net Acidity (sulfur units)		0.02	% S	0.38	0.13		0.20	0.35
Net Acidity (acidity units)		10	mole H+ / t	238	83		122	216
Liming Rate		1	kg CaCO3/t	18	6		9	16
Net Acidity excluding ANC (sulfur units)		0.02	% S	0.38	0.13		0.20	0.35
Net Acidity excluding ANC (acidity units)		10	mole H+/t	238	83		122	216
Liming Rate excluding ANC		1	kg CaCO3/t	18	6		9	16
EA055: Moisture Content (Dried @ 105-11	10°C)							
Moisture Content		1.0	%		52.4	8.6	47.8	
EA200: AS 4964 - 2004 Identification of As	sbestos in Soils							
Asbestos Detected	1332-21-4	0.1	g/kg			No		
Asbestos (Trace)	1332-21-4	5	Fibres			No		
Asbestos Type	1332-21-4	-				-		
Synthetic Mineral Fibre		0.1	g/kg			No		
Organic Fibre		0.1	g/kg			No		
Sample weight (dry)		0.01	g			298		

Page : 10 of 24 Work Order : ES2121325 Client : ARCADIS AUSTRALIA PACIFIC PTY LTD Project : PSI 8 Grosvenor St



Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH02_3.0	BH02_5.0	BH03_0.5	BH03_3.0	BH03_5.0
		Sampli	ng date / time	07-Jun-2021 00:00				
Compound	CAS Number	LOR	Unit	ES2121325-012	ES2121325-014	ES2121325-016	ES2121325-019	ES2121325-021
				Result	Result	Result	Result	Result
EA200: AS 4964 - 2004 Identification of A	sbestos in Soils	- Continu	ed					
APPROVED IDENTIFIER:		-				A. SMYLIE		
EG005(ED093)T: Total Metals by ICP-AES	3					\cap		
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	
Chromium	7440-47-3	2	mg/kg		11	17	9	
Copper	7440-50-8	5	mg/kg		5	21	<5	
Lead	7439-92-1	5	mg/kg		27	27	22	
Nickel	7440-02-0	2	mg/kg		4	13	<2	
Zinc	7440-66-6	5	mg/kg	•	18	26	10	
EG035T: Total Recoverable Mercury by I	FIMS							
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls		0.1	mg/kg		<0.1	<0.1	<0.1	
EP068A: Organochlorine Pesticides (OC)				CU .				
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	
^ Total Chlordane (sum)		0.05	mg/kg		<0.05	<0.05	<0.05	
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	
Dieldrin	60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	
Endrin	72-20-8	0.05	mg/kg		<0.05	<0.05	<0.05	
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	<0.05	<0.05	
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	<0.05	<0.05	
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.05	<0.05	
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	<0.05	<0.05	

Page : 11 of 24 Work Order : ES2121325 Client : ARCADIS AUSTRALIA PACIFIC PTY LTD Project : PSI 8 Grosvenor St



Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH02_3.0	BH02_5.0	BH03_0.5	BH03_3.0	BH03_5.0
		Sampli	ng date / time	07-Jun-2021 00:00				
Compound	CAS Number	LOR	Unit	ES2121325-012	ES2121325-014	ES2121325-016	ES2121325-019	ES2121325-021
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued							
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	<0.2	
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.05	<0.05	
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	≤0.2	<0.2	
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5	0.05	mg/kg		<0.05	<0.05	<0.05	
	0-2							
EP068B: Organophosphorus Pesticide	es (OP)							
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	<0.05	<0.05	
Demeton-S-methyl	919-86-8	0.05	mg/kg	+	<0.05	<0.05	<0.05	
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	<0.2	<0.2	
Dimethoate	60-51-5	0.05	mg/kg		<0.05	<0.05	<0.05	
Diazinon	333-41-5	0.05	mg/kg		<0.05	<0.05	<0.05	
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	<0.05	<0.05	
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	<0.2	<0.2	
Malathion	121-75-5	0.05	mg/kg		<0.05	<0.05	<0.05	
Fenthion	55-38-9	0.05	mg/kg		<0.05	<0.05	<0.05	
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	<0.05	<0.05	
Parathion	56-38-2	0.2	mg/kg	- X O	<0.2	<0.2	<0.2	
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	<0.05	<0.05	
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	<0.05	<0.05	
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	<0.05	<0.05	
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	<0.05	<0.05	
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	<0.05	<0.05	
Ethion	563-12-2	0.05	mg/kg		<0.05	<0.05	<0.05	
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	<0.05	<0.05	
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	<0.05	<0.05	
EP075(SIM)B: Polynuclear Aromatic H	lydrocarbons							
Naphthalene	91-20-3	0.5	mg/kg		<0.8	<0.5	<0.5	
Acenaphthylene	208-96-8	0.5	mg/kg		<0.8	<0.5	<0.5	
Acenaphthene	83-32-9	0.5	mg/kg		<0.8	<0.5	<0.5	
Fluorene	86-73-7	0.5	mg/kg		<0.8	<0.5	<0.5	
Phenanthrene	85-01-8	0.5	mg/kg		<0.8	<0.5	<0.5	
Anthracene	120-12-7	0.5	mg/kg		<0.8	<0.5	<0.5	
Fluoranthene	206-44-0	0.5	mg/kg		1.4	<0.5	0.7	
Pyrene	129-00-0	0.5	mg/kg		1.5	<0.5	0.8	

Page: 12 of 24Work Order: ES2121325Client: ARCADIS AUSTRALIA PACIFIC PTY LTDProject: PSI 8 Grosvenor St



Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH02_3.0	BH02_5.0	BH03_0.5	BH03_3.0	BH03_5.0		
		Sampli	ng date / time	07-Jun-2021 00:00						
Compound	CAS Number	LOR	Unit	ES2121325-012	ES2121325-014	ES2121325-016	ES2121325-019	ES2121325-021		
				Result	Result	Result	Result	Result		
EP075(SIM)B: Polynuclear Aromatic H	lydrocarbons - Cont	inued								
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.8	<0.5	<0.5			
Chrysene	218-01-9	0.5	mg/kg		<0.8	<0.5	<0.5			
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.8	<0.5	<0.5			
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.8	<0.5	<0.5			
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.8	<0.5	<0.5			
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.8	<0.5	<0.5			
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.8	<0.5	<0.5			
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.8	<0.5	<0.5			
^ Sum of polycyclic aromatic hydrocarbor	IS	0.5	mg/kg	+	2.9	<0.5	1.5			
^ Benzo(a)pyrene TEQ (zero)		0.5	mg/kg		<0.5	<0.5	<0.5			
^ Benzo(a)pyrene TEQ (half LOR)		0.5	mg/kg		1.0	0.6	0.6			
^ Benzo(a)pyrene TEQ (LOR)		0.5	mg/kg		1.9	1.2	1.2			
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction		10	mg/kg		<10	<10	<10			
C10 - C14 Fraction		50	mg/kg		<50	<50	<50			
C15 - C28 Fraction		100	mg/kg		<100	<100	110			
C29 - C36 Fraction		100	mg/kg		300	<100	310			
^ C10 - C36 Fraction (sum)		50	mg/kg		300	<50	420			
EP080/071: Total Recoverable Hydroc	arbons - NEPM 201	3 Fractio	ns							
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10			
[^] C6 - C10 Fraction minus BTEX	C6_C10-BTEX	10	mg/kg		<10	<10	<10			
(F1)										
>C10 - C16 Fraction		50	mg/kg		<50	<50	<50			
>C16 - C34 Fraction		100	mg/kg		240	<100	260			
>C34 - C40 Fraction		100	mg/kg		290	<100	310			
^ >C10 - C40 Fraction (sum)		50	mg/kg		530	<50	570			
^ >C10 - C16 Fraction minus Naphthalene		50	mg/kg		<50	<50	<50			
(F2)										
EP080: BTEXN										
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2			
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5			
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5			
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5			
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5			

Page: 13 of 24Work Order: ES2121325Client: ARCADIS AUSTRALIA PACIFIC PTY LTDProject: PSI 8 Grosvenor St



Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH02_3.0	BH02_5.0	BH03_0.5	BH03_3.0	BH03_5.0
		Sampli	ng date / time	07-Jun-2021 00:00				
Compound	CAS Number	LOR	Unit	ES2121325-012	ES2121325-014	ES2121325-016	ES2121325-019	ES2121325-021
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
^ Sum of BTEX		0.2	mg/kg		<0.2	<0.2	<0.2	
^ Total Xylenes		0.5	mg/kg		<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	
EP066S: PCB Surrogate						$\cap V$		
Decachlorobiphenyl	2051-24-3	0.1	%		49.8	79.9	71.8	
EP068S: Organochlorine Pesticide Surr	ogate							
Dibromo-DDE	21655-73-2	0.05	%		61.2	75.8	59.6	
EP068T: Organophosphorus Pesticide	Surrogate			C		V		
DEF	78-48-8	0.05	%		53.2	83.5	72.8	
EP075(SIM)S: Phenolic Compound Sur	rogates							
Phenol-d6	13127-88-3	0.5	%		83.8	84.6	80.8	
2-Chlorophenol-D4	93951-73-6	0.5	%		88.4	82.1	84.4	
2.4.6-Tribromophenol	118-79-6	0.5	%		85.0	54.6	81.4	
EP075(SIM)T: PAH Surrogates				CU				
2-Fluorobiphenyl	321-60-8	0.5	%		98.3	105	96.4	
Anthracene-d10	1719-06-8	0.5	%		99.6	111	95.6	
4-Terphenyl-d14	1718-51-0	0.5	%		91.6	98.6	88.5	
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%		109	124	120	
Toluene-D8	2037-26-5	0.2	%		91.6	104	100.0	
4-Bromofluorobenzene	460-00-4	0.2	%		80.0	94.1	89.4	
			C					
			N	-				

Page : 14 of 24 Work Order : ES2121325 Client : ARCADIS AUSTRALIA PACIFIC PTY LTD Project : PSI 8 Grosvenor St



Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH04_0.1	BH04_2.0	BH04_5.0	FD01	TB01
		Sampli	ng date / time	07-Jun-2021 00:00				
Compound	CAS Number	LOR	Unit	ES2121325-023	ES2121325-026	ES2121325-029	ES2121325-031	ES2121325-033
				Result	Result	Result	Result	Result
EA003 :pH (field/fox)								
pH (F)		0.1	pH Unit		7.0	6.0		
pH (Fox)		0.1	pH Unit		2.2	2.9		
Reaction Rate		1	Reaction Unit		3	3		
EA033-A: Actual Acidity						$\cap V$		
pH KCI (23A)		0.1	pH Unit		6.2	4.2		
Titratable Actual Acidity (23F)		2	mole H+ / t		7	156		
sulfidic - Titratable Actual Acidity (s-23F)		0.02	% pyrite S		<0.02	0.25		
EA033-B: Potential Acidity				C		V		
Chromium Reducible Sulfur (22B)		0.005	% S		0.037	0.041		
acidity - Chromium Reducible Sulfur		10	mole H+ / t		23	26		
(a-22B)								
EA033-D: Retained Acidity								
KCI Extractable Sulfur (23Ce)		0.02	% S			<0.02		
HCI Extractable Sulfur (20Be)		0.02	% S			<0.02		
Net Acid Soluble Sulfur (20Je)		0.02	% S			<0.02		
acidity - Net Acid Soluble Sulfur (a-20J)		10	mole H+ / t			<10		
sulfidic - Net Acid Soluble Sulfur (s-20J)		0.02	% pyrite S			<0.02		
EA033-E: Acid Base Accounting								
ANC Fineness Factor		0.5	-	f.	1.5	1.5		
Net Acidity (sulfur units)		0.02	% S		0.05	0.29		
Net Acidity (acidity units)		10	mole H+ / t		30	182		
Liming Rate		1	kg CaCO3/t		2	14		
Net Acidity excluding ANC (sulfur units)		0.02	% S		0.05	0.29		
Net Acidity excluding ANC (acidity units)		10	mole H+ / t		30	182		
Liming Rate excluding ANC		1	kg CaCO3/t		2	14		
EA055: Moisture Content (Dried @ 105-11	0°C)							
Moisture Content		1.0	%	12.8	43.0		13.9	
EA200: AS 4964 - 2004 Identification of As	sbestos in Soils							
Asbestos Detected	1332-21-4	0.1	g/kg	No				
Asbestos (Trace)	1332-21-4	5	Fibres	No				
Asbestos Type	1332-21-4	-		•				
Synthetic Mineral Fibre		0.1	g/kg	No				
Organic Fibre		0.1	g/kg	No				
Sample weight (dry)		0.01	g	284				

Page : 15 of 24 Work Order : ES2121325 Client : ARCADIS AUSTRALIA PACIFIC PTY LTD Project : PSI 8 Grosvenor St



Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH04_0.1	BH04_2.0	BH04_5.0	FD01	TB01
		Sampli	ng date / time	07-Jun-2021 00:00				
Compound	CAS Number	LOR	Unit	ES2121325-023	ES2121325-026	ES2121325-029	ES2121325-031	ES2121325-033
				Result	Result	Result	Result	Result
EA200: AS 4964 - 2004 Identification of A	sbestos in Soils	- Continue	əd					
APPROVED IDENTIFIER:		-		A. SMYLIE				
EG005(ED093)T: Total Metals by ICP-AES	;					\cap		
Arsenic	7440-38-2	5	mg/kg	<5	<5		<5	
Cadmium	7440-43-9	1	mg/kg	<1	<1		<1	
Chromium	7440-47-3	2	mg/kg	10	7		8	
Copper	7440-50-8	5	mg/kg	9	7		6	
Lead	7439-92-1	5	mg/kg	72	88		55	
Nickel	7440-02-0	2	mg/kg	8	2		2	
Zinc	7440-66-6	5	mg/kg	70 🔶	46		57	
EG035T: Total Recoverable Mercury by F	IMS							
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.1		<0.1	
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls		0.1	mg/kg	<0.1	<0.1		<0.1	
EP068A: Organochlorine Pesticides (OC)				CU				
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05		<0.05	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05		<0.05	
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05		<0.05	
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05		<0.05	
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05		<0.05	
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05		<0.05	
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05		<0.05	
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05		<0.05	
^ Total Chlordane (sum)		0.05	mg/kg	<0.05	<0.05		<0.05	
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05		<0.05	
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05		<0.05	
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05		<0.05	
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05		<0.05	
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05		<0.05	
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05		<0.05	
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05		<0.05	
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05		<0.05	
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05		<0.05	
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05		<0.05	
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05		<0.05	

Page : 16 of 24 Work Order : ES2121325 Client : ARCADIS AUSTRALIA PACIFIC PTY LTD Project : PSI 8 Grosvenor St



Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH04_0.1	BH04_2.0	BH04_5.0	FD01	TB01
		Sampli	ng date / time	07-Jun-2021 00:00				
Compound	CAS Number	LOR	Unit	ES2121325-023	ES2121325-026	ES2121325-029	ES2121325-031	ES2121325-033
-				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticide	s (OC) - Continued							
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2		<0.2	
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05		<0.05	
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2		<0.2	
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05		<0.05	
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5	0.05	mg/kg	<0.05	<0.05	+	<0.05	
	0-2							
EP068B: Organophosphorus Pesti	cides (OP)							
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05		<0.05	
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05		<0.05	
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2		<0.2	
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05		<0.05	
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05		<0.05	
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05		<0.05	
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	≤0.2		<0.2	
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05		<0.05	
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05		<0.05	
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05		<0.05	
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2		<0.2	
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05		<0.05	
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05		<0.05	
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05		<0.05	
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05		<0.05	
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05		<0.05	
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05		<0.05	
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05		<0.05	
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05		<0.05	
EP075(SIM)B: Polynuclear Aromati	ic Hydrocarbons							
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5		<0.5	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5		<0.5	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5		<0.5	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5		<0.5	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5		2.5	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5		0.6	
Fluoranthene	206-44-0	0.5	mg/kg	0.6	0.7		3.4	
Pyrene	129-00-0	0.5	mg/kg	0.7	0.7		3.5	

Page: 17 of 24Work Order: ES2121325Client: ARCADIS AUSTRALIA PACIFIC PTY LTDProject: PSI 8 Grosvenor St



Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH04_0.1	BH04_2.0	BH04_5.0	FD01	TB01		
		Sampli	ng date / time	07-Jun-2021 00:00						
Compound	CAS Number	LOR	Unit	ES2121325-023	ES2121325-026	ES2121325-029	ES2121325-031	ES2121325-033		
				Result	Result	Result	Result	Result		
EP075(SIM)B: Polynuclear Aromatic H	ydrocarbons - Cont	inued								
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5		1.4			
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	-	1.4			
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5		1.5			
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5		0.7			
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5		1.5			
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5		0.7			
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5		<0.5			
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5		0.9			
^ Sum of polycyclic aromatic hydrocarbon	IS	0.5	mg/kg	1.3 🔶	1.4		18.1			
^ Benzo(a)pyrene TEQ (zero)		0.5	mg/kg	<0.5	<0.5		2.0			
^ Benzo(a)pyrene TEQ (half LOR)		0.5	mg/kg	0.6	0.6		2.2			
^ Benzo(a)pyrene TEQ (LOR)		0.5	mg/kg	1.2	1.2		2.4			
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction		10	mg/kg	<10	<10		<10	<10		
C10 - C14 Fraction		50	mg/kg	<50	<50		<50			
C15 - C28 Fraction		100	mg/kg	<100	100		<100			
C29 - C36 Fraction		100	mg/kg	<100	220		<100			
^ C10 - C36 Fraction (sum)		50	mg/kg	<50	320		<50			
EP080/071: Total Recoverable Hydroc	arbons - NEPM 201	3 Fractio	ns							
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10		<10	<10		
[^] C6 - C10 Fraction minus BTEX	C6_C10-BTEX	10	mg/kg	<10	<10		<10	<10		
(F1)										
>C10 - C16 Fraction		50	mg/kg	<50	<50		<50			
>C16 - C34 Fraction		100	mg/kg	<100	200		<100			
>C34 - C40 Fraction		100	mg/kg	<100	230		<100			
^ >C10 - C40 Fraction (sum)		50	mg/kg	<50	430		<50			
^ >C10 - C16 Fraction minus Naphthalene		50	mg/kg	<50	<50		<50			
(F2)										
EP080: BTEXN										
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2		<0.2	<0.2		
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5		
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5		
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5		
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5		

Page: 18 of 24Work Order: ES2121325Client: ARCADIS AUSTRALIA PACIFIC PTY LTDProject: PSI 8 Grosvenor St



Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH04_0.1	BH04_2.0	BH04_5.0	FD01	TB01
		Sampli	ing date / time	07-Jun-2021 00:00				
Compound	CAS Number	LOR	Unit	ES2121325-023	ES2121325-026	ES2121325-029	ES2121325-031	ES2121325-033
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
^ Sum of BTEX		0.2	mg/kg	<0.2	<0.2		<0.2	<0.2
^ Total Xylenes		0.5	mg/kg	<0.5	<0.5		<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1		<1	<1
EP066S: PCB Surrogate						$\cap V$		
Decachlorobiphenyl	2051-24-3	0.1	%	87.9	42.2		82.4	
EP068S: Organochlorine Pesticid	le Surrogate							
Dibromo-DDE	21655-73-2	0.05	%	75.9	69.3		96.1	
EP068T: Organophosphorus Pest	ticide Surrogate			C		V		
DEF	78-48-8	0.05	%	99.6	57.0		114	
EP075(SIM)S: Phenolic Compoun	d Surrogates							
Phenol-d6	13127-88-3	0.5	%	81.0	81.1		85.3	
2-Chlorophenol-D4	93951-73-6	0.5	%	84.0	86.4		89.8	
2.4.6-Tribromophenol	118-79-6	0.5	%	73.4	84.2		82.4	
EP075(SIM)T: PAH Surrogates				CU				
2-Fluorobiphenyl	321-60-8	0.5	%	99.5	96.1		100	
Anthracene-d10	1719-06-8	0.5	%	105	93.3		104	
4-Terphenyl-d14	1718-51-0	0.5	%	93.3	87.7		91.2	
EP080S: TPH(V)/BTEX Surrogates	s in the second s							
1.2-Dichloroethane-D4	17060-07-0	0.2	%	123	110		118	120
Toluene-D8	2037-26-5	0.2	%	103	90.8		97.4	98.7
4-Bromofluorobenzene	460-00-4	0.2	%	92.2	81.1		91.0	90.7
			N C	0				

Page : 19 of 24 Work Order : ES2121325 Client : ARCADIS AUSTRALIA PACIFIC PTY LTD Project : PSI 8 Grosvenor St



Sub-Matrix: WATER (Matrix: WATER)			Sample ID	RB01						
		Sampli	ng date / time	07-Jun-2021 00:00						
Compound	CAS Number	LOR	Unit	ES2121325-030						
				Result						
EG020T: Total Metals by ICP-MS										
Arsenic	7440-38-2	0.001	mg/L	<0.001	🔺					
Cadmium	7440-43-9	0.0001	mg/L	<0.0001						
Chromium	7440-47-3	0.001	mg/L	<0.001						
Copper	7440-50-8	0.001	mg/L	<0.001						
Nickel	7440-02-0	0.001	mg/L	<0.001		+				
Lead	7439-92-1	0.001	mg/L	<0.001						
Zinc	7440-66-6	0.005	mg/L	<0.005						
EG035T: Total Recoverable Mercury by FIMS										
Mercury	7439-97-6	0.0001	mg/L	<0.0001						
EP066: Polychlorinated Biphenyls (PCB)										
^ Total Polychlorinated biphenyls		1	µg/L	<1						
EP068A: Organochlorine Pesticides (OC))									
alpha-BHC	319-84-6	0.5	µg/L	<0.5						
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5						
beta-BHC	319-85-7	0.5	µg/L	<0.5						
gamma-BHC	58-89-9	0.5	µg/L	<0.5						
delta-BHC	319-86-8	0.5	µg/L	<0.5						
Heptachlor	76-44-8	0.5	µg/L	<0.5						
Aldrin	309-00-2	0.5	µg/L	<0.5						
Heptachlor epoxide	1024-57-3	0.5	μg/L	<0.5						
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5						
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5						
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5						
Dieldrin	60-57-1	0.5	µg/L	<0.5						
4.4`-DDE	72-55-9	0.5	µg/L	<0.5						
Endrin	72-20-8	0.5	µg/L	<0.5						
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5						
4.4`-DDD	72-54-8	0.5	µg/L	<0.5						
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5						
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5						
4.4`-DDT	50-29-3	2.0	µg/L	<2.0						
Endrin ketone	53494-70-5	0.5	µg/L	<0.5						
Methoxychlor	72-43-5	2.0	µg/L	<2.0						
^ Total Chlordane (sum)		0.5	µg/L	<0.5						

Page : 20 of 24 Work Order : ES2121325 Client : ARCADIS AUSTRALIA PACIFIC PTY LTD Project : PSI 8 Grosvenor St



Sub-Matrix: WATER			Sample ID	RB01	 	
		Sampli	na date / time	07-Jun-2021 00:00	 	
Compound	CAS Number	LOR	Unit	ES2121325-030	 	
	ono number			Result	 	
EP068A: Organochlorine Pesticid	es (OC) - Continued					
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5	0.5	µg/L	<0.5	 	
	0-2					
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	 	
EP068B: Organophosphorus Pest	ticides (OP)				N V	
Dichlorvos	62-73-7	0.5	µg/L	<0.5		
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5		
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	 	
Dimethoate	60-51-5	0.5	µg/L	<0.5	 	
Diazinon	333-41-5	0.5	µg/L	<0.5	 	
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	 	
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	 	
Malathion	121-75-5	0.5	µg/L	<0.5	 	
Fenthion	55-38-9	0.5	µg/L	<0.5	 	
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	 	
Parathion	56-38-2	2.0	µg/L	<2.0	 	
Pirimphos-ethyl	23505-41-1	0.5	μg/L	<0.5	 	
Chlorfenvinphos	470-90-6	0.5	µg/L_	<0.5	 	
Bromophos-ethyl	4824-78-6	0.5	μg/L	<0.5	 	
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	 	
Prothiofos	34643-46-4	0.5	μg/L	<0.5	 	
Ethion	563-12-2	0.5	μg/L	<0.5	 	
Carbophenothion	786-19-6	0.5	µg/L	<0.5	 	
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	 	
EP075(SIM)B: Polynuclear Aroma	tic Hydrocarbons					
Naphthalene	91-20-3	1.0	µg/L	<1.0	 	
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	 	
Acenaphthene	83-32-9	1.0	µg/L	<1.0	 	
Fluorene	86-73-7	1.0	μg/Ľ	<1.0	 	
Phenanthrene	85-01-8	1.0	µg/L	<1.0	 	
Anthracene	120-12-7	1.0	μg/L	<1.0	 	
Fluoranthene	206-44-0	1.0	μg/L	<1.0	 	
Pyrene	129-00-0	1.0	µg/L	<1.0	 	
Benz(a)anthracene	56-55-3	1.0	μg/L	<1.0	 	
Chrysene	218-01-9	1.0	μg/L	<1.0	 	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	 	

Page : 21 of 24 Work Order : ES2121325 Client : ARCADIS AUSTRALIA PACIFIC PTY LTD Project : PSI 8 Grosvenor St



Sub-Matrix: WATER (Matrix: WATER)			Sample ID	RB01						
		Sampli	ng date / time	07-Jun-2021 00:00						
Compound	CAS Number	LOR	Unit	ES2121325-030						
				Result						
EP075(SIM)B: Polynuclear Aromatic Hy	drocarbons - Cont	inued								
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0						
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5						
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0						
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0						
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0		-				
^ Sum of polycyclic aromatic hydrocarbons	3	0.5	µg/L	<0.5						
^ Benzo(a)pyrene TEQ (zero)		0.5	µg/L	<0.5						
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction		20	µg/L	<20						
C10 - C14 Fraction		50	µg/L	<50						
C15 - C28 Fraction		100	µg/L	<100						
C29 - C36 Fraction		50	µg/L	<50						
^ C10 - C36 Fraction (sum)		50	µg/L	<50						
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions										
C6 - C10 Fraction	C6_C10	20	µg/L	<20						
[^] C6 - C10 Fraction minus BTEX	C6_C10-BTEX	20	µg/L	<20						
(F1)										
>C10 - C16 Fraction		100	µg/L	<100						
>C16 - C34 Fraction		100	µg/L	<100						
>C34 - C40 Fraction		100	µg/L	<100						
^ >C10 - C40 Fraction (sum)		100	µg/L	<100						
^ >C10 - C16 Fraction minus Naphthalene		100	µg/L	<100						
(F2)										
EP080: BTEXN										
Benzene	71-43-2	1	µg/L	<1						
Toluene	108-88-3	2	µg/L	<2						
Ethylbenzene	100-41-4	2	µg/L	<2						
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2						
ortho-Xylene	95-47-6	2	µg/L	<2						
Iotal Xylenes		2	µg/L	<2						
^ Sum of BIEX		1	µg/L	<1						
Naphthalene	91-20-3	5	µg/L	<5						
EP066S: PCB Surrogate										
Decachlorobiphenyl	2051-24-3	1	%	93.5						

Page : 22 of 24 Work Order : ES2121325 Client : ARCADIS AUSTRALIA PACIFIC PTY LTD Project : PSI 8 Grosvenor St



Sub-Matrix: WATER (Matrix: WATER)			Sample ID	RB01			
		Sampli	ing date / time	07-Jun-2021 00:00			
Compound	CAS Number	LOR	Unit	ES2121325-030			
				Result			
EP068S: Organochlorine Pesticid	e Surrogate						
Dibromo-DDE	21655-73-2	0.5	%	110			
EP068T: Organophosphorus Pest	icide Surrogate					\cap	
DEF	78-48-8	0.5	%	79.8			
EP075(SIM)S: Phenolic Compoun	d Surrogates					NV	
Phenol-d6	13127-88-3	1.0	%	25.7			
2-Chlorophenol-D4	93951-73-6	1.0	%	66.7	V (
2.4.6-Tribromophenol	118-79-6	1.0	%	52.9			
EP075(SIM)T: PAH Surrogates				C		V	
2-Fluorobiphenyl	321-60-8	1.0	%	75.1			
Anthracene-d10	1719-06-8	1.0	%	85.4			
4-Terphenyl-d14	1718-51-0	1.0	%	89.9			
EP080S: TPH(V)/BTEX Surrogates	5						
1.2-Dichloroethane-D4	17060-07-0	2	%	108			
Toluene-D8	2037-26-5	2	%	112			
4-Bromofluorobenzene	460-00-4	2	%	105			
Analytical Results							
Descriptive Results							
Sub-Matrix: SOIL	Sample	ID - Samr	ling date / time	Analy	tical Results		
		D - Samp	ale Atime	7 may			
EA200: AS 4964 - 2004 Identificati	on of Aspestos in Solis	2 07 lun	2021 00:00				
EA200: Description	BH01_0. BH02_0	2 - 07-Jun	-2021 00:00	Mid b	rown soll.		
EA200. Description	BH03_0	5 - 07- Jun	-2021 00:00	- Wild g	rown soil		
EA200: Description	BH04_0	1 - 07-Jun	-2021 00:00	Mid b	rown soil		
	21101_0.						



Surrogate Control Limits

Sub-Matrix: SOII	Г	Pagever	Limite (%)
Compound	CAS Number	Low	Hiah
ED066S: DCB Surrogato			
Decachlorohinhenyl	2051-24-3	39	149
EP062S: Organoshlaring Pastisida Surragata	2001 24 0	00	140
Dibromo-DDE	21655-73-2	40	147
ED069T: Organonhaanharua Baatiaida Surragata	21000 70 2		177
	78-48-8	35	1/3
ED075(SIM)S: Decodic Compound Surroutes	70-40-0	55	140
Phone de	12127 00 2	62	102
2-Chlorophenol-D4	03051-73-6	66	123
2 4 6-Tribromonhenol	118-79-6	40	138
	110 7 0 0		100
2 Elugrabinhanyl	321 60 8	70	122
Anthracono d10	1710.06.8	66	122
4-Ternhenyl-d14	1718-51-0	65	120
	1110 01 0	00	120
2 Diphoreethane D4	17060.07.0	72	192
Toluono D8	2037 26 5	73	133
4-Bromofluorobenzene	460-00-4	72	130
Sub-Matrix: WATER		Recovery	Limits (%)
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	45	134
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	67	111
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	67	111
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

Page	24 of 24
Work Order	: ES2121325
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD
Project	PSI 8 Grosvenor St



Sub-Matrix: WATER	Recovery Limits (%)			
Compound	CAS Number	Low	High	
EP080S: TPH(V)/BTEX Surrogates - Continued				

Inter-Laboratory Testing

Analysis conducted by ALS Brisbane, NATA accreditation no. 825, site no. 818 (Chemistry) 18958 (Biology).

(SOIL) EA003 :pH (field/fox)

(SOIL) EA033-B: Potential Acidity

(SOIL) EA033-C: Acid Neutralising Capacity

(SOIL) EA033-D: Retained Acidity

(SOIL) EA033-A: Actual Acidity

(SOIL) EA033-E: Acid Base Accounting

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(SOIL) EA200: AS 4964 - 2004 Identification of Asbestos in Soils

Al contractor



Edwandy Fadjar

Kim McCabe

QUALITY CONTROL REPORT

Work Order	: ES2121325	Page	: 1 of 16
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: LOEK MUNNICHS	Contact	: Loren Schiavon
Address	: LEVEL 16 580 GEORGE STREET	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
	SYDNEY NSW 2000		N.
Telephone	:	Telephone	: +61 2 8784 8555
Project	: PSI 8 Grosvenor St	Date Samples Received	: 07-Jun-2021
Order number	: 30090774	Date Analysis Commenced	:08-Jun-2021
C-O-C number	:	Issue Date	15-Jun-2021
Sampler	: MICHAEL ASHELFORD		Hac-MRA NATA
Site	:	X Y	
Quote number	: EN/091		Accordition No. 825
No. of samples received	: 33		Accredited for compliance with
No. of samples analysed	: 16		ISO/IEC 17025 - Testing
This report supersedes not be reproduced, excep This Quality Control Rep Laboratory Duplica Method Blank (ME Matrix Spike (MS)	any previous report(s) with this reference. Result of in full. ort contains the following information: ate (DUP) Report; Relative Percentage Difference (RPD) and Ac 3) and Laboratory Control Spike (LCS) Report; Recovery and Ac Report; Recovery and Acceptance Limits	is apply to the sample(s) as submitted, aceptance Limits ceptance Limits	unless the sampling was conducted by ALS. This document shall
Signatories This document has been	electronically signed by the authorized signatories below	. Electronic signing is carried out in complianc	e with procedures specified in 21 CFR Part 11.
Signatories	Position	Accreditation Cate	egory
Alana Smylie	Asbestos Identifier	Newcastle - Asbes	stos, Mayfield West, NSW
Ashesh Patel	Senior Chemist	Sydney Inorganics	s, Smithfield, NSW
Ben Felgendrejeris	Senior Acid Sulfate Soil Cher	nist Brisbane Acid Sul	phate Soils, Stafford, QLD
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics	s, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics	s, Smithfield, NSW

Sydney Organics, Smithfield, NSW

Brisbane Acid Sulphate Soils, Stafford, QLD

Organic Coordinator

Senior Inorganic Chemist



General Comments

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

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

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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: SOIL					, i i i i i i i i i i i i i i i i i i i	Laboratory L	Duplicate (DUP) Report		
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Tot	al Metals by ICP-AES (QC L	ot: 3728324)) *				
ES2121284-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	5	6	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	9	14.8	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	13	15	15.9	No Limit
ES2121325-004	BH01_2.0	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	13	16	18.6	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	3	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	8	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	32	35	6.1	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	22	27	20.6	No Limit
EG005(ED093)T: Tot	al Metals by ICP-AES (QC L	ot: 3731201)							
ES2121028-005	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	7	7	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	4	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	53	32	47.8	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	14	13	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	82	84	1.9	0% - 50%
ME2100960-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	51	50	0.0	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	23	22	5.3	0% - 50%

Page	: 3 of 16
Work Order	: ES2121325
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD
Project	: PSI 8 Grosvenor St



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Tot	al Metals by ICP-AES (QC L	.ot: 3731201) - continued							
ME2100960-001	Anonymous	EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	17	17	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	13	11	17.2	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	28	26	7.6	No Limit
EA003 :pH (field/fox)	(QC Lot: 3726717)								
EM2110193-003	Anonymous	EA003: pH (F)		0.1	pH Unit	5.5	5.6	0.0	0% - 20%
		EA003: pH (Fox)		0.1	pH Unit	2.3	2.4	0.0	0% - 20%
ES2121325-014	BH02_5.0	EA003: pH (F)		0.1	pH Unit	6.2	6.3	0.0	0% - 20%
		EA003: pH (Fox)		0.1	pH Unit	2.3	2.3	0.0	0% - 20%
EA033-A: Actual Aci	dity (QC Lot: 3731842)								
EM2110801-002	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)		0.02	% pyrite S	<0.02	<0.02	0.0	No Limit
		EA033: Titratable Actual Acidity (23F)		2	mole H+ / t	<2	<2	0.0	No Limit
		EA033: pH KCl (23A)		0.1	pH Unit	6.4	6.4	0.0	0% - 20%
EA033-B: Potential A	Acidity (QC Lot: 3731842)			0		·			
EM2110801-002	Anonymous	EA033: Chromium Reducible Sulfur (22B)		0.005	% S	0.009	0.009	0.0	No Limit
	EA033: acidity - Chromium Reducible Sulfur		10	mole H+ / t	<10	<10	0.0	No Limit	
		(a-22B)							
EA055: Moisture Co	ntent (Dried @ 105-110°C) (QC Lot: 3728327)				·			
ES2121284-003	Anonymous	EA055: Moisture Content		0.1	%	18.7	17.8	4.9	0% - 50%
ES2121325-016	BH03_0.5	EA055: Moisture Content		0.1	%	8.6	7.3	15.3	No Limit
EA055: Moisture Co	ntent (Dried @ 105-110°C) (QC Lot: 3731202)							
ES2121325-031	FD01	EA055: Moisture Content		0.1	%	13.9	14.0	1.0	0% - 50%
ES2121843-002	Anonymous	EA055: Moisture Content		0.1	%	15.2	16.0	4.9	0% - 20%
EG035T: Total Reco	verable Mercury by FIMS (C Lot: 3728321)							
ES2121284-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EB2115591-041	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Reco	verable Mercury by FIMS (DC L ot: 3728325)			0.0				
ES2121325-014	BH02 5.0	EG035T: Mercury	7439-97-6	0.1	ma/ka	<0.1	0.1	0.0	No Limit
EG035T: Total Reco	werable Mercury by EIMS (C L ot: 3731200)							
ES2121028-005			7/30-07-6	0.1	ma/ka	<0.1	<0.1	0.0	No Limit
ME2100960-001	Anonymous	EG0351: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
			7433-37-0	0.1	iiig/kg	-0.1	~0 .1	0.0	
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3723454)						Nie 1 Section			
ES2121325-001	BH01_0.2	EP066: Total Polychlorinated biphenyls		0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP068A: Organochlo	orine Pesticides (OC) (QC L	ot: 3723453)							
ES2121325-001	BH01_0.2	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	< 0.05	<0.05	0.0	No Limit

Page	: 4 of 16
Work Order	: ES2121325
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD
Project	: PSI 8 Grosvenor St



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP068A: Organochloi	rine Pesticides (OC) (QC Lo	ot: 3723453) - continued							
ES2121325-001	BH01_0.2	EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068B: Organophos	phorus Pesticides (OP) (Q	C Lot: 3723453)							
ES2121325-001	BH01_0.2	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)B: Polynu	clear Aromatic Hydrocarbo	ns (QC Lot: 3723452)							
ES2121325-001	BH01_0.2	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Page	5 of 16
Work Order	: ES2121325
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD
Project	: PSI 8 Grosvenor St



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP075(SIM)B: Polynu	clear Aromatic Hydrocarbor	ns (QC Lot: 3723452) - continued							
ES2121325-001	BH01_0.2	EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic		0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		hydrocarbons							
		EP075(SIM): Benzo(a)pyrene TEQ (zero)		0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petr	oleum Hydrocarbons (QC L	.ot: 3723451)							
ES2121325-001	BH01_0.2	EP071: C15 - C28 Fraction		100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction		100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction		50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petr	oleum Hydrocarbons (QC L	ot: 3725610)							
ES2121227-001	Anonymous	EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.0	No Limit
ES2121325-011	BH02_2.0	EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Rec	overable Hvdrocarbons - NE	PM 2013 Fractions (QC Lot: 3723451)							
ES2121325-001	BH01 0.2	EP071: >C16 - C34 Fraction		100	ma/ka	<100	<100	0.0	No Limit
	_	EP071: >C34 - C40 Fraction		100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction		50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Rec	overable Hvdrocarbons - NE	PM 2013 Fractions (OC Lot: 3725610)							
ES2121227-001	Anonymous	EP080: C6 - C10 Eraction	C6 C10	10	ma/ka	<10	<10	0.0	No Limit
ES2121325-011	BH02 2.0	EP080: C6 - C10 Fraction	 C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080: BTEXN (OC L	 of: 3725610)		_		00				
ES2121227-001	Anonymous	EP080: Benzene	71-43-2	02	ma/ka	<0.2	<0.2	0.0	No Limit
			108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: mata- & nara-Xulana	108-38 3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3	0.0		-0.0	-0.0	0.0	
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Page	: 6 of 16
Work Order	: ES2121325
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD
Project	: PSI 8 Grosvenor St



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080: BTEXN (QC L	ot: 3725610) - continued								
ES2121227-001	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES2121325-011	BH02_2.0	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3		mg/kg	<1	<1	0.0	No Limit
Sub-Matrix: WATER						Laboratory D	Duplicate (DUP) Report		
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020T: Total Metals	by ICP-MS (QC Lot: 37308	90)	X						
ET2102599-003	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.126	0.125	0.8	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.007	0.007	0.0	No Limit
ES2121331-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.011	<0.005	71.4	No Limit
EG035T: Total Recov	verable Mercury by FIMS (Q	C Lot: 3730899)							
ES2120443-003	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ET2102625-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP080/071: Total Petr	oleum Hydrocarbons (QC I	ot: 3725707)							
CA2103529-001	Anonymous	EP080: C6 - C9 Fraction		20	µg/L	<20	<20	0.0	No Limit
EB2115186-008	Anonymous	EP080: C6 - C9 Fraction		20	µg/L	40	40	0.0	No Limit
EP080/071: Total Rec	overable Hydrocarbons - NE	EPM 2013 Fractions (QC Lot: 3725707)							
CA2103529-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EB2115186-008	Anonymous	EP080: C6 - C10 Fraction	 C6_C10	20	μg/L	40	40	0.0	No Limit
EP080: BTEXN (QC L	.ot: 3725707)		_				· · · · · · · · · · · · · · · · · · ·		
CA2103529-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
	. ,	EP080: Toluene	108-88-3	2	μg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	μg/L	<2	<2	0.0	No Limit

Page	: 7 of 16
Work Order	: ES2121325
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD
Project	: PSI 8 Grosvenor St



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)	
EP080: BTEXN (QC L	ot: 3725707) - continued									
CA2103529-001	Anonymous	EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit	
EB2115186-008	Anonymous	EP080: Benzene	71-43-2	1	µg/L	1	1	0.0	No Limit	
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit	
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit	



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

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

Sub-Matrix: SOIL				Method Blank (MB)	Laboratory Control Spike (LCS) Report						
				Report	Spike	Spike Recovery (%)	Acceptable	_imits (%)			
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High			
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3728324)											
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	94.1	88.0	113			
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	105	70.0	130			
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	95.9	68.0	132			
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	96.6	89.0	111			
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	92.8	82.0	119			
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	91.6	80.0	120			
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	94.6	66.0	133			
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3731201)											
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	89.2	88.0	113			
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	105	70.0	130			
EG005T: Chromium	7440-47-3	2	mğ/kg	<2	19.6 mg/kg	92.2	68.0	132			
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	97.9	89.0	111			
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	91.5	82.0	119			
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	93.5	80.0	120			
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	88.4	66.0	133			
EA033-A: Actual Acidity (QCLot: 3731842)											
EA033: pH KCI (23A)			pH Unit		4.4 pH Unit	98.4	91.0	107			
EA033: Titratable Actual Acidity (23F)		2	mole H+ / t	<2	15 mole H+ / t	88.2	70.0	124			
EA033: sulfidic - Titratable Actual Acidity (s-23F)		0.02	% pyrite S	<0.02							
EA033-B: Potential Acidity (QCLot: 3731842)											
EA033: Chromium Reducible Sulfur (22B)		0.005	% S	<0.005	0.155 % S	86.9	77.0	121			
EA033: acidity - Chromium Reducible Sulfur (a-22B)		10	mole H+ / t	<10							
EA033-C: Acid Neutralising Capacity (QCLot: 3731842)											
EA033: Acid Neutralising Capacity (19A2)		0.01	% CaCO3	<0.01	10 % CaCO3	98.6	91.0	112			
EA033: acidity - Acid Neutralising Capacity (a-19A2)		10	mole H+ / t	<10							
EA033: sulfidic - Acid Neutralising Capacity (s-19A2)		0.01	% pyrite S	<0.01							
EA033-D: Retained Acidity (QCLot: 3731842)											
EA033: Net Acid Soluble Sulfur (20Je)		0.02	% S	<0.02							
EA033: acidity - Net Acid Soluble Sulfur (a-20J)		10	mole H+ / t	<10							
EA033: sulfidic - Net Acid Soluble Sulfur (s-20J)		0.02	% pyrite S	<0.02							
EA033: KCI Extractable Sulfur (23Ce)		0.02	% S	<0.02	0.04779 % S	87.5	70.0	128			
EA033: HCI Extractable Sulfur (20Be)		0.02	% S	<0.02	0.279 % S	86.7	70.0	120			
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3728	321)										
Page	: 9 of 16										
------------	-------------------------------------										
Work Order	: ES2121325										
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD										
Project	: PSI 8 Grosvenor St										



Sub-Matrix: SOIL				Method Blank (MB)	Laboratory Control Spike (LCS) Report				
				Report	Spike	Spike Recovery (%)	Acceptable	Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3728321) - continued									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	92.0	70.0	125	
EG035T: Total Recoverable Mercury by FIMS (Q	CLot: 3728325)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	103	70.0	125	
EG035T: Total Recoverable Mercury by FIMS (C	CLot: 3731200)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	92.0	70.0	125	
EP066: Polychlorinated Binhenyls (PCB) (OCL of	* 3723454)								
EP066: Total Polychlorinated biphenyls		0.1	mg/kg	<0,1	1 mg/kg	83.5	62.0	126	
EP068A: Organochloring Posticidos (OC) (OC) o	t· 3723453)								
EP068: alpha-BHC	319-84-6	0.05	ma/ka	<0.05	0.5 ma/ka	89.3	69.0	113	
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	ma/ka	< 0.05	0.5 mg/kg	90.3	65.0	117	
EP068: beta-BHC	319-85-7	0.05	ma/ka	< 0.05	0.5 mg/kg	82.7	67.0	119	
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	87.9	68.0	116	
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	81.8	65.0	117	
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	84.6	67.0	115	
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.2	69.0	115	
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	90.4	62.0	118	
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	90.2	63.0	117	
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	91.2	66.0	116	
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.1	64.0	116	
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	85.4	66.0	116	
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.0	67.0	115	
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	90.9	67.0	123	
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	79.7	69.0	115	
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	82.6	69.0	121	
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	98.3	56.0	120	
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	87.4	62.0	124	
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	81.9	66.0	120	
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	96.0	64.0	122	
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	94.6	54.0	130	
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3723453)									
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	82.9	59.0	119	
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	76.5	62.0	128	
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	75.1	54.0	126	
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	81.9	67.0	119	
EP068: Diazinon	333-41-5	0.05	mg/kg	< 0.05	0.5 mg/kg	77.8	70.0	120	
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	83.8	72.0	120	
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	78.9	68.0	120	
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	82.7	68.0	122	

Page	: 10 of 16
Work Order	: ES2121325
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD
Project	PSI 8 Grosvenor St



Sub-Matrix: SOIL			Method Blank (MB)	Laboratory Control Spike (LCS) Report				
				Report	Spike	Spike Recovery (%)	Acceptable	Limits (%)
Method: Compound CA	S Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3723453) - continued								
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	90.7	69.0	117
EP068: Chlorpyrifos 29	21-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.2	76.0	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	83.2	64.0	122
EP068: Pirimphos-ethyl 235	05-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	87.4	70.0	116
EP068: Chlorfenvinphos 4	70-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	84.9	69.0	121
EP068: Bromophos-ethyl 48	24-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	88.9	66.0	118
EP068: Fenamiphos 222	24-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	78.2	68.0	124
EP068: Prothiofos 346	43-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	84.4	62.0	112
EP068: Ethion 5	63-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	77.6	68.0	120
EP068: Carbophenothion 7	86-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	88.4	65.0	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	68.9	41.0	123
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 372	3452)		+ 6		•			
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	97.7	77.0	125
EP075(SIM): Acenaphthylene 2	08-96-8	0.5	mg/kg	<0.5	6 mg/kg	94.0	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	100	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	99.0	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	94.2	75.0	127
EP075(SIM): Anthracene 1	20-12-7	0.5	mg/kg	<0.5	6 mg/kg	93.5	77.0	127
EP075(SIM): Fluoranthene 2	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	89.4	73.0	127
EP075(SIM): Pyrene 1	29-00-0	0.5	mg/kg	<0.5	6 mg/kg	95.0	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	97.4	69.0	123
EP075(SIM): Chrysene 2	18-01-9	0.5	mg/kg	<0.5	6 mg/kg	98.9	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene 2	05-99-2	0.5	mg/kg	<0.5	6 mg/kg	94.0	68.0	116
2	05-82-3							
EP075(SIM): Benzo(k)fluoranthene 2	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	92.9	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	94.0	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene 1	93-39-5	0.5	mg/kg	<0.5	6 mg/kg	94.2	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	95.2	62.0	118
EP075(SIM): Benzo(g.h.i)perylene 1	91-24-2	0.5	mg/kg	<0.5	6 mg/kg	93.1	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3723451)								
EP071: C10 - C14 Fraction		50	mg/kg	<50	300 mg/kg	103	75.0	129
EP071: C15 - C28 Fraction		100	mg/kg	<100	450 mg/kg	110	77.0	131
EP071: C29 - C36 Fraction		100	mg/kg	<100	300 mg/kg	108	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3725610)								
EP080: C6 - C9 Fraction		10	mg/kg	<10	26 mg/kg	111	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fracti	ions (QC	Lot: 3723451)						
EP071: >C10 - C16 Fraction		50	mg/kg	<50	375 mg/kg	109	77.0	125
EP071: >C16 - C34 Fraction		100	mg/kg	<100	525 mg/kg	109	74.0	138

Page	: 11 of 16
Work Order	: ES2121325
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD
Project	: PSI 8 Grosvenor St



Sub-Matrix: SOIL			Method Blank (MB)		3) Laboratory Control Spike (LCS) Report			
			Report		Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NE	PM 2013 Fractions (QCL	_ot: 3723451) - co	ontinued					
EP071: >C34 - C40 Fraction		100	mg/kg	<100	225 mg/kg	114	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NE	PM 2013 Fractions (QCL	_ot: 3725610)						
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	114	68.4	128
EP080: BTEXN (QCLot: 3725610)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	112	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	104	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	101	65.0	117
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	98.1	66.0	118
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	99.3	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	96.3	63.0	119
Sub-Matrix: WATER				Method Blank (MB)		Laboratory Control Spike (LC	S) Report	
				Report	Spike	Spike Recovery (%)	Acceptable	e Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 3730890								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	92.3	82.0	114
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	84.3	84.0	112
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	89.7	86.0	116
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	91.6	83.0	118
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	87.0	85.0	115
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	87.0	84.0	116
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	100	79.0	117
EG035T: Total Recoverable Mercury by FIMS (QC	Lot: 3730899)							
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	96.9	77.0	111
EP066: Polychlorinated Biphenyls (PCB) (QCLot:	3723585)	CV						
EP066: Total Polychlorinated biphenyls			µg/L	<1	10 µg/L	96.4	68.9	113
EP068A: Organochlorine Pesticides (OC) (QCLot:	3723583)							
EP068: alpha-BHC	319-84-6	0.5	μg/L	<0.5	5 µg/L	82.7	64.9	107
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	90.0	58.3	111
EP068: beta-BHC	319-85-7	0.5	μg/L	<0.5	5 µg/L	94.7	69.0	117
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	89.9	70.0	112
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	101	68.9	110
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	91.9	65.2	108
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	94.1	65.8	109
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	104	67.1	107
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 μg/L	107	64.1	110
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	102	66.7	112
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	105	63.2	111

Page	: 12 of 16
Work Order	: ES2121325
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD
Project	: PSI 8 Grosvenor St



Sub-Matrix: WATER		Method Blank (MB)	Laboratory Control Spike (LCS) Report						
				Report	Spike	Spike Recovery (%)	Acceptable	Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High	
EP068A: Organochlorine Pesticides (OC) (QCLot: 3723583) - continued									
EP068: Dieldrin	60-57-1	0.5	μg/L	<0.5	5 µg/L	98.3	65.2	113	
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	101	66.0	112	
EP068: Endrin	72-20-8	0.5	μg/L	<0.5	5 µg/L	86.9	65.2	113	
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	98.5	67.3	114	
EP068: 4.4`-DDD	72-54-8	0.5	μg/L	<0.5	5 μg/L	98.8	72.0	122	
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 μg/L	97.2	66.9	109	
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 μg/L	94.3	65.2	112	
EP068: 4.4`-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	87.7	65.2	112	
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 μg/L	98.6	63.8	110	
EP068: Methoxychlor	72-43-5	2	μg/L	<2.0	5 μg/L	85.9	61.1	114	
EP068B: Organophosphorus Pesticides (OP)	(QCLot: 3723583)		•						
EP068: Dichlorvos	62-73-7	0.5	♦ µg/L	<0.5	5 μg/L	84.0	65.6	114	
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	91.5	63.7	113	
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	23.2	19.7	48.0	
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	84.4	69.5	110	
EP068: Diazinon	333-41-5	0.5	μg/L	<0.5	5 µg/L	95.9	71.1	110	
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	99.8	77.0	119	
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	103	70.0	124	
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	93.1	68.4	116	
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	101	68.6	112	
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	98.0	75.0	119	
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	105	67.0	121	
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	103	69.0	121	
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	102	71.8	110	
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	106	67.5	112	
EP068: Fenamiphos	22224-92-6	0.5	μg/L	<0.5	5 µg/L	101	64.1	116	
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	102	67.8	114	
EP068: Ethion	563-12-2	0.5	μg/L	<0.5	5 µg/L	97.5	74.0	120	
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	95.7	66.2	114	
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	76.2	51.6	128	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3723584)									
EP075(SIM): Naphthalene	91-20-3	1	μg/L	<1.0	5 µg/L	74.9	50.0	94.0	
EP075(SIM): Acenaphthylene	208-96-8	1	μg/L	<1.0	5 µg/L	74.5	63.6	114	
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	71.6	62.2	113	
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	80.2	63.9	115	
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	83.6	62.6	116	
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	65.9	64.3	116	
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	75.2	63.6	118	
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	76.6	63.1	118	

Page	: 13 of 16
Work Order	ES2121325
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD
Project	: PSI 8 Grosvenor St



Sub-Matrix: WATER		Method Bla		Method Blank (MB)	Laboratory Control Spike (LCS) Report			
				Report	Spike	Spike Recovery (%)	Acceptable	e Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbor	ns (QCLot: 3723584) - cor	tinued						
EP075(SIM): Benz(a)anthracene	56-55-3	1	μg/L	<1.0	5 μg/L	72.7	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 μg/L	79.2	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	μg/L	<1.0	5 µg/L	83.0	61.7	119
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 μg/L	69.9	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 μg/L	73.8	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 μg/L	83.0	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	μg/L	<1.0	5 µg/L	84.1	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	μg/L	<1.0	5 μg/L	81.2	59.1	118
EP080/071: Total Petroleum Hydrocarbons (QCL	ot: 3723582)							
EP071: C10 - C14 Fraction		50	µg/L	<50	400 µg/L	67.1	55.8	112
EP071: C15 - C28 Fraction		100	μg/L	<100	600 µg/L	82.8	71.6	113
EP071: C29 - C36 Fraction		50	µg/L	<50	400 µg/L	79.2	56.0	121
EP080/071: Total Petroleum Hydrocarbons (QCL	ot: 3725707)							
EP080: C6 - C9 Fraction		20	µg/L	<20	260 µg/L	93.4	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NE	PM 2013 Fractions (QCLo	ot: 3723582)						
EP071: >C10 - C16 Fraction		100	μg/L	<100	500 μg/L	76.8	57.9	119
EP071: >C16 - C34 Fraction		100	µg/L	<100	700 µg/L	81.5	62.5	110
EP071: >C34 - C40 Fraction		100	µg/L	<100	300 µg/L	76.2	61.5	121
EP080/071: Total Recoverable Hydrocarbons - NE	PM 2013 Fractions (QCLC	t: 3725707)						
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	95.2	75.0	127
EP080: BTEXN (QCLot: 3725707)								
EP080: Benzene	71-43-2	1	μg/L	<1	10 µg/L	102	70.0	122
EP080: Toluene	108-88-3	2	μg/L	<2	10 µg/L	105	69.0	123
EP080: Ethylbenzene	100-41-4	2	μg/L	<2	10 µg/L	104	70.0	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	99.3	69.0	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	μg/L	<2	10 µg/L	101	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	105	70.0	120

Matrix Spike (MS) Report

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

Sub-Matrix: SOIL			Matrix Spike (MS) Report				
			Spike	SpikeRecovery(%)	Acceptable	Limits (%)	
Laboratory sample ID Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High	
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3728324)							

Page	: 14 of 16
Work Order	: ES2121325
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD
Project	: PSI 8 Grosvenor St



Sub-Matrix: SOIL				Matrix Spike (MS) Report				
					Spike	SpikeRecovery(%)	Acceptable L	.imits (%)
Laboratory sample ID	Sample ID		Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: To	otal Metals by ICP-AES (QCLot: 3728324) - cont	tinued						
ES2121284-001	Anonymous		EG005T: Arsenic	7440-38-2	50 mg/kg	98.7	70.0	130
		-	EG005T: Cadmium	7440-43-9	50 mg/kg	101	70.0	130
		-	EG005T: Chromium	7440-47-3	50 mg/kg	100	68.0	132
			EG005T: Copper	7440-50-8	250 mg/kg	97.2	70.0	130
			EG005T: Lead	7439-92-1	250 mg/kg	101	70.0	130
			EG005T: Nickel	7440-02-0	50 mg/kg	97.4	70.0	130
			EG005T: Zinc	7440-66-6	250 mg/kg	102	66.0	133
EG005(ED093)T: To	otal Metals by ICP-AES (QCLot: 3731201)		\sim					
ES2121028-005	Anonymous		EG005T: Arsenic	7440-38-2	50 mg/kg	104	70.0	130
			EG005T: Cadmium	7440-43-9	50 mg/kg	102	70.0	130
			EG005T: Chromium	7440-47-3	50 mg/kg	108	68.0	132
			EG005T: Copper	7440-50-8	250 mg/kg	97.2	70.0	130
			EG005T: Lead	7439-92-1	250 mg/kg	111	70.0	130
			EG005T: Nickel	7440-02-0	50 mg/kg	100	70.0	130
			EG005T: Zinc	7440-66-6	250 mg/kg	102	66.0	133
EG035T: Total Rec	overable Mercury by FIMS (QCLot: 3728321)							
EB2115591-041	Anonymous		EG035T: Mercury	7439-97-6	5 mg/kg	83.2	70.0	130
EG035T: Total Rec	overable Mercury by FIMS (QCLot: 3728325)							
ES2121325-014	BH02_5.0		EG035T: Mercury	7439-97-6	5 mg/kg	93.3	70.0	130
EG035T: Total Rec	overable Mercury by FIMS (QCLot: 3731200)		× ×O					
ES2121028-005	Anonymous	Y	EG035T: Mercury	7439-97-6	5 mg/kg	94.0	70.0	130
EP066: Polychlorin	ated Biphenyls (PCB) (QCLot: 3723454)							
ES2121325-001	BH01_0.2		EP066: Total Polychlorinated biphenyls		1 mg/kg	102	70.0	130
EP068A: Organoch	lorine Pesticides (OC) (QCLot: 3723453)		<u> </u>					
ES2121325-001	BH01_0.2		EP068: gamma-BHC	58-89-9	0.5 mg/kg	96.3	70.0	130
		-	EP068: Heptachlor	76-44-8	0.5 mg/kg	89.0	70.0	130
			EP068: Aldrin	309-00-2	0.5 mg/kg	74.2	70.0	130
			EP068: Dieldrin	60-57-1	0.5 mg/kg	110	70.0	130
			EP068: Endrin	72-20-8	2 mg/kg	102	70.0	130
			EP068: 4.4`-DDT	50-29-3	2 mg/kg	106	70.0	130
EP068B: Organoph	osphorus Pesticides (OP) (QCLot: 3723453)							
ES2121325-001	BH01_0.2		EP068: Diazinon	333-41-5	0.5 mg/kg	116	70.0	130
		-	EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	87.1	70.0	130
			EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	93.6	70.0	130
			EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	90.0	70.0	130
			EP068: Prothiofos	34643-46-4	0.5 mg/kg	82.8	70.0	130

Page	: 15 of 16
Work Order	: ES2121325
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD
Project	: PSI 8 Grosvenor St



Sub-Matrix: SOIL				Ма	atrix Spike (MS) Report		
				Spike	SpikeRecovery(%)	Acceptable L	.imits (%)
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP075(SIM)B: Poly	nuclear Aromatic Hydrocarbons (QCLot: 3723452)						
ES2121325-001	BH01_0.2	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	90.9	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	106	70.0	130
EP080/071: Total P	etroleum Hydrocarbons (QCLot: 3723451)						
ES2121325-001	BH01 0.2	EP071: C10 - C14 Fraction		480 mg/kg	87.6	73.0	137
	_	EP071: C15 - C28 Fraction		3100 mg/kg	100	53.0	131
		EP071: C29 - C36 Fraction		2060 mg/kg	110	52.0	132
EP080/071: Total P	etroleum Hydrocarbons (QCLot: 3725610)						
ES2121227-001	Anonymous	EP080: C6 - C9 Eraction		32.5 ma/ka	106	70.0	130
EP080/071: Total R	ecoverable Hydrocarbons - NEPM 2013 Eractions (OC	Li 000: 00 00 1100001					
ES2121225 001				960 ma/ka	104	72.0	127
E32121323-001	BH01_0.2	EP071: >C10 - C16 Fraction	V	4320 mg/kg	104	73.0 53.0	137
		EP071: >C10 - C34 Flaction		890 ma/ka	102	52.0	132
		EF071. 2034 - 040 Hacilon		000 mg/kg	100	02.0	102
EP080/071: Total R	ecoverable Hydrocarbons - NEPM 2013 Fractions (QC	Lot: 3725610)					
ES2121227-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	106	70.0	130
EP080: BTEXN (QC	CLot: 3725610)						
ES2121227-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	102	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	90.3	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	90.9	70.0	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	88.3	70.0	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	92.4	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	84.5	70.0	130
Sub-Matrix: WATER				Ма	atrix Spike (MS) Report		
				Spike	SpikeRecovery(%)	Acceptable L	.imits (%)
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Meta	als by ICP-MS (QCLot: 3730890)						
ES2121325-030	RB01	EG020A-T: Arsenic	7440-38-2	1 mg/L	90.6	70.0	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	84.4	70.0	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	93.2	70.0	130
		EG020A-T: Copper	7440-50-8	1 mg/L	92.4	70.0	130
		EG020A-T: Lead	7439-92-1	1 mg/L	87.9	70.0	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	92.6	70.0	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	85.7	70.0	130
EG035T: Total Rec	overable Mercury by FIMS (QCLot: 3730899)						
ES2121325-030	RB01	EG035T: Mercury	7439-97-6	0.01 mg/L	91.3	70.0	130
EP080/071: Total P	etroleum Hvdrocarbons (QCLot: 3725707)						

Page	: 16 of 16
Work Order	: ES2121325
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD
Project	PSI 8 Grosvenor St



Sub-Matrix: WATER				Ма	atrix Spike (MS) Report		
				Spike	SpikeRecovery(%)	Acceptable L	imits (%)
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total P	Petroleum Hydrocarbons (QCLot: 3725707) - continued						
CA2103529-001	Anonymous	EP080: C6 - C9 Fraction		325 µg/L	82.7	70.0	130
EP080/071: Total R	Recoverable Hydrocarbons - NEPM 2013 Fractions (QCL	ot: 3725707)					
CA2103529-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	82.2	70.0	130
EP080: BTEXN (Q	CLot: 3725707)		0				
CA2103529-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	82.9	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	91.3	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	96.6	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	92.3	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	92.0	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	86.0	70.0	130
		Section					



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2121325	Page	: 1 of 11	
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD	Laboratory	: Environmental Division Sydney	
Contact	: LOEK MUNNICHS	Telephone	: +61 2 8784 8555	
Project	: PSI 8 Grosvenor St	Date Samples Received	: 07-Jun-2021	
Site	:	Issue Date	: 15-Jun-2021	
Sampler	: MICHAEL ASHELFORD	No. of samples received	: 33	
Order number	: 30090774	No. of samples analysed	: 16	

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

- NO Method Blank value outliers occur.
- <u>NO</u> Duplicate outliers occur.
- <u>NO</u> Laboratory Control outliers occur.
- <u>NO</u> Matrix Spike outliers occur.
- For all regular sample matrices, NO surrogate recovery outliers occu

Outliers : Analysis Holding Time Compliance

• <u>NO</u> Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

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



Outliers : Frequency of Quality Control Samples

Matrix: WATER

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	5	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	14	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)				0	
PAH/Phenols (GC/MS - SIM)	0	5	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	14	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

			Evaluation: * = Holding time breach ; < = W					thin holding time.
		Sample Date	Ex	traction / Preparation			Analysis	
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
BH01_5.0,		07-Jun-2021	10-Jun-2021	02-Mar-2024	1	10-Jun-2021	08-Sep-2021	✓
BH02_5.0,								
BH03_5.0,								
BH04_5.0								
	N							
BH01_5.0,		07-Jun-2021	14-Jun-2021	07-Jun-2022	1	14-Jun-2021	12-Sep-2021	✓
BH02_5.0,	•							
BH03_5.0,								
BH04_5.0								
BH01_5.0,		07-Jun-2021	14-Jun-2021	07-Jun-2022	1	14-Jun-2021	12-Sep-2021	✓
BH02_5.0,								
BH03_5.0,								
BH04_5.0								
	BH01_5.0, BH02_5.0, BH03_5.0, BH04_5.0 BH01_5.0, BH02_5.0, BH03_5.0, BH04_5.0 BH01_5.0, BH04_5.0, BH03_5.0, BH03_5.0, BH04_5.0	BH01_5.0, BH02_5.0, BH03_5.0, BH04_5.0 BH01_5.0, BH03_5.0, BH03_5.0, BH04_5.0 BH04_5.0	BH01_5.0, BH02_5.0, BH03_5.0, BH04_5.0 07-Jun-2021 BH01_5.0, BH02_5.0, BH03_5.0, BH04_5.0 07-Jun-2021 BH01_5.0, BH04_5.0 07-Jun-2021	Sample Date Ex BH01_5.0, 07-Jun-2021 10-Jun-2021 BH02_5.0, 07-Jun-2021 10-Jun-2021 BH03_5.0, BH04_5.0 07-Jun-2021 14-Jun-2021 BH01_5.0, BH03_5.0, BH04_5.0 07-Jun-2021 14-Jun-2021 BH01_5.0, BH03_5.0, BH04_5.0 07-Jun-2021 14-Jun-2021	Sample Date Extraction / Preparation Date extracted Due for extraction BH01_5.0, BH03_5.0, BH04_5.0 07-Jun-2021 10-Jun-2021 02-Mar-2024 BH01_5.0, BH04_5.0 07-Jun-2021 14-Jun-2021 07-Jun-2022 BH01_5.0, BH04_5.0 07-Jun-2021 14-Jun-2021 07-Jun-2022 BH01_5.0, BH04_5.0 07-Jun-2021 14-Jun-2021 07-Jun-2022	BH01_5.0, BH03_5.0, BH04_5.0 O7-Jun-2021 10-Jun-2021 02-Mar-2024 ✓ BH01_5.0, BH04_5.0 07-Jun-2021 10-Jun-2021 02-Mar-2024 ✓ BH01_5.0, BH04_5.0 07-Jun-2021 10-Jun-2021 07-Jun-2022 ✓ BH01_5.0, BH02_5.0, BH03_5.0, BH04_5.0 07-Jun-2021 14-Jun-2021 07-Jun-2022 ✓ BH01_5.0, BH04_5.0 07-Jun-2021 14-Jun-2021 07-Jun-2022 ✓	BH01_5.0, BH02_5.0, BH04_5.0 O7-Jun-2021 14-Jun-2021 07-Jun-2021 07-Jun-2021 07-Jun-2021 07-Jun-2021 07-Jun-2021 07-Jun-2021 14-Jun-2021 14-Ju	Evaluation: * = Holding time breach; * = Withi Sample Date Extracted Date extraction Evaluation Date analyses Date Date extracted Due for extraction Evaluation Date analyses Due for analysis BH01_5.0, BH02_5.0, BH03_5.0, BH04_5.0 07-Jun-2021 10-Jun-2021 02-Mar-2024 ✓ 10-Jun-2021 08-Sep-2021 BH01_5.0, BH03_5.0, BH04_5.0 07-Jun-2021 14-Jun-2021 07-Jun-2022 ✓ 14-Jun-2021 12-Sep-2021 BH01_5.0, BH03_5.0, BH04_5.0 07-Jun-2021 14-Jun-2021 07-Jun-2022 ✓ 14-Jun-2021 12-Sep-2021

Page	: 3 of 11
Work Order	: ES2121325
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD
Project	: PSI 8 Grosvenor St



Matrix: SOIL						Evaluation	n: 🗴 = Holding time	breach ; 🗸 = With	in holding time.
Method			Sample Date	Ex	traction / Preparation			Analysis	
Container / Client Sample ID(s)				Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-C: Acid Neutralising Capacity									
Snap Lock Bag - frozen (EA033)									
BH01_2.0,	BH01_5.0,		07-Jun-2021	14-Jun-2021	07-Jun-2022	1	14-Jun-2021	12-Sep-2021	✓
BH02_3.0,	BH02_5.0,								
BH03_3.0,	BH03_5.0,								
BH04_2.0,	BH04_5.0								
EA033-D: Retained Acidity			C						
Snap Lock Bag - frozen (EA033)									
BH01_2.0,	BH01_5.0,		07-Jun-2021	14-Jun-2021	07-Jun-2022	~	14-Jun-2021	12-Sep-2021	 ✓
BH02_3.0,	BH02_5.0,								
BH03_3.0,	BH03_5.0,								
BH04_2.0,	BH04_5.0								
EA033-E: Acid Base Accounting			· ·	5 V					
Snap Lock Bag - frozen (EA033)									
BH01_2.0,	BH01_5.0,		07-Jun-2021	14-Jun-2021	07-Jun-2022	~	14-Jun-2021	12-Sep-2021	✓
BH02_3.0,	BH02_5.0,								
BH03_3.0,	BH03_5.0,								
BH04_2.0,	BH04_5.0								
EA055: Moisture Content (Dried @ 105-110°C)									
Soil Glass Jar - Unpreserved (EA055)									
BH01_0.2,	BH01_2.0,		07-Jun-2021				10-Jun-2021	21-Jun-2021	✓
BH02_2.0,	BH02_5.0,								
BH03_0.5,	BH03_3.0,								
BH04_0.1,	BH04_2.0								
Soil Glass Jar - Unpreserved (EA055)									
FD01			07-Jun-2021				11-Jun-2021	21-Jun-2021	~
EA200: AS 4964 - 2004 Identification of Asbestos in	Soils								
Snap Lock Bag: Separate bag received (EA200)			07 1 0001					04 Dec 2024	
BH01_0.2,	BH02_0.1,		07-Jun-2021				09-Jun-2021	04-Dec-2021	✓
BH03_0.5,	BH04_0.1								
EG005(ED093)T: Total Metals by ICP-AES									
Soil Glass Jar - Unpreserved (EG005T)		N	07 1 0004	40 1	04 Dec 2021		44 1	04 Dec 2021	
BH01_0.2,	BH01_2.0,		07-Jun-2021	10-Jun-2021	04-Dec-2021	~	11-Jun-2021	04-Dec-2021	✓
BH02_2.0,	BH02_5.0,	▼							
BH03_0.5,	BH03_3.0,								
BH04_0.1,	BH04_2.0								
Soil Glass Jar - Unpreserved (EG005T)					04 D . 0004	-		04 D. 0001	
FD01			07-Jun-2021	11-Jun-2021	04-Dec-2021		11-Jun-2021	04-Dec-2021	

Page	: 4 of 11
Work Order	: ES2121325
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD
Project	: PSI 8 Grosvenor St



Matrix: SOIL						Evaluation	: × = Holding time	breach ; 🗸 = Withi	n holding time.
Method			Sample Date	Extraction / Preparation					
Container / Client Sample ID(s)				Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS									
Soil Glass Jar - Unpreserved (EG035T)									
BH01_0.2,	BH01_2.0,		07-Jun-2021	10-Jun-2021	05-Jul-2021	✓	11-Jun-2021	05-Jul-2021	\checkmark
BH02_2.0,	BH02_5.0,								
BH03_0.5,	BH03_3.0,								
BH04_0.1,	BH04_2.0								
Soil Glass Jar - Unpreserved (EG035T)									
FD01			07-Jun-2021	11-Jun-2021	05-Jul-2021	✓	15-Jun-2021	05-Jul-2021	✓
EP066: Polychlorinated Biphenyls (PCB)			0) (
Soil Glass Jar - Unpreserved (EP066)									
BH01_0.2,	BH01_2.0,		07-Jun-2021	10-Jun-2021	21-Jun-2021	✓	11-Jun-2021	20-Jul-2021	\checkmark
BH02_2.0,	BH02_5.0,								
BH03_0.5,	BH03_3.0,								
BH04 0.1,	BH04 2.0,	+ C							
FD01	_ ^								
EP068A: Organochlorine Pesticides (OC)									
Soil Glass Jar - Unpreserved (EP068)									
BH01_0.2,	BH01_2.0,		07-Jun-2021	10-Jun-2021	21-Jun-2021	1	11-Jun-2021	20-Jul-2021	\checkmark
BH02_2.0,	BH02_5.0,								
BH03_0.5,	BH03_3.0,	CU							
BH04 0.1,	BH04 2.0,								
FD01	_ ^		Ň						
EP068B: Organophosphorus Pesticides (OP)									
Soil Glass Jar - Unpreserved (EP068)									
BH01_0.2,	BH01_2.0,		07-Jun-2021	10-Jun-2021	21-Jun-2021	✓	11-Jun-2021	20-Jul-2021	\checkmark
BH02_2.0,	BH02_5.0,								
BH03_0.5,	BH03_3.0,								
BH04 0.1,	BH04 2.0,								
FD01	_								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Soil Glass Jar - Unpreserved (EP075(SIM))									
BH01_0.2,	BH01_2.0,		07-Jun-2021	10-Jun-2021	21-Jun-2021	1	11-Jun-2021	20-Jul-2021	 ✓
BH02_2.0,	BH02_5.0,								
BH03_0.5,	BH03_3.0,								
BH04_0.1,	BH04_2.0,								
FD01									

Page	: 5 of 11
Work Order	: ES2121325
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD
Project	: PSI 8 Grosvenor St



Matrix: SOIL						Evaluation	n: 🗴 = Holding time	breach ; 🗸 = With	in holding time.
Method			Sample Date	E	xtraction / Preparation			Analysis	
Container / Client Sample ID(s)				Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons									
Soil Glass Jar - Unpreserved (EP080)									
BH01_0.2,	BH01_2.0,		07-Jun-2021	10-Jun-2021	21-Jun-2021	\checkmark	11-Jun-2021	21-Jun-2021	\checkmark
BH02_2.0,	BH02_5.0,								
BH03_0.5,	BH03_3.0,								
BH04 0.1,	BH04 2.0,								
FD01,	TB01								
EP080/071: Total Recoverable Hydrocarbons - NEPM 20	13 Fractions								
Soil Glass Jar - Unpreserved (EP080)									
BH01 0.2,	BH01 2.0,		07-Jun-2021	10-Jun-2021	21-Jun-2021	~	11-Jun-2021	21-Jun-2021	1
BH02 2.0.	BH02 5.0.								·
BH03.0.5	BH03_3.0								
BH04_0.1	BH04_2.0								
ED01	DI 104_2.0, TP01	• C							
EP080: BTEXN									
Soli Glass Jar - Unpreserved (EP080)	DU01 2.0		07 Jun 2021	10 Jun 2021	21- lun-2021	/	11 Jun 2021	21- lun-2021	
BH01_0.2,	BH01_2.0,		07-Juli-2021	10-Juli-2021	21-3011-2021	~	11-Juli-2021	21-3011-2021	✓
BH02_2.0,	BH02_5.0,								
BH03_0.5,	BH03_3.0,								
BH04_0.1,	BH04_2.0,								
FD01,	TB01								
Matrix: WATER						Evaluation	n: × = Holding time	breach ; 🗸 = With	in holding time.
Method			Sample Date	E	xtraction / Preparation			Analysis	
Container / Client Sample ID(s)		V ov		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS									
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T)									
RB01			07-Jun-2021	11-Jun-2021	04-Dec-2021	~	11-Jun-2021	04-Dec-2021	 ✓
EG035T: Total Recoverable Mercury by FIMS									
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)									
RB01			07-Jun-2021				11-Jun-2021	05-Jul-2021	✓
EP066: Polychlorinated Biphenyls (PCB)									
Amber Glass Bottle - Unpreserved (EP066)									
RB01			07-Jun-2021	08-Jun-2021	14-Jun-2021	✓	11-Jun-2021	18-Jul-2021	✓
EP068A: Organochlorine Pesticides (OC)									
Amber Glass Bottle - Unpreserved (EP068)									
RB01			07-Jun-2021	08-Jun-2021	14-Jun-2021	~	11-Jun-2021	18-Jul-2021	✓
EP068B: Organophosphorus Pesticides (OP)									
Amber Glass Bottle - Unpreserved (EP068)			07 1. 0001	00.1	14 Jun 0004		44 1.000	10 101 0004	
KB01			07-Jun-2021	08-Jun-2021	14-Jun-2021	✓	11-Jun-2021	10-JUI-2021	✓

Page	: 6 of 11
Work Order	: ES2121325
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD
Project	: PSI 8 Grosvenor St



Matrix: WATER				Evaluation	: × = Holding time	breach ; 🗸 = With	in holding time.
Method	Sample Date	Ex	traction / Preparation			Analysis	
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) RB01	07-Jun-2021	08-Jun-2021	14-Jun-2021	1	11-Jun-2021	18-Jul-2021	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) RB01	07-Jun-2021	08-Jun-2021	14-Jun-2021	~	11-Jun-2021	18-Jul-2021	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB01	07-Jun-2021	11-Jun-2021	21-Jun-2021	~	11-Jun-2021	21-Jun-2021	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) RB01	07-Jun-2021	08-Jun-2021	14-Jun-2021	1	11-Jun-2021	18-Jul-2021	✓
Amber VOC Vial - Sulfuric Acid (EP080) RB01	07-Jun-2021	11-Jun-2021	21-Jun-2021	1	11-Jun-2021	21-Jun-2021	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) RB01	07-Jun-2021	11-Jun-2021	21-Jun-2021	~	11-Jun-2021	21-Jun-2021	√



Quality Control Parameter Frequency Compliance

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

Matrix: SOIL				Evaluatio	n: × = Quality Co	ntrol frequency n	ot within specification ; \checkmark = Quality Control frequency within specification.
Quality Control Sample Type		Co	ount		Rate (%)		Quality Control Specification
Analytical Methods	Method	00	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							N
Chromium Suite for Acid Sulphate Soils	EA033	1	10	10.00	10.00	1	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	4	37	10.81	10.00		NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	9	11.11	10.00		NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	9	11.11	10.00		NEPM 2013 B3 & ALS QC Standard
pH field/fox	EA003	2	15	13.33	10.00		NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	9	11.11	10.00		NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	5	37	13.51	10.00	1	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	4	29	13.79	10.00	V 🗸	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068		9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	37	8.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)		9	11.11	5.00	~	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	37	8.11	5.00	~	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	9	11.11	5.00	~	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	37	8.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	29	6.90	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Page	: 8 of 11
Work Order	: ES2121325
Client	: ARCADIS AUSTRALIA PACIFIC PTY LTD
Project	PSI 8 Grosvenor St



Matrix: WATER	VATER Evaluation: * = Quality Control frequency not within specification ; 🗸 = Quality Control frequency within specifi											
Quality Control Sample Type		Co	ount		Rate (%)		Quality Control Specification					
Analytical Methods	Method	00	Reaular	Actual	Expected	Evaluation						
Laboratory Duplicates (DUP)												
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	5	0.00	10.00	sc.	NEPM 2013 B3 & ALS QC Standard					
Pesticides by GCMS	EP068	0	6	0.00	10.00	×	NEPM 2013 B3 & ALS QC Standard					
Polychlorinated Biphenyls (PCB)	EP066	0	1	0.00	10.00	32	NEPM 2013 B3 & ALS QC Standard					
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard					
Total Metals by ICP-MS - Suite A	EG020A-T	2	18	11.11	10.00	1	NEPM 2013 B3 & ALS QC Standard					
TRH - Semivolatile Fraction	EP071	0	14	0.00	10.00	*	NEPM 2013 B3 & ALS QC Standard					
TRH Volatiles/BTEX	EP080	2	18	11.11	10.00		NEPM 2013 B3 & ALS QC Standard					
Laboratory Control Samples (LCS)												
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	20.00	5.00		NEPM 2013 B3 & ALS QC Standard					
Pesticides by GCMS	EP068	1	6	16.67	5.00	N	NEPM 2013 B3 & ALS QC Standard					
Polychlorinated Biphenyls (PCB)	EP066	1	1	100.00	5.00	1	NEPM 2013 B3 & ALS QC Standard					
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓ ✓	NEPM 2013 B3 & ALS QC Standard					
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard					
TRH - Semivolatile Fraction	EP071	1	14	7.14	5.00	~	NEPM 2013 B3 & ALS QC Standard					
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard					
Method Blanks (MB)												
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard					
Pesticides by GCMS	EP068	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard					
Polychlorinated Biphenyls (PCB)	EP066	1	1	100.00	5.00	~	NEPM 2013 B3 & ALS QC Standard					
Total Mercury by FIMS	EG035T		20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard					
Total Metals by ICP-MS - Suite A	EG020A-T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard					
TRH - Semivolatile Fraction	EP071	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard					
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard					
Matrix Spikes (MS)												
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	5	0.00	5.00	×	NEPM 2013 B3 & ALS QC Standard					
Pesticides by GCMS	EP068	0	6	0.00	5.00	×	NEPM 2013 B3 & ALS QC Standard					
Polychlorinated Biphenyls (PCB)	EP066	0	1	0.00	5.00	×	NEPM 2013 B3 & ALS QC Standard					
Total Mercury by FIMS	EG035T		20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard					
Total Metals by ICP-MS - Suite A	EG020A-T		18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard					
TRH - Semivolatile Fraction	EP071	0	14	0.00	5.00	x	NEPM 2013 B3 & ALS QC Standard					
TRH Volatiles/BTEX	EP080	1	18	5.56	5.00	./	NEPM 2013 B3 & ALS OC Standard					



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
pH field/fox	EA003	SOIL	In house: Referenced to Ahern et al 1998 - determined on a 1:5 soil/water extract designed to simulate field measured pH and pH after the extract has been oxidised with peroxide.
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3).
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.



Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house. Referenced to USERA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
Drying only	EN020D	SOIL	In house
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	in house
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM Schedule B(3)

Page: 11 of 11Work Order: ES2121325Client: ARCADIS AUSTRALIA PACIFIC PTY LTDProject: PSI 8 Grosvenor St



Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3). ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.

	25	202
NCOO	nipe	
Ser		

		F Y J&	ב ר מפנאייני פנ ארגני זינ	er Ber Allter, of Isanon Housi Praestin, SA 1606 1115 Allter Giffer, establighter and antipa Stead March Straffer, 120 Allta 2. Interfact Hausan (Sauster)		DVADCA PARQUZA UNELBO FN CS 557	 Alexience and an expension of the second seco	d blacksy O: D y@al-qikihol oo a Roari Sgringr 95 ≪e-bourneli	i 4740 m ole 146 0171 g ile (Secol e e ns	<u> </u>	UNEWCA Police 401 UNIX-98A FEICARC	311 Block Block Mot A 2001 Block Block 4/10 Galey File 2004 Block Block Block	acul ero härgt o ni menosol erög e Nicette nicular i ginti grahau tant	n (Mar Nasanas Ing Salat Salat D Bara Salat Salat P - 07 -	Barbin T.A. (Bertreaugus e Hand Brith Medide) (B. (B. (B. 2014) - Martin Roman and Angelan and Angelan and 2014 - 14-15 Conta Catan Roman (B. (B. 2015) 2014 - Martin Roman (B. (B. 1997) (B. 2015)
\$.5,7°%%.;	ALS Laborato	ry: UGt → Ph	40610145 7.747+096	18 de temenunt Orixe Gritter (st.C. 1948) 1 Er granden ogsa letter av m		3.047 2.047	(SEC) Sysney 2 5372 BY SEC min	ন্যমত কি তেয়াক ম প্রহান - পর্বস্রুগ ম	isw 2360 - yuup Johel euro - Philip	भग सः विश्व-द्वार १ २०१६ १८७४ व	ny tiné n été anapara perin	হাঁটেন। ইচন জোনানা কাল		шу СЛ 10) 95-00 //21	Nacional B., Karang Salawa Sanasan, Ang 2019 (2013) 15 MTA El por General ang ang panalaran
UENT:	Arcadis Australia Pacific Pty Ltd		TURN/	ROUND REQUIREMENTS : d TAT may be longer for some tests e.o.	Stenda	rd TAT (List	due date):					FOR	LABORAT	DRY USE C	INLY (Circle)
PROJECT:	PSI 8 Grosvenor St		Ultra Tra	ALS QUOTE NO.: EN/	91/20	landard or un	geni TAT (Lis	tdue date):	COC SEQUE	NCE NUMB	ER (Círcle)		Mooring	a second	not point a Year No No No
ORDER N	MBER: 30090774							coc:	1 2	34	56	7 Rahd	om Sempli I	n Pilan mpenatire.s	n Receipt
ROJECT	MANAGER: Loek Munnichs	CONTACT F	PH: 04230	333440		OUED DV.		OF:	1 2	3 4	5 6				
OC emai	ed to ALS? (YES)	EDD FORM	AT (or de	fault): ESDAT	MA	3ACO B1.		S	\propto	110	s	NE LINKO	SHED B1.		RECEIVED BT.
mail Rep	orts to: Loek.Munnichs@arcadis.com; M	lichael.Ashelford@arcadis	.com, Lei	la.Bowe@arcadis.com	DATE/TIME			DATE		111		DATE/TIME			DATE/TIME:
EmailInvo	ice to : AU.Accounts.Payable@arcadis.con	n			7.6.21			ר	1812	12	240				
OMMEN	S/SPECIAL HANDLING/STORAGE OR D	ISPOSAL: samples were d	ropped o	off by Alex To from Asset to the A	LS facility li	n Smithfield	today								
ALS	SAMPLE DI MATRIX SOLID IS	ETAILS I WATER (V)		CONTAINER INFO	RMATION		ANALY Where Me	'SIS REQUIR stals are requ	ED including uired, specify T	SUITES (NB otal (unfilter	. Suite Codes ed bottle requ	must be lister ired) or Disso	l to attract su sived (field fil	le price) ered bottle	Additional Information
						engines 	т	~	ź	1944 					
LABID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE codes below)	(refer to	НОГР	EA003 (pHf and p FOX)	EA033 - (Cr Suite	S-16 (TRH, BTEX) PAH, 8 Metals, OCP/OPP and PCBs)	EA200G (Asbestc P/A)	ткнивтех	W-16 ((TRH, BTEXN, PAH, 8 Metals, OCP/OPP and PCBs)		Port	Commente on likely contaminant levels, dilutions, or eamples requiring specific QC analysis etc.
1	BH01_0.2	7.6.21	8						x	×					
2	BH01_0.5		s	A G		x									
3	BH01_1.0		8	Aa		x									
4	BH01_2.0		s	G			×	X							
5	BH01_3.0		8	G		x							V		
6	BH01_4.0		5	à		x						\Box			1
7	BH01_6.0		8	G				×							-
8	BH02_0.1	-	8	G		x				×			1		
<u>0</u>			s	Δ		x							1		
- (- ()	BH02 10		s			x									
<u>\</u> 0	BH02.2.0			4		The second secon			×						
<u>u</u>	BH02_2.0					^									
12	BH02_3.0		6			v									
15	BH02_4.0		3		P	×									2
<u>4</u>	BH02_5.0		8	A /				<u> </u>	*		ļ	┾╴_	L		
15	BH03_0.1		5	#		×						⊢ E	nviro	nmer	ntal Division
16	BH03_0.6		s						*	×		ר א_ צ	ydne	y Orda	r Dafassa s
17	BH03_1.0			A G	XX	× .						+			
18	BH03_2.0		8	<u>ц</u>		×						+		ו שנ	21323
4	BH03_3.0			ú l)	· .	×	x	×			+			*
20	BH03_4.0		S			×						+			
Ü	BH03_5.0		8				×	×				+		Цъ-й	
22	BH03_6.0			G		x						- ·		h Y L L	
23	BH04_0.1		s	• ,					×	×		-			
24	8H04_0.5		s	A		x						fel	ephone	+ 61-2-	8784 8555
25	BH04_1.0		5	A		x						1			
26	BH04_2.0		5				×	×	×			1	[1	
27	BH04_3.0		s	G.		x		1							
Ъ	BH04_4.0		5	a		x									
29	BH04_5.0		8				×	×							
30	RB01		w									×			
3	FD01	. 61	8		· · ·				x						
	F801		s	1			1	-	×						Barris an Inc. and the Provide
32	FD02		s			×									r resize on-tonierd to Envirolet
	F302		s			x				+		-			
34	TB01		s							1	x	-			Please on-forward to Enviroisb
										+	-	-			
Water C	nteiner Codes; P = Unpracerved Plastic: N = N	Nitrie Preserved Plastic · ORC =	Nibic Pres	erved ORC; SH = Sodium Hudravide/C	Propervad	s = Sodi S IL	DOB Proto		AG'= Ambér Ya	ass there ha	fred ber A.	freight Unree	Served Plasfin		
V = VOA Z = Zinc	Vial HCI Preserved; VB = VOA Vial Sodium Bisulp Acetate Preserved Bottle; E = EDTA Preserved Bot	ohste Preserved; VS = VOA Vial attles; ST = Sterile Bottle; ASS =	Sulfuric P Plastic Ba	reserved; AV = Airfreight Unpreserved V ig for Acid Sulphate Soils; B = Unpreser	ial SG = Suifu ved Bag.	Ind Preserved	Amber Glass	H = HCl pr	eserved Plastic	HS = HCI	preserved Sp	ଟିମାନାମ ଜଣ୍ଡାର	SP = Suitan	Preserved 1	naster = Formaldehyde Preserved Glass;
						LE	07 <u>197</u>	llysis:							
						Ot	ganisee	J Ey /	Date:						
						Re	linaria	bod B	y / Dar	FS	0l + 7	5	-D [A.L	tak
						0		and the second	· Fn		in an an Al	<u>~</u>		<u>. WAN</u>	
						0	nnota /	< Curi	icr:tH	DX.	FAC	m2	, Kr	idm	

. 4

•

Relinquished By / Data: FSOL + FSO2 -> Enviveda
Connote / Courier: EA003 + EA033 - Bristone
WO No: Asbestos -> Newcastle.
Attached Ry PO / Internal Shaet