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Preliminary PFAS Risk Assessment for Camden Airport

Sydney Metro Airports IA115500 | FINAL 4 April, 2017





Project No: IA115500

Document Title: Preliminary PFAS Risk Assessment for Camden Airport

Document No.: IA115500 Revision: FINAL

Date: 4 April, 2017

Client Name: Sydney Metro Airports

Client No:

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File Name: J:\IE\Projects\04_Eastern\IA115500\21 Deliverables\IA115500 Preliminary PFAS Risk

Assessment Camden Airport FINAL 4Apr2017.docx

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Document history and status

Revision	Date	Description	Ву	Review	Approved
DRAFT	9/1/17	For client review	DL	MS	DL
FINAL	4/4/17	Final	DL	MS	DL

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Executive Summary

Sydney Metro Airports (SMA), the lease holder and operator of Bankstown and Camden Airports, engaged Jacobs to undertake a preliminary risk assessment of per- and polyfluoroalkyl substances (PFAS) land contamination at Camden Airport (the Airport). This report presents the scope of work, findings and recommendations from the risk assessment.

PFAS are a large group of compounds consisting of a fully fluorinated hydrophobic alkyl chain of varying length (typically 4 to 16 carbon atoms) and a hydrophilic end group. In the past, PFAS were often referred to as "PFCs" (per- and polyfluorinated chemicals). However the term PFAS is now used by regulators in Australia. PFAS are emerging contaminants and their sources, fate and transport and toxicity is still not well understood. Similarly, the regulatory framework for the characterisation, assessment and management of risks associated with PFAS is also under development.

No known sources of PFAS contamination have been identified at the Airport as part of this preliminary risk assessment. Aqueous Film Forming Foam (AFFF) used for fire fighting and fire fighting training is a significant source of PFAS contamination at airports in Australia. However information from Airservices Australia indicated that the Aviation Rescue and Fire Fighting (ARFF) service at Camden Airport ceased in around 1977 and no AFFF containing PFAS was used. Information from the NSW Rural Fire Service and NSW Fire & Rescue did not identify any incidents at the Airport where foam was applied.

No PFAS investigations of soil or groundwater have been undertaken at the Airport. Surface water sampling undertaken by SMA in February, 2016 identified low level concentrations of PFOS ($0.06~\mu g/L$ and $0.26~\mu g/L$) in two samples collected from an open drain close to the Helicopter Landing Site. It is noted that these samples were collected during dry conditions. Potential sources of PFAS that may have contributed to these concentrations include undocumented storage or use of AFFF, aviation hydraulic fluid, use of foam fire extinguishers, use of fire appliances that contained foam and off-site sources. Based on these two sample results alone, the site would be a Priority 2 site under the NSW EPA Decision Tree for prioritising sites potentially impacted with PFAS. The NSW EPA Decision Tree states that Priority 2 sites are to be further investigated once investigations at Priority 1 sites are completed.

There is no known beneficial use of groundwater at or in the near vicinity of the Airport. Groundwater from the Airport likely discharges to the Nepean River and therefore risks to beneficial users of groundwater on the opposite side of the Nepean River are considered to be low.

The Draft Australian and New Zealand Water Quality Guidelines for ecological impacts associated with PFOS in freshwater range from $0.00023~\mu g/L$ for high conservation value ecosystems (99% species protection) to 31 $\mu g/L$ for highly disturbed ecosystems (80% species protection). It is likely that the guideline value for slightly to moderately disturbed ecosystems (PFOS concentration of $0.13~\mu g/L$) would apply for the Nepean River based on general guidance issued by the NSW Government (NSW DEC, 2006).

Therefore, the potential for surface water containing PFAS from the Airport to discharge to the Nepean River and impact on aquatic ecosystems is likely the most significant source – receptor pathway identified in this preliminary risk assessment. In order to further assess this risk, it is recommended that SMA undertakes the following:

- 1) **Survey of the surface water drainage network at the Airport**. This should include identification of surface water drainage structures, potential overland flow paths and discharge points to the Nepean River.
- 1) Upgrade to the current surface water quality monitoring program. Once the survey of the surface water drainage network has been completed, a review of the surface water sampling locations should be undertaken. These should include sampling locations in the Nepean River upgradient, of the Airport discharge points, at the discharge points and downgradient of the discharge points. The analysis suite should also be upgraded to include a more comprehensive suite of PFAS compounds. As a minimum, perfluorohexane sulfonic acid (PFHxS) should be included in all future PFAS analysis.
- 2) **GEMS 002 PFC management actions advice**. For the purposes of GEMS 002, this Preliminary PFAS Risk Assessment could be used as a Trigger Assessment for new activities at the Airport. The risk of



significant PFAS contamination to be present at the Airport is considered low and further investigation is not considered necessary. However, should a detailed site investigation be undertaken for other reasons (ie. potential presence of non-PFAS contaminants) then it is recommended that PFAS compounds are included in the laboratory analysis suites. Additional data on PFAS concentrations in soil, groundwater or surface water at the Airport should be compiled to support updates to the Conceptual Site Model and revisions of the risk assessment in the future.



Important note about your report

The sole purpose of this report is to present the findings of a Preliminary Per- and Polyfluoroalkyl Substances Risk Assessment at Camden Airport carried out by Jacobs for Sydney Metro Airports ('the Client'). This report was produced in accordance with and is limited to the scope of services set out in the contract between Jacobs and the Client. That scope of services, as described in this report, was developed with the Client.

The scope of services was not intended to provide a definitive or quantitative investigation of the environmental impacts, performance and compliance of the subject site. Environmental conditions may exist at the site that are beyond the scope of our investigations and this report.

The findings presented in this report are professional opinions based solely upon information and data provided or made available by the Client or otherwise available in the public domain between 28 May, 2016 and 9 January, 2017.

Jacobs has relied upon and presumed that this data is accurate and representative of the conditions at the site. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete or if site conditions change beyond the above dates then it is possible that our conclusions as expressed this report may change. Because regulatory evaluation criteria are constantly changing, concentrations of contaminants present and considered to be acceptable at the time of this report may in the future become subject to different regulatory standards and require assessment.

Opinions and judgements expressed in the report are based on Jacobs' understanding and interpretation of current regulatory standards and should not be construed as legal opinions.

Except as specifically stated in this report, Jacobs makes no statement or representation of any kind concerning the suitability of the site for any purpose or the permissibility of any use.

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1. Introduction

Sydney Metro Airports (SMA), the lease holder and operator of Bankstown and Camden Airports, has engaged Jacobs Group (Australia) Pty Ltd (Jacobs) to undertake a preliminary risk assessment of per- and polyfluoroalkyl substances (PFAS) land contamination at Camden Airport (the Airport). The Airport property is owned by the Commonwealth. The management of environmental matters on the Airport is regulated under the *Airports Act* 1996 and the *Airports (Environment Protection) Regulations* 1997.

This report presents the scope of work, findings and recommendations from the preliminary risk assessment.

1.1 Scope of work

The preliminary risk assessment was limited to:

- An assessment of the potential for PFAS to be present in soil, groundwater or surface water at the Airport;
 and.
- An assessment of whether PFAS in soil, groundwater or surface water, if present, could present a risk to human health or the environment.

The scope of work involved a desktop assessment and brief site reconnaissance only. No environmental sampling was undertaken as part of this assessment.

The scope of work performed included:

- Identification of potential sources of PFAS at the Airport through a review of SMA and tenant activities and submission of information requests to the Department of Infrastructure and Regional Development (DIRD), Airservices Australia, NSW Rural Fire Service and the NSW Fire & Rescue.
- A review of the Airport site setting including topography, geology, hydrogeology and hydrology to identify potential PFAS transport pathways.
- Identification of potential receptors to PFAS contamination including on-site and off-site human receptors and on-site and off-site ecological receptors.
- Review of existing soil, groundwater and surface water data at the Airport relating to PFAS contamination.
- Development of a preliminary conceptual site model and a qualitative assessment of PFAS risks.
- Recommendations for further investigation and / or risk management measures as appropriate.



2. Background on Per- and Polyfluoroalkyl substances (PFAS)

2.1 Terminology

PFAS are a large group of compounds consisting of a fully fluorinated hydrophobic alkyl chain of varying length (typically 4 to 16 carbon atoms) and a hydrophilic end group (DER, 2016). In the past, PFAS were often referred to as "PFCs" (per- and polyfluorinated chemicals), but this term can also be understood as perfluorocarbons which contain only carbon and fluorine and have properties and functionalities different from those of PFAS (OECD, 2013).

PFAS and their derivatives are man-made chemicals and have been used in a wide range of industrial processes and consumer products, including in the manufacture of non-stick cookware (although not added to the finished cookware), specialised garments and textiles, Scotchgard™ and similar products (used to protect fabric, furniture, and carpets from stains), metal plating and in some types of fire-fighting foam (NICNAS, 2016).

There are two main groups of PFAS used in industry (NICNAS, 2016):

- perfluoroalkyl sulfonic acids (PFSA) group, including chemicals such as perfluorooctane sulfonate (PFOS)
- the perfluorocarboxylic acid (PFCA) group, including chemicals such as perfluorocatanoic acid (PFOA).

Various organisations have used the term PFCs in the past. However, the US EPA is now utilising the term PFAS to collectively describe PFOA, PFOS and the other chemicals in these groups (US EPA, 2016). The Environmental Health Standing Committee of the Australian Health Protection Principal Committee (enHealth) now refers to this group of chemicals as PFAS (enHealth, 2016) and other Australian regulatory authorities appear to be following this direction.

2.2 Sources of PFAS

PFAS are man made chemicals that have been used since the 1950s. They are resistant to heat, oil, grease, water and acids and this, combined with their surfactant properties, have made them useful for a wide variety of applications.

While PFAS has not been manufactured in Australia, PFOS was a component of the Scotchgard[™] and Scotchban[™] range of products supplied by the 3M Company. Scotchgard[™] was used in commercial / industrial applications in Australia for protecting textiles and leather. Scotchban[™] was used to treat paper containers for fast-food and pet-food. Other products containing PFAS that were used in Australia include Aqueous Film Forming fire fighting Foams (AFFF) and Alcohol-Type Concentrate (ATC) fire fighting foams, industrial coating products, rubber moulding products and acid mist suppressants. (NICNAS, 2013)

The salts of PFSAs (primarily PFOS) have been used as additives with a content of about or less than 0.1% in aviation hydraulic fluids to prevent evaporation, fires and corrosion (OECD, 2013).

Non-polymeric PFAS (such as the potassium, lithium, diethanolamine and ammonium salts of PFOS or 6:2 fluorotelomer sulfonate) have been used as surfactants, wetting agents and mist suppressing agents for both decorative chrome plating and hard chrome plating processes. Recent technology development on using chromium (III) instead of chromium (VI) has made PFOS use in decorative chrome plating obsolete. For hard plating, chromium (III) does not work, and PFOS is still used for this application (OECD, 2013).

The 3M Company stopped manufacturing PFOS chemicals in December 2000 and reformulated all Scotchgard products replacing PFOS with other short-chain PFASs (NICNAS, 2016). Many PFOS containing products were phased out in Australia in December, 2013 (NICNAS, 2013). However in many cases, products containing the C-8 chain PFAS such as PFOS and PFOA have been replaced by products with shorter chain PFAS. For example manufacturers of aqueous film forming foams AFFF have been replacing long-chain fluorosurfactants



based on PFOS or PFOA derivatives/precursors with shorter-chain fluorosurfactants based on perfluorobutane sulfonate (PFBS) and perfluorohexane sulfonic acid (PFHxS) (Danish Environmental Protection Agency, 2015).

2.3 Fate and transport

PFAS includes thousands of compounds and the fate and transport of these compounds in the environment is not well understood. In general terms, PFAS are known to be persistent, bioaccumulative and toxic and, due to their persistence in the environment and moderate solubility, can be transported long distances (potentially kilometres) in water and air, and transfer between different media (e.g. soil, sediment, surface water and groundwater) (DER, 2016).

Over the pH range normally found in soil, groundwater and surface waters (pH 5-9) PFAS are normally present as anions, and this reduces sorption by soils and sediments, which usually carry a net negative charge. Their retardation during transport in groundwater increases with perfluorocarbon chain length and the fraction of organic carbon in the soil, with PFSAs binding more strongly than PFCAs of the same carbon number. Vapour migration plays only a minor role in assessing the mobility of most PFAS in the environment due to the low to very low vapour pressure of the PFAS. (Concawe, 2016)

While PFAS are generally considered to be recalcitrant to biodegradation via naturally-occurring microorganisms in water or soil, precursors are known to be transformed into PFAS under natural circumstances (Concawe, 2016). Therefore, DER (2016) recommends that the potential for precursor transformation to PFOS and PFOA and other PFAS metabolites should be considered in the overall potential for environmental and human exposure and evaluation of risk to human health, the environment and environmental values when assessing site contamination caused by PFAS.

2.4 Exposure and toxicity

enHealth (2016) notes that because of their widespread use, most people in Australia will have some PFOS and PFOA in their body. PFOS and PFOA are readily absorbed through the gut, and once these chemicals are in a person's body it takes about two to nine years, depending on the study, before those levels go down by half, even if no more is taken in. Outside of the occupational setting, exposure to PFAS can occur from the air, indoor dust, food, water and various consumer products. For most people food is expected to be the primary source of exposure to PFOS and PFOA. Human breast milk may contribute to exposure in infants since PFCs have been detected in human breast milk. For some communities near facilities where PFOS and PFOA have been extensively used, higher levels may be found in the surrounding environment and exposure may occur through other means, including drinking water supplied from groundwater containing PFOS and PFOA..

Studies on laboratory animals exposed to high levels of PFAS have indicated changes in the liver, thyroid, and pancreatic function, as well as some changes in hormone levels. Some, but not all studies in humans have shown that certain PFAS may:

- affect the developing foetus and child, including possible changes in growth, learning, and behaviour;
- decrease fertility and interfere with the body's natural hormones;
- increase cholesterol;
- affect the immune system; and
- increase cancer risk. (ATSDR, 2016)

As noted in Section 2.2, many products containing C-8 chain PFAS have been replaced by shorter chain PFAS. While these are thought to be less toxic, there is a general lack of toxicological information regarding the short-chain PFAS other than PFHxS. Similarly there is very little information on the environmental fate and transport of short-chain PFAS. (Danish Environmental Protection Agency, 2015).



2.5 Regulatory framework

Regulators around the world have introduced restrictions on the manufacture, import and use of certain types of PFAS since the early 2000's. As noted in Section 2.2, many types of PFOS containing products were prohibited in Australia from 2003.

However the Commonwealth and State regulatory framework for the management of PFAS impacts to land is still developing. There are no screening guideline values for PFAS included in the National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended 2013 (NEPM). There are no specific published NSW EPA guidelines or requirements for the assessment of PFAS impacts or for the disposal of PFAS impacted waste in NSW. The *Airports (Environment Protection) Regulation 1997* does not provide trigger levels for PFAS in soil or groundwater.

In May, 2015, the Department of Defence issued Interim Screening Criteria for Perfluorooctanesulfonate (PFOS), Perfluorooctanesulfonic acid (PFOA) and 6:2 fluorotelomer sulfonate (6:2FTS) (Defence, 2015). These compounds are PFAS that are commonly present in certain types of AFFF.

In March, 2015, the Department of Infrastructure and Regional Development published the Guideline for Environmental Management 002 "PFC – management actions advice" (GEM 002) (DIRD, 2015). This document is discussed further in Section 2.5.1.

In June, 2015, Airservices Australia commissioned GHD to prepare the report "Managing PFC contamination at Airports, Interim Management Strategy and Decision Framework" (GHD, 2015) which also provides background on the potential presence, transport mechanisms and risks associated with PFAS and presented a recommended management strategy for PFAS impacted land.

The Western Australian Department of Environmental Regulation published "Interim Guideline on the Assessment and Management of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS), Contaminated Sites Guidelines" in February, 2016 (DER, 2016). This document provides recommendations on the assessment, management and remediation of PFAS impacted sites.

enHealth published "Interim national guidance on human health reference values for per- and poly-fluoroalkyl substances for use in site investigations in Australia" in June, 2016 (enHealth, 2016). This guidance provides recommended Tolerable Daily Intake values, Drinking Water Quality Guidelines values and Recreational Water Quality Guideline values for the sum of PFOS and perfluorohexane sulfonate (PFHxS) as well as PFOA.

The QLD Department of Environment and Heritage Protection published the "Operational Policy for the Environmental Management of Fire Fighting Foam" in July, 2016 (DEHP, 2016). This policy sets out requirements for fire fighting foams or materials contaminated with fire fighting foams in Queensland. Under this policy, foams containing PFOS or PFOA and it's precursors must be withdrawn from service. C6 chain flourotelemer foams can be used under certain conditions.

A summary of published guideline values for PFAS in soil, surface water and groundwater is provided in Table 1 on the following page.



Table 1 : Summary of selected Australian PFAS guideline values

Exposure scenario	PFOS	PFOS + PFHxS	PFOA	6:2 FTS
Tolerable Daily Intake (µg/kg/d)		0.15 ¹	1.5 ¹	
Drinking Water Quality Guideline (µg/L)	0.2 ^{2,5,6}	0.51	5 ¹ 0.4 ^{2,5,6}	5 ^{2,5,6}
Recreational Water Quality Guideline (µg/L)	26	51	50 ¹ 4 ⁶	50 ⁶
Ecological – freshwater (High conservation value – 99% species protection) (µg/L)	0.000233		19 ³	
Ecological – freshwater (Slightly – moderately disturbed ecosystems – 95% species protection) (µg/L)	0.13 ³ 6.66 ^{5,6}		220 ³ 2900 ^{5,6}	
Ecological – freshwater (Highly disturbed ecosystems – 90% species protection) (µg/L)	2 ³		632 ³	
Ecological – freshwater (Highly disturbed ecosystems – 80% species protection) (µg/L)	31 ³		1,824 ³	
Soil – human health residential (mg/kg)	4 ⁴ 6 ^{5,6}		16 ^{5,6}	60 ^{5,6}
Soil – human health industrial / commercial (mg/kg)	100 ⁴ 90 ^{5,6}		240 ^{5,6}	900 ^{6.6}
Soil – ecological terrestrial (mg/kg)	0.373 – 4.71 ^{5,6}		3.73 ^{5,6}	
Surface water – human health consumption of fish (ng/L)	0.65 ^{5,6}		300 ^{5,6}	6.5 ^{5,6}

Sources:

- enHealth (2016)
- Defence (2016) based on US EPA provisional guidance. Draft Australian and New Zealand Water Quality Guidelines applicable to aquatic organisms as published 3 in DER (2016) DER (2016)
- 4
- Airservices Australia Guidance (GHD 2015)
- Defence (2016) based on US EPA Region 4 guidance.

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2.5.1 GEM 002 - PFC - management actions advice

GEM 002 – PFC Management Actions Advice (DIRD, 2016) provides a guide to operators of undertakings at federal leased airports on the reasonable and practicable management of PFAS which may be encountered during building activities. GEM 002 was applicable until 30 June, 2016 and SMA has been advised by DIRD that it should still be applied.

The guidance recommends that a Trigger Assessment is conducted to determine if there is a likelihood of known or potential PFAS contaminating activities occurring (presently or in the past) on or in the vicinity of the building activity site. If the Trigger Assessment identifies a likelihood of known or potential contamination then a Preliminary Site Investigation should be conducted as per Schedule A of the National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended in 2013 (referred to as the NEPM) (NEPC, 2013).

Where the Preliminary Site Investigation indicates there is reason to expect PFAS contamination or there is not sufficient information to determine otherwise, then a Detailed Site Investigation should be conducted in accordance with Schedule A of the NEPM.

2.5.2 NSW EPA Decision Tree for Prioritising Sites Potentially Contaminated with PFASs

The NSW EPA commissioned Environmental Risk Sciences Pty Ltd (enRiskS) to prepare a decision tree for prioritising sites potentially contaminated with PFAS (hereafter referred to as the NSW EPA Decision Tree) (enRiskS, 2016). The NSW EPA Decision Tree states that an initial screening assessment involving collection of surface water, groundwater and soil samples is to be undertaken at each potentially impacted site, in the areas of the site most potentially impacted.

Trigger points have been defined based on total PFAS concentrations in the collected samples. Based on these trigger points, a site is classified as either one of the following priority levels:

- Priority 1 sites where PFAS concentrations are elevated and there is a pathway by which people or the
 environment can be exposed to the contamination. Detailed investigations are to be carried out on these
 sites as soon as possible and short term management options to reduce the risks associated with the
 contamination may also be needed.
- **Priority 2** sites are those where PFAS is present above screening guidelines but at lower concentrations than Priority 1 sites. Detailed investigations of these sites are to be performed following the Priority 1 sites.
- **Priority 3** sites are those sites where PFAS concentrations are not detected or are detected below the relevant thresholds. These sites are unlikely to need further investigation but a final decision on the need for such an investigation is to be confirmed once the Australian guidelines for these chemicals are finalised.

The trigger point values are summarised in Table 2 below.

Table 2: NSW EPA Decision Tree trigger point values (summarised from enRiskS, 2016)

Trigger point descriptor	Surface water	Groundwater	Soil leachate
Trigger Point 1 Elevated contamination	10 µg/L	10 μg/L	100 μg/L
Trigger Point 2 Current screening guideline	0.1 μg/L	0.1 μg/L	1 μg/L
Trigger Point 3 Low level of contamination	0.05 μg/L	0.05 μg/L	-
Limit of Reporting as at February, 2016	0.01-0.05 μg/L	0.01-0.05 μg/L	-



For surface water and groundwater samples, Priority 1 sites are those where on-site results are above Trigger Point 1 or where off-site results exceed Trigger Point 2. Priority 2 sites are those where on-site results are between Trigger Point 1 and Trigger Point 3 or off-site results are between Trigger Point 2 and Trigger Point 3. Priority 3 sites are those where on or off-site results are below Trigger Point 3.

For soil leachate samples, Priority 1 sites are those where results are above Trigger Point 1. Priority 2 sites are those with results between Trigger Point 1 and Trigger Point 2. Priority 3 sites are those with results below Trigger Point 2.



3. Site setting

3.1 Overview

The Airport consists of approximately 196 hectares of commonwealth land located approximately 60 km from the Sydney Central Business District (CBD). The Airport has four runways, two for powered fixed wing aircraft and two for gliders. One of the runways has a sealed asphalt surface while the other three runways are grass. There is also a designated Helicopter Landing Site in the northern area of the Airport. Approximately 34 hectares of land within the Airport property is leased to around 42 tenants. These tenants generally carry out commercial aviation, recreational aviation and rural activities. The NSW Rural Fire Service operates helicopters for emergency services during the bushfire season. There is one fuel service provider at the Airport, using a bowser system (SMA, 2015).

An aerial photo of the Airport and surrounding areas is provided as **Figure 1** below.



Figure 1: Aerial photo of the Airport and surrounding area (source: SMA, 2015)

3.2 Surrounding properties

The Nepean River is located adjacent to the Airport's northern, western and southern boundaries. The land to the immediate east of the Airport and the land on the opposite side of the Nepean River can generally be classified as rural residential. The main agricultural activity is grazing.

3.3 Topography and hydrology

The Airport land is generally flat with an elevation of approximately 60 meters Australian Height Datum (AHD). The land in the east of the Airport property, where the main hangars and buildings are located is on slightly higher ground than the remainder of the property. Large parts of the Airport property fall within the 1 in 100 year flood zone.



Stormwater on the developed parts of the Airport property flows to drains and channels which then discharges at a single point to the Nepean River (SMA, 2013 and URS, 2000). Stormwater flows in the upper part of the property flow overland to the Nepean River (URS, 2000). There are currently no plans available which show the locations of drainage infrastructure and the discharge points to the Nepean River. A recommendation for SMA to obtain this information is included in Section 7.

The Nepean River is part of the Hawkesbury Nepean Catchment. There are a series of weirs along the Nepean River which partially regulate flow. Sharpes Weir is the only weir located directly adjacent to the Airport property (see Figure 1). While the upper Nepean River includes several dams for water supply purposes, the part of the river adjacent to and downstream of the Airport is not used for drinking water supply. However water from the river downstream of the Airport is used for agricultural and industrial purposes as well as recreational uses such as water sport and fishing.

Sydney Water operates the West Camden Sewage Treatment Plant approximately 800 meters south of the southern Airport property boundary. The treatment plant discharges to Matahil Creek which flows into the Nepean River opposite the Airport's southern boundary.

3.4 Soils and geology

Review of the 1:100,000 Wollongong – Port Hacking Soil Landscape Series Sheet 9029-9129 (Soil Conservation Service of NSW, 1990) indicated that the area in which the Airport is located has soils primarily within the Theresa Park landscape grouping. This is noted to consist of tertiary and quaternary fllodplain and terraces of the Nepean River south of Cobbity Creek. Soils consist of Red Earths and Red Podzolic Soils on terraces and minimal Praire Soils on the current floodplain. Alluvial bedding is sometimes evident with Alluival Soils. In the drainage lines Solodic Soils occur. These soils are highly variable and include poorly structured orange to red silty loams, brown loams and sandy loams.

The eastern, more elevated area of the Airport property is noted as having soils in the Blacktown landscape group. Soils in this landscape are shallow to moderately deep Red Pozolic Soils and Brown Podzolic Soils on crests, upper slopes and well drained areas; deep Yellow Podzolic Soils and Soloths on lower slopes and in drainage depressions and localised areas of poor drainage.

Review of the 1:100,000 Wollongong – Port Hacking Geological Sheet 9029-9129 (Geological Survey of NSW, 1985) indicated the Airport is within an area underlain by quartz and lithic "fluvial" sand, silt and clay. The eastern portion of the Airport property is also noted to have high-level alluvium. These units overlie Bringelly Shale of the Wianamatta Group.

3.5 Hydrogeology

Regional groundwater flow at the Airport is expected to be towards the Nepean River. Shallow groundwater is expected to be perched above the residual weathered bedrock and to be recharged predominantly by the infiltration of surface water falling onto the unsealed surfaces of the site. There are several groundwater wells at the Airport. These were installed by Airport tenants with underground storage tanks for the purpose of monitoring for leaks (SMA, 2013). No further information on these wells and the depth to groundwater was made available to Jacobs.

3.5.1 Beneficial use of groundwater

SMA has advised that there is currently no beneficial use of groundwater at the Airport.

At the time of preparing this risk assessment, Jacobs conducted a search of the Office of Water groundwater database. There were no registered wells identified within the Airport property. Several registered wells were identified on the opposite side of the Nepean River. The two nearest wells to the north of the Airport (GW024355 and GW GW024356) are listed as being for exploration purposes. GW105789 to the west of the Airport is listed as being for domestic supply and stock watering. The information provided indicates that the well has a depth of 139 m and a standing water level of 39 m. GW027792 to the west of the Airport is listed as



having an intended purpose of domestic use and an authorised purpose of industrial use. The well has a depth of 121.9 m. The standing water level was not provided.

The locations of the registered wells are shown on Figure 2 below.

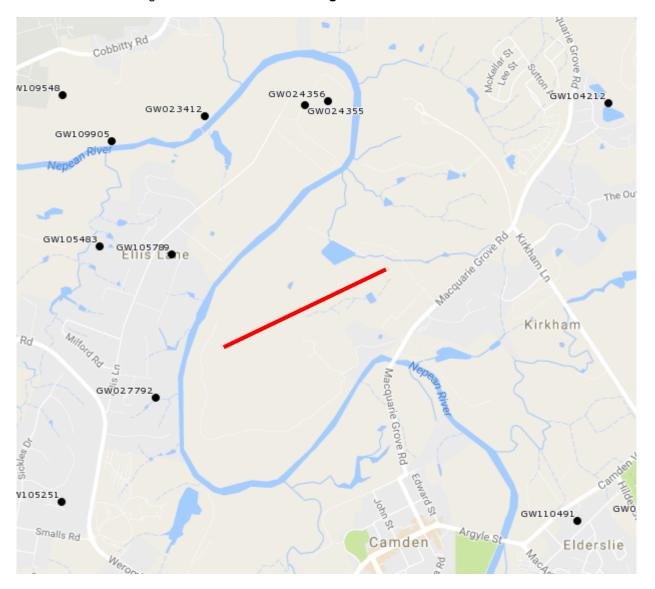


Figure 2 : Registered water bores around Camden Airport (Office of Water website search on 22 November, 2016). Red line indicates position of the main runway.



4. Potential sources of PFAS at the Airport

This section provides a historical overview of operations at the airport and the findings from our communications with the Department of Infrastructure and Regional Development (DIRD), Airservices Australia, the NSW Rural Fire Service and NSW Fire & Rescue.

4.1 Historical overview

The Airport was initially developed in 1935 as a private aerodrome on the property owned by the Macarthur-Onslow family. The Federal Government acquired the Airport during World War II and it was used for training, anti-submarine, convoy escort, reconnaissance, general air and meteorological roles. A large US Army Air Corp was based and barracked at the Airport (SMA, 2015).

The Department of Civil Aviation owned the Airport from 1946 to 1983 when the ownership was transferred to the Federal Airports Corporation. Ownership was then transferred to the Sydney Airports Corporation Limited (SACL) in 1998. Camden Airport Limited (CAL) was formed at this time and was wholly owned by SACL. SMA took control of CAL in 2003 (SMA, 2015).

4.2 Information from the Department of Infrastructure and Regional Development

A letter was sent to the Department of Infrastructure and Regional Development (DIRD) requesting information on historical activities at the Airport that may have involved the use or storage of PFAS containing materials. A response from DIRD (letter to Bankstown Airport Limited dated 23 September, 2016) stated that the historical files reviewed by DIRD did not identify the use of PFAS or specific locations which may be of interest.

4.3 Information from Airservices Australia

Jacobs contacted Airservices Australia (Airservices) to request information on the historic use and storage of AFFF at the Airport.

In an email response to Jacobs, Airservices advised that Airservices was created in 1995 and has not carried out an Aviation Rescue and Fire Fighting (ARFF) service at Camden Airport. It is Airservices' understanding that the ARFF service ceased at Camden in around 1977, prior to the creation of the Civil Aviation Authority (CAA). Further, it is Airservices' understanding that only non-fluorinated foam was used at Camden. This aligns with Airservices submission to the Senate Inquiry into Contamination at Commonwealth, State and Territory sites in Australia where Fire Fighting Foams containing Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA) (Airservices, 2016).

Information provided by Airservices to Jacobs in 2010 indicated that there was no fire training ground at the Airport. However there was an ARFF fire station located in the northern part of the hangar area. Staffing of the fire station was restricted to weekends and AFFF was not used.

4.4 Information from the NSW Rural Fire Service

A request for information on the historical or current use of AFFF at the Airport was submitted to the NSW Rural Fire Service (NSW RFS). The NSW RFS responded in a letter to SMA dated 15 July 2016. In this response, NSW RFS stated that:

- NSW RFS historically used AFFF containing PFOS and PFOA. These foams were phased out with no further purchases from 2005 and a recall of all existing stocks in 2007.
- NSW RFS noted that AFFF, also known as Class B foams, were designed and are used for petrol and oil
 fires, not bush fires. Incidents that NSW RFS respond to seldom require Class B foam. However all NSW
 RFS appliances are equipped with Class B foam.



- Aircraft operating by or for NSW RFS from Camden Airport would not be loaded with AFFF but with foam products specifically targeted at bushfires, known as Class A foams. Class A foams do not contain PFOS or PFOA.
- The application of AFFF is a standard operational procedure in an aircraft incident involving the risk of fire.
 Records held by NSW RFS indicate a number of incidents involving aircraft prior to 2007, the majority offsite in surrounding suburbs such as Greendale, Oran Park, Ellis Lane and Cobbity. The only known
 incident at Camden Airport occurred on 11 May 2001, where a RAAF Caribou landed with one engine.
 Records do not indicate whether fire fighting foam was used in this incident.

4.5 Information from NSW Fire & Rescue

NSW Fire & Rescue was requested to provide information on fire incidents at the Airport, whether AFFF was used during these incidents and the approximate amount of AFFF applied.

In NSW Fire & Rescue's response, it was noted that computerised records of incidents are available from 1987 and AFFF was phased out by NSW Fire & Rescue in 2007. NSW Fire & Rescue advised that they did not respond to any incidents at Camden Airport during this period.

4.6 Australian Transport Safety Bureau incident investigations

Jacobs conducted a search of the Australian Transport Safety Bureau aviation safety investigations and reports database for all incidents at Camden Airport. A total of 34 incidents were identified, a number of which related to forced landings outside of the airport property (in some cases several kilometres from the Airport). The incident reports did not indicate whether fire services responded or whether foam was applied.

4.7 Information from SMA

SMA advised Jacobs that their records do not indicate any incidents at the Airport where AFFF may have been applied. No historical activities involving the storage or use of AFFF were identified.

4.8 Information from previous investigations

Jacobs reviewed the Contaminated Sites Register and associated reports for the Airport maintained by SMA. The purpose of this review was to identify potential PFAS sources at the Airport and soil, surface water or groundwater investigations where analysis of PFAS has been performed.

No potential PFAS sources were identified from this review. It is noted that URS (2000) reported the presence of a landfill in the western portion of the Airport property. This was estimated to be approximately 30 meters x 20 meters in area and was used to dispose of waste materials from the Airport. The waste material mainly comprised fibre-glass markers, empty drums, construction debris, wooden pallets and sundry waste materials. No waste oils or other similar organic materials were reportedly dumped in the landfill. The landfill area has been covered with fill material and revegetated. Based on the information available, Jacobs considers that the landfill is unlikely to be a significant source of PFAS.

4.9 Current activities

SMA were not aware of any activities at the Airport that use or store products known to contain PFAS.

There are a large number of aviation related activities undertaken by tenants at the Airport where aviation hydraulic fluid may be used and / or stored. Hydraulic fluid may also leak from aircraft in parking areas. As noted in Section 2, small amounts of PFAS (<0.1%) can be present in aviation hydraulic fluids.



5. Previous PFAS investigations

A review of previous investigations and monitoring reports was undertaken to identify studies where PFAS was included in the laboratory analysis. The only investigation identified which included PFAS analysis was the surface water sampling undertaken in February, 2016 (SMA, 2016).

A biannual surface water monitoring program is in place at the Airport as part of the Airport's Water Quality Management Plan (BAL, 2013). Surface water samples are collected from seven locations across the Airport property (see **Figure 3** below).

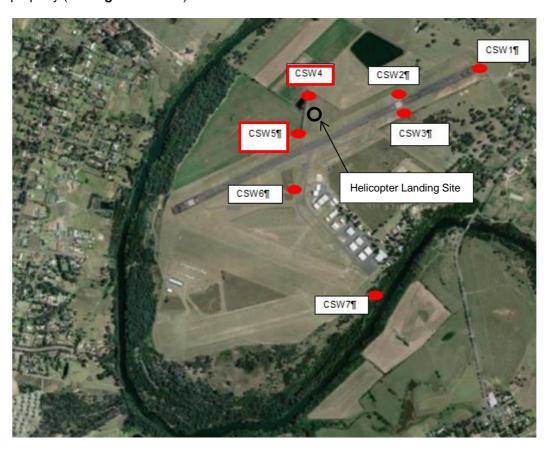


Figure 3 : Stormwater monitoring locations (SMA, 2016). Note: Red boxes indicate locations where PFAS was detected in the February, 2016 sampling round.

Surface water samples were collected from six location (CSW1 was dry) in February, 2016. The report noted that a total of 0.4 mm of rainfall was recorded at Camden Airport in the week preceding the date of the February sampling event. As such, it was not considered to be a wet weather sampling event.

All samples were analysed for PFOS, PFOA, 6:2 Fluorotelomer sulfonate (6:2 FtS) and 8:2 Fluorotelomer sulfonate (8:2 FtS). PFOS concentrations above the laboratory limit of reporting were detected in samples from locations CSW-4 (0.06 μ g/L) and CSW-5 (0.26 μ g/L). These samples were collected from an open drain located close to the Helicopter Landing Site. The remaining PFAS analytes were below the laboratory limit of reporting at all locations.

In terms of the NSW EPA Decision Tree (see Section 2.5.2), based on a maximum reported concentration of PFOS in on-site surface water samples of 0.26 μ g/L, the Airport would be classified as a Priority 2. However it is noted that the NSW EPA trigger points have been set for total PFAS.



6. Preliminary conceptual site model

A preliminary conceptual site model for the risks associated with PFAS contamination at the Airport has been developed. The purpose of a conceptual site model is to identify known or potential sources of contamination, human health and environmental receptors including exposure mechanisms and pathways between the sources and receptors. A risk is present where there is a complete source – pathway – receptor linkage. The conceptual site model can also be useful in identifying data gaps for further investigation.

The identified potential sources, transport mechanisms, receptors and associated exposure mechanisms are summarised in **Figure 4** below.

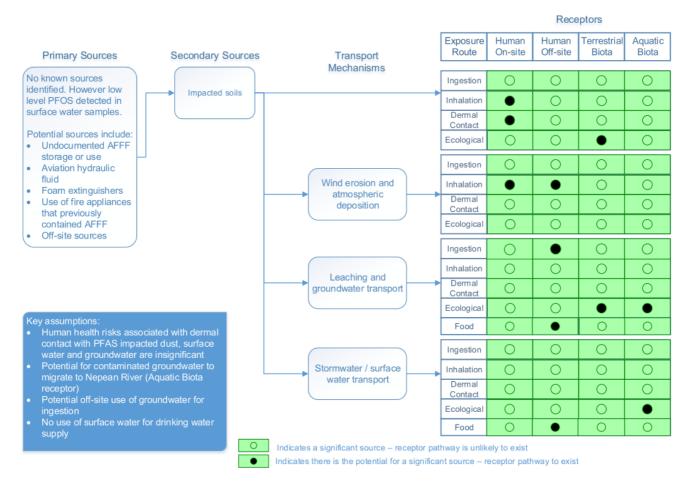


Figure 4: Preliminary conceptual site model for PFAS contamination at Bankstown Airport

There are a number of source – receptor pathways shown in **Figure 4** as potentially significant. This is based on a conservative assessment of potential exposure pathways and receptors associated with PFAS contamination. However no known sources of PFAS at the Airport have been identified as part of this preliminary risk assessment and therefore complete source – receptor pathways may not exist.

Low level concentrations of PFOS have been identified in surface water samples and therefore further investigations will be required in order to reduce the current level of uncertainty on contamination risks. Potential sources of PFAS include undocumented AFFF storage or use, aviation hydraulic fluid, use of foam fire extinguishers, use of fire appliances that have contained AFFF and off-site sources.



7. Conclusions and recommendations

PFAS are emerging contaminants and their sources, fate and transport and toxicity is still not well understood. Similarly, the regulatory framework for the characterisation, assessment and management of risks associated with PFAS is evolving.

No PFAS investigations of soil or groundwater have been undertaken at the Airport. Surface water sampling undertaken by SMA in February, 2016 identified low level concentrations of PFOS ($0.06~\mu g/L$ and $0.26~\mu g/L$) in two samples collected from an open drain close to the Helicopter Landing Site. It is noted that these samples were collected during dry conditions. Potential sources of PFAS that may have contributed to these concentrations include undocumented storage or use of AFFF, aviation hydraulic fluid, use of foam fire extinguishers, use of fire appliances that contained foam and off-site sources. Based on these two sample results alone, the site would be a Priority 2 site under the NSW EPA Decision Tree for prioritising sites potentially impacted with PFAS. The NSW EPA Decision Tree states that Priority 2 sites are to be further investigated once investigations at Priority 1 sites are completed.

There is no known beneficial use of groundwater at or in the near vicinity of the Airport. Groundwater from the Airport likely discharges to the Nepean River and therefore risks to beneficial users of groundwater on the opposite side of the Nepean River are considered to be low.

The Draft Australian and New Zealand Water Quality Guidelines for ecological impacts associated with PFOS in freshwater range from 0.00023 μ g/L for high conservation value ecosystems (99% species protection) to 31 μ g/L for highly disturbed ecosystems (80% species protection). It is likely that the guideline value for slightly to moderately disturbed ecosystems (PFOS concentration of 0.13 μ g/L) would apply for the Nepean River based on general guidance issued by the NSW Government (NSW DEC, 2006).

Therefore, the potential for surface water containing PFAS from the Airport to discharge to the Nepean River and impact on aquatic ecosystems is likely the most significant source – receptor pathway identified in this preliminary risk assessment. In order to further assess this risk, it is recommended that SMA undertakes the following:

- 1) Survey of the surface water drainage network at the Airport. This should include identification of surface water drainage structures, potential overland flow paths and discharge points to the Nepean River.
- 2) Upgrade to the current surface water quality monitoring program. Once the survey of the surface water drainage network has been completed, a review of the surface water sampling locations should be undertaken. These should include sampling locations in the Nepean River upgradient, of the Airport discharge points, at the discharge points and downgradient of the discharge points. The analysis suite should also be upgraded to include a more comprehensive suite of PFAS compounds. As a minimum, perfluorohexane sulfonic acid (PFHxS) should be included in all future PFAS analysis.
- 3) GEMS 002 PFC management actions advice. For the purposes of GEMS 002, this Preliminary PFAS Risk Assessment could be used as a Trigger Assessment for new activities at the Airport. The risk of significant PFAS contamination to be present at the Airport is considered low and further investigation is not considered necessary. However, should a detailed site investigation be undertaken for other reasons (ie. potential presence of non-PFAS contaminants) then it is recommended that PFAS compounds are included in the laboratory analysis suites. Additional data on PFAS concentrations in soil, groundwater or surface water at the Airport should be compiled to support updates to the Conceptual Site Model and revisions of the risk assessment in the future.



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JACOBS°

Preliminary Contamination Investigation

South West Precinct, Bankstown Airport

23 April 2018





Client Name: Bankstown Airport Limited

Document Title: Preliminary Contamination Investigation - SW Precinct Bankstown Airport

Document No.: 1

Revision: Draft

Revision Date: 23 April 2018

Project/Proposal No: IA179600

Project Manager: Michael Stacey

Prepared By: Michael Stacey

Approved By: Michael Stacey

File Name: J:\IE\Projects\04_Eastern\IA179600\21

Deliverables\SWP_CONT_RPT_JACOBS_230418.docx

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Appendix A - Summary of Analytical Results



Executive Summary

Jacobs Group (Australia) Pty Ltd (Jacobs) was commissioned by Bankstown Airport Limited (BAL) to prepare a preliminary contamination investigation (PCI) to support the Major Development Plan (MDP) application for the South West Precinct (SWP) located at Bankstown Airport.

The PCI has been prepared in general accordance with and provides strategies for investigations and management of contaminated materials in line with the following nationally endorsed guideline documents:

- NEPC National Environment Protection (Assessment of Site Contamination) Measure 1999, as revised 2013 (NEPM, 2013)
- HEPA (January, 2018) PFAS National Environmental Management Plan (PFAS NEMP).

THE PCI involved a review of available information in context of current nationally endorsed guideline documents and the *Airports (Environmental Protection) Regulations 1997* (AEPR).

Based on the information provided, significant investigation effort has historically (since 2005) been undertaken across SWP (not including the western portion of the site). Over 300 test pits and boreholes have been excavated across the site to assess contamination with over 400 samples submitted for laboratory analysis.

The results of the investigations undertaken indicated the following:

- Bonded and friable asbestos containing materials (ACMs) have been identified sporadically at the surface
 and buried in fill material and stockpiles present across the SWP. Friable asbestos was identified in one
 sample only.
- Benzo(a)pyrene contamination has been identified in stockpiled material at isolated locations across the SWP (DLA, 2014). The elevated benzo(a)pyrene concentrations are likely to be associated with bitumen identified within the material sampled.
- Localised hydrocarbon staining was present in the vicinity of the aviation museum.

The information review has also identified a number of data gaps with the respect to the SWP development areas as detailed below:

- Asbestos has been identified sporadically at the surface and buried in fill material and stockpiles present across the SWP. Previous investigations and remedial works undertaken at the SWP have detailed that measures will be required to manage the asbestos identified at the site including remediation action plans, unexpected finds protocols and validation (should earthworks be undertaken at the site). In accordance with the remediation hierarchies and preferred approaches for the management of asbestos on sites detailed in national guidance and supporting documents, the current proposed approach for the SWP is to manage the asbestos in soils in situ under appropriate management plans.
- Hydrocarbon stained areas have been previously observed surrounding the aviation museum associated
 with leaks from parked planes. The contamination status of these areas are not known and will require
 investigation and remediation/management (should contamination be identified)
- A fire incident (2003) was reported within the SWP. The presence of per- and polyfluoroalkyl substances (PFAS) contamination within this area is not known and will require investigation and remediation/management (should contamination be identified)



- The western corner of the SWP has not been investigated as part of previous studies. In consideration of
 the general airport use of this area and presence of a former spray painting facility, the western corner of
 the SWP will require investigation.
- A number of previous investigations were undertaken prior to the implementation of current national
 guidance for the assessment and management of contaminated sites. New national guidance requires
 selected contaminant compounds to be assessed in different ways to that of the historical guideline
 values. To assess previous laboratory data in context of current guidelines, additional samples will need
 to be collected and analysed to allow for comparisons.
- Volatile organic compounds (VOC) are known to be present in groundwater to the east of the SWP (within
 the former Boeing site). Groundwater adjacent to the eastern boundary of the site will need to be
 investigated for VOC to assess potential vapour partitioning and associated risk (should elevated
 concentrations of VOC be identified). If vapour risks are identified, designs will need to include adequate
 measures to suitably reduce vapour risks to site occupants,

Jacobs findings from the information review are generally consistent with the conclusions and recommendations detailed in previous investigations (i.e. that the site in its current condition is considered suitable for commercial/industrial land use).

Based on the results of the investigations undertaken to date and subject to the results of the proposed investigations (detailed within this PCI), the site in its current condition is considered suitable for commercial/industrial land use subject to appropriate environmental management plans being implemented at the site during both construction and occupation to manage potential exposure to site occupants, adjacent land users and environmental receptors.



1. Introduction

Jacobs Group (Australia) Pty Ltd (Jacobs) was commissioned by Bankstown Airport Limited (BAL) to provide contamination assessment and remediation advice to support the Major Development Plan (MDP) application entitled "Bankstown Airport – South-West Precinct Site Works and Warehouse MDP".

Jacobs understands that there are plans to redevelop the South West Precinct (SWP) for predominantly commercial / industrial land use together with a mixed use service precinct. To support the MDP, historical contamination issues at the SWP need to be understood at and an assessment made as to whether the site is suitable or can be made suitable for the proposed commercial / industrial land use.

As part of the provision of the contamination assessment and remediation advice, Jacobs has prepared the following preliminary contamination investigation (the subject of this document) to support the development of a detailed investigation plan (if required) for the SWP to assess contamination in context of its proposed use involving:

- A review and consolidation of historical and available information (with respect to contamination)
- An assessment of data gaps
- Development of an investigation plan to address the data gaps identified in consideration of the proposed commercial / industrial land use.

The preliminary contamination investigation (PCI) was prepared in accordance with the requirements for the preliminary site investigation as detailed in Schedule B2 of the NEPC *National Environment Protection* (Assessment of Site Contamination) Measure 1999, as revised 2013 (NEPM, 2013).

Based on the known understanding of the contamination status of the SWP, the aim of the PCI and subsequent investigations is intended to support the reuse of pre-existing on-site materials in context of the proposed commercial / industrial land use on airport land.



2. Background

The SWP is predominantly vacant airport land, with a small portion occupied by an aviation museum, some redundant buildings and a services building. The redundant buildings, located on the western corner of the SWP were formerly used as flying schools and a spray painting facility.

In 2008, "Stage 1" bulk earthworks were undertaken across the SWP to facilitate proposed redevelopment including the construction of a raised platform and drainage works – referred to as "Stage 1". Stockpiling of material from Lots 801 and 803 (understood to be located on airport land to the east of the SWP) is referred to as Stage 2.

Numerous detailed contamination investigations have been undertaken across the SWP to date including over 300 boreholes and test pits. The investigations reviewed to support the assessment of contamination at the SWP are detailed below:

- Consulting Earth Scientists (November 2005) Stage 2 Environmental Site Assessment: Area 6, Bankstown Airport (CES, 2005)
- Consulting Earth Scientists (April 2009) Environmental Management Plan: Construction Phase, Stage 1
 South West Precinct, Bankstown Airport NSW (CES, 2009)
- DLA Environmental (May 2009) Asbestos Contamination Assessment: South West Precinct Stages 1 and 2, Bankstown Airport (DLA, 2009a)
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- Jacobs (January 2017) Preliminary PFAS Risk Assessment for Bankstown Airport (DLA, 2017).

To assist with understanding the extent of the previous investigations a visual representation was prepared by Crawford Architects for Altis Property Partners (Altis) which details the sampling locations from the previous investigations and specific site features including Stage 1, Stage 2, the western portion of the SWP (Lot 231 in DP 1132273) and the stockpiling from Lots 801 and 803. This contamination summary is presented within the figures section of this report.

2.1 CES, 2005

The CES (2005) investigation was undertaken in October 2005. The investigation was undertaken in accordance with a Sampling, Analysis and Quality Plan (SAQP). The SAQP was prepared in accordance with the following guidelines:



- NSW EPA (1995) Contaminated Sites: Sampling Design Guidelines (NSW EPA, 1995)
- National Environment Protection Measure (NEPM) 1999. Schedule B(2) Guideline on Data Collection, Sample Design and Reporting (NEPM, 1999)

The report was prepared in general accordance with the requirements specified for a Stage 2 ESA as published by the NSW Environment Protection Authority (EPA) in the 1997 *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites* (NSW EPA, 1997).

The site assessment criteria adopted for the investigation was consistent with NSW EPA endorsed guidelines at the time of undertaking the investigation.

A summary of the results of the investigation are detailed below:

- 130 boreholes were excavated in a grid pattern across the SWP. The western portion of the SWP (Lot 231 in DP 1132273) was not investigated.
- The southern portion of the site had been substantially filled. Anecdotal information indicated that the fill was sourced from the M5 Motorway construction site.
- Three stockpiles of construction materials were present along the southern site boundary to the east of the aviation museum and consist of crushed sandstone material with minor concrete content, general construction wastes (asphalt, soil, concrete, rocks) and basalt rocks typically used to fill gabion baskets. A stockpile of wood chips was also present within the aviation museum area. The contamination status of the woodchip stockpile was not assessed.
- The laboratory analysis of fill, soil and stockpile samples for heavy metals, total petroleum hydrocarbons (TPH), monocyclic aromatic hydrocarbons (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), organophosphorus pesticides (OPPs), phenols and asbestos indicated that concentrations of these contaminants were below the soil investigation levels.
- Minor surface staining was noted in the northern and eastern portions of the aviation museum lease area
- No groundwater was observed during the drilling program. Shallow groundwater, where present, is likely
 to be perched above the natural clay soils and is anticipated to flow in a south westerly direction towards
 the Georges River.

Based on the results of the information review and the site assessment, the site was considered suitable for commercial/industrial redevelopment and any excavated material from the site was suitable for reuse on other areas of Bankstown Airport during future commercial/industrial development subject to the following:

- An investigation of the areas of localised spillages observed within the northern and eastern portions will
 need to be undertaken to quantify the level of contamination present within these areas. If contamination
 is present at concentrations exceeding the soil investigation levels, this contamination should be managed
 and/or remediated so that the site is suitable for its proposed use.
- If material is to be removed off-site, it is recommended that additional testing (TCLP) be undertaken to reduce the waste classification to the lowest possible waste classification.

2.2 CES, 2009

The CES (2009) Environmental Management Plan (EMP) was prepared for application on the Stage 1 of the SWP area to provide guidance for the management of bonded Asbestos Containing Material (ACM) impacted fill during the construction of the on-site commercial/industrial facilities and associated elements.



During excavation associated with the bulk earthworks phase of the proposed commercial/industrial development, isolated fragments of bonded ACM as cement sheeting were identified. The ACM was noted during the excavation and placement of fill material across the site that was sourced from the southern fill embankment. Where observed, ACM fragments were collected and disposed off-site. However, it was considered likely that minor quantities of ACM fragments may be present as scattered occurrences within the various fill placements at the site.

To further assess the source of the bonded ACM, test pitting was undertaken within the southern fill embankment on 27 and 29 August 2008. The test pitting indicated that isolated fragments of bonded ACM were present within different fill types within the southern portion of the fill embankment. Consequently, the source of the bonded ACM observed is likely to be the fill material placed within the embankment located at the southern portion of the SWP. This fill was reportedly sourced from the construction of the M5 freeway. Based on the review, the number of test pits excavated across the southern fill embankment in not known.

2.3 DLA, 2009a

The DLA (2009a) assessment was undertaken in April 2009.

A summary of the results of the assessment are detailed below:

- The assessment comprised excavation and bulk sample collection from 89 test pits and a visual inspection of site surfaces across Stage 1 and Stage 2 of the SWP and the aviation museum site.
- 10 samples of fragments of potential ACM were submitted for laboratory identification.
- 23 bulk soil samples were submitted for asbestos fibre identification.
- Asbestos fragments were positively identified across Stage 1 and the aviation museum.
- Asbestos fibres were not identified in the 23 soil samples submitted for identification.
- Minor isolated surface bonded asbestos fragments were located within the north eastern and northern boundary of Stage 1, eastern portion of Stage 2, eastern area of the aviation museum, eastern and northern boundary of the top soil stockpile.

The results of the assessment indicated the presence of minor isolated bonded asbestos fragment contamination within both fill materials of Stage 1, the aviation museum and the top soil stockpile. Minor isolated surface contamination was present within isolated areas of Stage 1, Stage 2, the aviation museum and the top soil stockpile.

The in-situ and surface contamination was assessed as bonded in nature and in good condition, therefore posing minimal risk to human health and the environment in general.

The DLA (2009a) assessment recommended that all asbestos occurrences should be addressed in a professional and responsible manner and for this reason remedial activities should be undertaken.

Further recommendations included prior to any further development or increased access to site, a remediation action plan (RAP) should be implemented to minimise the risk of exposure and provide a site suitable for future construction activities.

2.4 DLA, 2009b

The DLA (2009b) remediation recommendations was prepared and detailed remediation strategies (excavation, spreading and hen picking) for the asbestos identified at the SWP.



2.5 DLA, 2009c

DLA undertook remediation and subsequent asbestos clearance certification of the site known as Bankstown Airport South West Precinct – Stages 1 and 2. Based on the review of the DLA (2009c), only certification was provided for certain areas within Stage 1.

The works associated with DLA (2009c) asbestos clearance certification was undertaken between April and May 2009. This investigation, subsequent inspections and asbestos clearance certifications were conducted in accordance with Part 11 Clearance to Reoccupy an Asbestos Work Area of the NOHSC: 2002 *Code of Practice for the Safe Removal of Asbestos – 2nd Edition 2005*. The bulk soil sampling was conducted in accordance with the NSW EPA (1995) guidelines. A total of 23 bulk soil samples were submitted for laboratory asbestos identification (presence / absence). The remediation works were undertaken in accordance with the DLA (2009a) remediation recommendations.

The remediation involved the excavation and hen picking of the asbestos contaminated areas. The process continued until such a time that the David Lane Associates representative present was satisfied that the contaminated materials had been removed.

DLA concluded that the clearance inspections and soil analysis results were satisfactory and indicated that asbestos containing materials had been successfully removed from the South West Precinct Stage 1, Bankstown Airport. The site could now be accessed and future works undertaken without risk to health or the environment generally.

DLA also provided the following limitation statement within the report. Due to the nature of asbestos fragment material it is never possible to guarantee every fragment of asbestos containing material has been removed. In the unlikely event that soil disturbance uncovers a fragment of an asbestos containing material, given its bonded matrix and isolated nature, this event would not pose an unacceptable health risk from the property or risk to the environment generally. However, all asbestos events should be addressed in a professional and responsible manner and for this reason an Unexpected Finds Protocol has been included for future construction activities in the clearance documentation.

2.6 CES, 2013

The CES (2013) remediation strategy summarized the results of the investigation undertaken between 2005 and 2009 as detailed below:

- Fill depths were mostly less than 2m, but in some cases fill depths over 3m were recorded, generally fill depths are greatest in the eastern part.
- Fill materials comprise mostly sandy and clayey soil, but with minor quantities of demolition materials
 including concrete, bricks, wood, asphalt, road base, aggregate, sandstone and occasionally plastic,
 metal, tiles etc.
- It appeared as though some fill had been introduced to the northern or Stage 1 area since the original investigation by CES in 2005.
- The initial Site Assessment by CES in 2005 noted that the concentrations of all potential contaminants tested in soil and fill samples (including metals, petroleum hydrocarbons, BTEX, PAHs, organochlorines, organophosphates, phenols and asbestos) on the site were below the appropriate soil investigation levels for commercial and industrial land uses.



- The CES 2005 report concluded that the site was suitable for commercial/industrial redevelopment.
- Additional investigations by CES in 2008 during earthworks identified the presence of some asbestos
 cement pieces in some areas of the fill. Subsequent investigations over the whole site area by DLA in
 2009 found asbestos fragments in 3 of 40 test pits in the Stage 1 area (and as visible surface fragments
 in much of the strip adjoining the north-eastern boundary of Stage 1). DLA also found asbestos fragments
 in several test pits within the Australian Aviation Museum area (which was within the Stage 2 area).
- Some remediation of asbestos was then carried out in the Stage 1 area in accordance with the DLA Remediation Recommendations (also in May 2009) in that the areas of the 3 test pits were excavated and the fill materials 'hen picked' to remove the fragments of asbestos material. These materials and each of the pits were then given a visual clearance certification that no asbestos fragments remained present; also a bulk soil sample was collected from each and subjected to analysis for asbestos fibres (these all showed no asbestos fibre presence).
- The DLA asbestos clearance report noted that while the 'remedial' works were specifically targeted at where the asbestos contamination had previously been reported, it was also possible (even likely) that asbestos fragments are still present in other areas of Stage 1, though not observed in the other test pits dug. For this reason, DLA included an 'Unexpected Finds Protocol' in their asbestos clearance report, to be applied in any future earthworks or construction activities at the site.
- Note that no 'remediation' works appear to have been undertaken in the Stage 2 or Australian Aviation Museum area (where asbestos was also found by DLA).
- Although asbestos cement fragments have been found and are known to be still present in some areas, particularly in the Stage 2 area, it is important to note that there have been no laboratory analyses of fill samples (by either CES or DLA) which have showed the presence of asbestos fibres.
- Localised staining of the surface was noted in parts of the Aviation Museum area, probably a result of spillage of oil and fuels, and should be assessed to determine whether the levels of contamination exceed the appropriate site criteria.

CES (2013) considered that there had been adequate environmental investigations and soil and fill assessment of the subject site to properly characterize the sub-surface conditions for the proposed redevelopment.

2.7 DLA, 2014

The DLA (2014) investigation was undertaken in April 2014. The investigation targeted approximately 80,000m³ of stockpile material spread across approximately 2.7ha which had been imported to the SWP. The source of the stockpiled material was not detailed in the report. General information with respect to the investigation is detailed below:

- The investigation was subject to data quality objectives consistent with the National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (NEPM, 2013) and Australian Standard (AS) 4482.1-2005 Guide to the investigation and sampling of sites with potentially contaminated soil Part 1: Non-volatile and semi-volatile compounds.
- The sampling program was designed in accordance with the NSW EPA (1995) guidelines.
- Sampling and analysis was undertaken in accordance with the NSW EPA (1995) guidelines, NEPM 2013 and AS4482.1-2005.



 Site assessment criteria was based on Schedule B1 Guideline on the Investigation Levels for Soil from the NEPM (2013) Table 1(A)1 Column A – Residential A HIL Criteria; and NSW EPA Guidelines for the NSW Site Auditor Scheme, second edition 2006.

A summary of the results of the investigation are detailed below:

- 60 test pits were excavated in a grid pattern across the stockpiled material.
- Brown gravelly clay fill was found over the majority of the assessment area to a maximum depth of 4m below stockpile surface from the maximum height of the stockpiled material. Fill soils across the assessment contained minor demolition rubble including bricks, concrete, sandstone and ceramics with minor amounts of asphalt rubble. Very minor amounts of ACM were identified within the stockpile.
- 88 primary samples were collected from the test pits for laboratory analysis for a range of common contaminant compounds including heavy metals, asbestos, Total Recoverable Hydrocarbons (TRH), BTEX, OCP, OPP, PAH and PCB.
- Heavy metals, OCP, OPP, PCB, TRH and BTEX fractions of the soil analytical results were found to comply with the appropriate health investigation levels (HILs) for the site. Two (2) samples were observed to exceed the HILs for benzo(a)pyrene (BaP) toxic equivalency factor (TEQ), however the 95% upper confidence limit (UCL) for BaP TEQ complies with the site assessment criteria (SAC). Given the presence of bitumen/asphalt within the stockpiled material, and the limited nature of the identified presence of elevated PAH compounds, it is considered appropriate to attribute the elevated detections of BaP to fragments of bitumen in soil. Based on limited extent of elevated concentrations within the stockpile, limited distribution of the two (2) exceedances and the compliance of the 95% UCL for BaP TEQ, it is surmised, therefore that the hotspots identified are not statistically significant and that the contamination is immobile within bitumen and does not pose a risk to human health.
- Fragments of fibre cement sheeting were observed in test pits 3, 5, 24, 45 and 47. Fragments were found at varying depths within the fill material and were sporadic with no substantial concentrations observed. The quantity of asbestos observed within these test pits was minimal with one (1) fragment found in each. Asbestos quantification of ACM in soil was assessed against the total volume of the test pit as all ACM fragments observed were included in the gravimetric calculation. No location was found to exceed the w/w% criteria for ACM or asbestos fines (AF) or fibrous asbestos (FA). It is the opinion of DLA that the ACM containing test pits assessed are representative of the remaining two (2) test pits observed to contain asbestos that were unquantified.
- The sampling regime and subsequent assessment and reporting of the site was considered to be adequate to determine the suitability of the site in accordance with the NSW EPA (1997) guidelines. No evidence could be found to infer chemical contamination by petroleum hydrocarbons, pesticides, PCBs or heavy metals at the site. Two (2) minor hotspots of PAH were observed however these are considered to be due to the presence of asphalt fragments in the sample and not representative of wider conditions within the stockpiled soils.
- A minor number of asbestos fragments were observed within the stockpile; however, w/w% analysis
 indicates these do not make the land unsuitable for a residential land use. No detection of AF/FA was
 recorded.
- All samples collected from stockpiled fill material were assessed and found to be compliant with the threshold criteria provided in the NEPM (2013) Column A – Residential with garden / accessible soils, the



most sensitive land use suitability criteria. DLA understood that the proposed future land use of the site was consistent with the definition of Column D – Commercial / Industrial within the NEPM (2013). Therefore, compliance with the most sensitive criteria, Residential A, also indicated compliance with the less sensitive criteria, Commercial / Industrial, concluding that the stockpiled materials were suitable for the future intended land use.

• Further criteria for asbestos stipulates that no visible asbestos is to be present at the surface (100mm). Therefore, if reshaping or spreading of stockpile materials is undertaken, an inspection of any new surface created should be undertaken to ensure compliance with NEPM (2013) guidelines.

2.8 DLA, 2015

The DLA (2015) investigation was undertaken in March 2015. The investigation targeted approximately 15,000m³ of stockpile material spread across approximately 0.8 hectares which had been imported to the SWP. The source of the stockpiled material was reportedly from Lot 803 Steel Street, Bankstown Airport.

General information with respect to the investigation is detailed below:

- The investigation was subject to data quality objectives consistent with the NEPM (2013) and AS4482.1-2005.
- The sampling program was designed in accordance with the NSW EPA (1995) guidelines.
- Sampling and analysis was undertaken in accordance with the NSW EPA (1995), NEPM (2013) and AS4482.1-2005.
- Site assessment criteria was based on Schedule B1 Guideline on the Investigation Levels for Soil from the NEPM (2013) Table 1(A)1 Column A – Residential A HIL Criteria and the Airports (Environment Protection) Regulations 1997 (AEPR, 1997).

A summary of the results of the investigation are detailed below:

- 20 test pits were excavated in a grid pattern across the stockpiled material.
- Brown gravelly clay fill was found over the majority of the assessment area to a maximum depth of 3.6m below stockpile surface from the maximum height of the stockpiled material. Testing was limited to the stockpile rather than the fill previously tested in May 2014. Fill soils across the assessment contained minor demolition rubble including bricks, concrete, sandstone and ceramics with minor amounts of asphalt rubble. Very minor amounts of ACM were identified within the stockpile.
- 34 primary samples were collected from the test pits for laboratory analysis for a range of common contaminant compounds including heavy metals, asbestos, TRH, BTEX, OCP, OPP, PAH and PCB.
- Heavy metals, pesticides, PCB, TRH and BTEX fractions of the soil analytical results were found to comply
 with the appropriate HILs for the site. One sample collected from test pit 16 tested positive for AF/FA,
 however this detection was suspected to be caused by the smearing of an asbestos fragment during the
 excavation of the test pit and was not indicative of the presence of AF/FA throughout the test pit. Another
 sample was later collected from test pit 16 and recorded no detection of AF/FA.
- Fragments of fibre cement sheeting were observed in test pits 1, 15, 16, 17 and 19. Fragments were found
 at varying depths within the fill material and were sporadic with no substantial concentrations observed.
 The quantity of asbestos observed within these test pits was minimal with one (1) fragment found in each.
 Asbestos quantification of ACM in soil was assessed against the total volume of the test pit as all ACM



fragments observed were included in the gravimetric calculation. No location was found to exceed the w/w% criteria for ACM or AF/FA.

- The sampling regime and subsequent assessment and reporting of the site was considered to be adequate to determine the suitability of the site in accordance with the NSW EPA (1997) guidelines. No evidence could be found to infer chemical contamination by petroleum hydrocarbons, pesticides, PCBs or heavy metals at the site. A minor number of asbestos fragments were observed within the stockpile; however, w/w% analysis indicates these did not make the land unsuitable for a residential land use.
- All samples collected from stockpiled fill material were assessed and found to be compliant with the threshold criteria provided in the NEPM (2013) Column A Residential with garden / accessible soils, the most sensitive land use suitability criteria. DLA understood that the proposed future land use of the site was consistent with the definition of Column D Commercial / Industrial within the NEPM (2013). Therefore, compliance with the most sensitive criteria, Residential A, also indicated compliance with the less sensitive criteria, Commercial / Industrial, concluding that the stockpiled materials were suitable for the future intended land use. All samples were also compliant with AEPR (1997) criteria.
- In its current location the stockpile was stable and based on a visual inspection there was no asbestos at the surface (100 mm) which ensures a safe environment. Given this and the fills compliance with the most sensitive criteria, Residential A, it was considered no further action was required in relation to the stockpile. If reshaping or spreading of stockpile materials was undertaken, an inspection of any new surface created should be undertaken to ensure compliance with NEPM (2013) guidelines.

2.9 Jacobs, 2017

Jacobs were commissioned by BAL to undertake a preliminary per- and polyfluoroalkyl substances (PFAS) risk assessment for the entire Bankstown Airport site. Historical activities at the Airport have included the use of Aqueous Film Forming Foams (AFFF) for firefighting and fire training purposes. At least one of the foam types historically used at the Airport, 3M Lightwater, contained PFAS. Other activities at the Airport may also have involved the use of products containing PFAS. These chemicals have been identified as presenting potential risks to human health and the environment.

Information provided by NSW Fire and Rescue detailed the following:

11/11/2003 – Aircraft fire on runway – low expansion AFFF foam was used. BAL advised that this incident
occurred in an area known as the "southern triangle", north of the aviation museum which has since been
filled.

The approximate location of the 2003 fire incident is provided on **Figure 1**.

The Jacobs (2017) risk assessment recommended that for the purposes of GEMS 002, the risk assessment could be used as a Trigger Assessment for new activities at the Airport. For activities that will be located in or in the vicinity of the identified potential PFAS source areas, Preliminary and Detailed Site Investigations in accordance with Schedule A of the NEPM should be undertaken. For activities located outside these areas, the risk of significant PFAS contamination to be present is considered low and further investigation is not considered necessary. However, should a detailed site investigation be undertaken for other reasons (ie. potential presence of non-PFAS contaminants) then it is recommended that PFAS compounds are included in the laboratory analysis suites.



2.10 Summary

Significant investigation effort has historically been undertaken across SWP (not including the western portion of the site). Over 300 test pits and boreholes have been excavated across the site to assess contamination with over 400 samples submitted for laboratory analysis.

A summary of the investigations undertaken is provided in **Table 2.1**.

Table 2.1: Contamination Investigation Summary

Reports	Test Pits (No.)	Boreholes (No.)	Sample Analysed ¹	Assessment Guidelines
CES, 2005	-	130	263 - Heavy metals 133 - PAH 133 - TPH/BTEX 120 - OCP/OPP 23 - Phenols 19 - Asbestos identification	A and B only. Presence / absence adopted for asbestos guidelines.
CES, 2009	1	ited to visually asset	ss asbestos content in fill. The known.	Presence / absence adopted for asbestos guidelines.
DLA, 2009a	89	-	33 - Asbestos identification	Presence / absence adopted for asbestos guidelines.
DLA, 2009b	No sampling or a	analysis undertaken		
DLA, 2009c ²	-	-	23 - Asbestos identification	Presence / absence adopted for asbestos guidelines.
CES, 2013	No sampling or a	analysis undertaken		
DLA, 2014	60	-	88 - Heavy metals 88 - PAH 88 - vTRH/BTEX 88 - TRH 32 - OCP/OPP 11 - Asbestos identification 6 - Asbestos gravimetric analysis	C and D only.
DLA, 2015	20	-	34 - Heavy metals 34 - PAH 34 - vTRH/BTEX 34 - TRH	C and E only.



			34 - PCB	
			26 - Asbestos identification	
			21 - Asbestos gravimetric analysis	
Jacobs, 2017	No sampling or a	analysis undertaken		

Assessment Guidelines

- A NSW EPA (1994) Contaminated Sites: Guidelines for Assessing Service Station Sites (no longer in force)
- B NEPC National Environment Protection (Assessment of Site Contamination) Measure 1999 (no longer in force)
- C NEPC National Environment Protection (Assessment of Site Contamination) Measure 1999, as revised 2013
- D NSW EPA (2006) Contaminated Sites: Guidelines for the Site Auditor Scheme 2nd Edition (no longer in force)
- E Airports (Environmental Protection) Regulations 1997.

The results of these investigations to date have indicated the following (with respect to contamination):

- Bonded and friable asbestos containing materials (ACMs) have been identified at the surface and buried
 in fill material and stockpiles present across the SWP. Friable asbestos identified in one sample only.
- Benzo(a)pyrene contamination has been identified in stockpiled material at isolated locations across the SWP (DLA, 2014). The elevated benzo(a)pyrene concentrations are likely to be associated with bitumen identified within the material sampled.
- Localised hydrocarbon staining was present in the vicinity of the aviation museum.

Jacobs has undertaken a review of all analytical data provided and have assessed concentrations in context of the NEPM 2013 and AEPR (1997) guidelines. The results of the review are detailed below. Tables providing a summary of the results is provided in **Appendix A**.

- Arsenic (417 samples) 6 samples greater than AEPR EIL (1% of all samples analysed) and 1 sample greater than NEPM EIL (0.2% of all samples analysed).
- Cadmium (417 samples) 2 samples greater than AEPR EIL (0.5% of all samples analysed) and 2 samples greater than NEPM EIL (0.5% of all samples analysed).
- Chromium (417 samples) 2 samples greater than AEPR EIL (0.5% of all samples analysed).
- Copper (417 samples) 8 samples greater than AEPR EIL (2% of all samples analysed) and 2 samples greater than NEPM EIL (0.5% of all samples analysed).
- Lead (417 samples) 1 sample greater than AEPR EIL (0.2% of all samples analysed).
- Mercury (417 samples) 2 sample greater than AEPR EIL (0.5% of all samples analysed) and 2 sample greater than NEPM EIL (0.5% of all samples analysed).
- Nickel (417 samples) 4 samples greater than AEPR EIL (1% of all samples analysed).
- Zinc (417 samples) 6 samples greater than AEPR EIL (1% of all samples analysed).
- Benzo(a)pyrene (255 samples) 11 samples greater than NEPM ESL (4% of all samples analysed) and
 1 sample greater than AER HIL (0.4% of all samples analysed).
- Total PAH (255 samples) 28 samples greater than AEPR EIL (11% of all samples analysed) and 1 sample greater than AER HIL (0.4% of all samples analysed).
- Asbestos-All Forms (27 samples) 18 samples greater than NEPM HIL.

¹ Only soil and material (potential asbestos containing material) samples collected from the SWP. No groundwater sampling to date has been undertaken.

² Samples for asbestos collected for validation of remediation works only. No additional test pits / boreholes excavated.



- Asbestos-ACM (66 samples) 2 samples greater than NEPM HIL
- Asbestos -AF/FA (79 samples) 1 sample greater than NEPM HIL.

The review of the analytical data in context of current NSW EPA endorsed guidelines and the AEPR (1997) indicate that only one sample for Benzo(a)pyrene, one sample for total PAH and 18 samples for asbestos (assuming that all asbestos was identified in soil samples within 300mm of site surfaces, acknowledging that some asbestos is present at the surface of the SWP) exceeded the respective guidance for the protection of human health in context of the site use (i.e. commercial/industrial and airport use). The elevated Benzo(a)pyrene and total PAH concentrations in one sample are likely to be associated with bitumen materials observed at this sample location. These compound are likely to be well bound within the bitumen and are unlikely to be readily leachable. In this bound and low leachable condition, these compounds are unlikely to represent an ongoing risk to environmental (groundwater and surface water) receptors. Asbestos (as both fibres and bonded asbestos) are likely to be present at the surface and throughout the fill material (placed and stockpiled) present across the site. Asbestos does not represent a risk to environmental receptors.

Considering that the majority of the site is highly modified from extensive filling (likely to represent a highly disturbed terrestrial ecosystem with little ecological value), the exceedances of EILs are unlikely to pose a risk to terrestrial ecosystem (if present) within this area.

The Jacobs (2017) risk assessment indicated that potential PFAS contamination sourced from a historical aircraft fire is located within the SWP. The PFAS contamination (if present) is likely to be located below the level of the current site surface (interface between the fill placement and the former ground surface) as the information on the crash preceded the earthworks undertaken on the site. Considering the requirements of the HEPA (January, 2018) *PFAS National Environmental Management Plan* (PFAS NEMP), this area should be subject to detailed site investigation.

Based on the results of the investigations undertaken to date and subject to the results of the proposed investigations (detailed hereinafter), the site in its current condition is suitable for commercial/industrial land use subject to appropriate environmental management plans being implemented at the site during both construction and occupation to manage potential exposure to site occupants and adjacent land users.



3. Data Gaps

The following is based on a review of available information, site understanding and an assessment of risks (with respect to contamination) which may impact upon the development of the SWP if not addressed.

3.1 Asbestos

Asbestos (bonded and friable) has been identified sporadically across the surface of the SWP and within buried fill materials.

In accordance with NEPM (2013) and Western Australian Department of Health (May 2009) *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (WADOH, 2009) guidelines, the proposed approach to the known asbestos present in fill material at the SWP is to accept that asbestos is present at the site and to develop and implement an Environmental Management Plan (EMP) to control risks associated with the asbestos and potentially other contamination (if present). This would include management of risks during construction and ongoing management of the asset.

Information from nationally endorsed guidelines to support the management of asbestos identified at the site in situ as part the redevelopment of the site is detailed below.

The NEPM (2013) states the following with respect to asbestos materials in soil:

- "Depending on the site-specific circumstances and the proposed remediation approach, conservative management of presumed asbestos contamination may avoid the need for a detailed site investigation".
- "Remediation options which minimize soil disturbance and therefore public risks are preferred. Management of asbestos in situ is encouraged, which may include covering the contamination with uncontaminated fill or other protective or warning layers. It should be noted that the alternative of complete removal of asbestos from a site often involves extensive and costly investigative and validation sampling and may not be effective or necessary for the protection of human health".

The WADOH, 2009 states the following with respect to the risk assessment, remediation and management of asbestos:

"DOH considers that the health risks posed by an appropriately managed site, whereby the asbestos
remains in situ subject to controls, are likely to be negligible and often preferable to removing the asbestos
containing materials from site".

The WADOH (2009) guidelines details a number of advantages associated with in situ remediation including:

- "Minimal disturbance of soil and therefore minimal dust generation
- Minimization of the amount of sampling necessary
- Potentially lower costs, time delays and greater confidence of outcomes".

The approach to retain material on-site has been assessed in context of the remediation hierarchy detailed in the NEPM (2013) Volume 1, Schedules A and B as detailed below. In the absence of known remediation technologies which destroy asbestos contamination, on-site containment is the next preferred level of remediation.

"In general, to achieve the desired environmental outcome, the process of the assessment of site contamination should be placed within the context of the broader site assessment and management process. In particular, in



assessing the contamination, the site assessor and others should take into account the preferred hierarchy of options for site clean-up and/or management which is outlined as follows:

 on-site treatment of the contamination so that it is destroyed or the associated risk is reduced to an acceptable level; and"

Jacobs Response: There are no known remediation technologies which destroy asbestos contamination.

• "off-site treatment of excavated soil, so that the contamination is destroyed or the associated risk is reduced to an acceptable level, after which soil is returned to the site; or,"

Jacobs Response: There are no known remediation technologies which destroy asbestos contamination.

"if the above are not practicable,

- consolidation and isolation of the soil on site by containment with a properly designed barrier; and
- removal of contaminated material to an approved site or facility, followed, where necessary, by replacement with appropriate material;

or,

• where the assessment indicates remediation would have no net environmental benefit or would have a net adverse environmental effect, implementation of an appropriate management strategy."

3.2 Aviation Museum

Some localised contamination (namely spills and leaks from aircraft) are known to be present in unsealed areas surrounding the aviation museum. The on ground spills and leaks could represent a hydrocarbon and potentially a PFAS contamination source.

Although unlikely to represent a significant contamination issue in context of the redevelopment, these areas should be assessed.

The approximate location of the area potentially impacted by spills and leaks from planes at the aviation museum is provided on **Figure 1**.

3.3 PFAS

Based on information from the Jacobs (2017) PFAS risk assessment, a fire incident was reported within an area within the eastern portion of Stage 1 in 2003. Based on the information provided, no PFAS soil or groundwater assessments have been undertaken within this portion of the SWP.

The HEPA (January, 2018) PFAS National Environmental Management Plan (PFAS NEMP) does not provide a specific process for the assessment of PFAS contamination, however with respect to contaminated site assessments, the PFAS NEMP provides specific information to supplement that provided in the NEPM (2013). The PFAS NEMP states that with respect to source characterisation "the nature of the potential source(s) is an important consideration for the desktop component of the preliminary site investigation and when developing the conceptual site model/sampling and analysis quality plan".



Based on the information provided in the Jacobs (2017) assessment, the potential risk of PFAS exposure within the SWP is only present within the area of the fire incident. Information reviewed as part of preparation of the Jacobs (2017) risk assessment did not identify other areas within the SWP which could potentially be impacted by PFAS.

The targeting of the fire incident area for the PFAS investigation is consistent with the requirements of the NEPM (2013) whereby potential risks are quantified through a sampling and analysis program.

The approximate location of the 2003 fire incident is provided on Figure 1.

3.4 Western Corner of SWP

No investigations have been undertaken with the western corner of the SWP. This area is known to have formerly housed flying schools (including plane parking) and a spray painting facility. There is a risk that these former land uses namely degradation of ACM contained within the flying school buildings, leaks and spills from planes and the use and storage of chemicals and paints within the spray painting facility may have contaminated this area of the SWP. These activities could have contaminated surface soils surrounding the flying school and plane parking areas (degradation of building materials and small leaks and spills from planes) and deeper soils/groundwater surrounding the spray paint facility (inappropriate chemical storage and spills, especially solvents).

Detailed site investigations should be undertaken across the western corner of the SWP.

3.5 Currency

Not all previous investigations have been undertaken in accordance with current contamination guidelines relevant to the Bankstown Airport including:

- NEPM (2013)
- AEPR (1997)
- PFAS NEMP (2018).

As detailed in section 2.11, the majority of the data collected to date has been assessed in context of current guidelines which will be applicable to the site with the exception of TRH, site specific ecological levels derived for selected heavy metals (copper, chromium, nickel) and PFAS compounds which have not been tested for on the SWP.

The outcome of the additional investigations will allow for all results currently available for the site to be assessed and used in context of the current guidelines.

3.6 Other Contamination Sources

Jacobs understands that the eastern portion of the SWP borders the former Boeing facility. It is known that groundwater beneath the Boeing facility is contaminated with volatile organic compounds (VOCs). Although unlikely, partitioning of VOC contamination from groundwater (if present) could generate vapours which could accumulate within buildings or other below and above ground structures constructed as part of the proposed redevelopment in the vicinity of the eastern property boundary.



Groundwater and vapour monitoring will be undertaken in areas on the site adjacent to the former Boeing facility. The approximate location of the VOC plume on the adjoining site (former Boeing facility) t is provided on **Figure 1**.





4. Site Inspection

An inspection of the site was undertaken on 7 March 2018 by representatives of BAL, Altis and Jacobs. The purpose of the site inspection was to ground truth the information gathered during the background information review, assess other potential contamination issues not identified within the information review and assess site access constraints with respect to physically undertaking the investigation.

At the time of the site inspection, the SWP was generally vacant land covered with grass and small shrubs. Specific site features identified during the inspection included:

- The aviation museum located within the central portion of the SWP.
- The northern portion of the SWP (Stage 1) comprises a large flattened earthworks pad.
- The southern portion of the SWP (Stage 2) is slightly raised above Stage 1 and contains large stockpile areas within the eastern portion of Stage 2.
- A number of retention ponds (or similar structures) are present to the west of the aviation museum within Stage 2.
- A number of vacant buildings (former flying schools and spray painter) are located adjacent to the western boundary of the SWP.
- Areas within the north western portion of the SWP (north west of the storm water drain) are operational
 areas of the airport.
- A number of stockpiles containing demolition wastes are present within the site adjacent to the southern boundary. The stockpiles appeared to have been in place for some time and maybe the stockpiles referred to in the CES (2005) report.

Based on the observations made during the site inspection and the knowledge obtained from the review of information, the site is unlikely to have been subject to other activities (other than those reported in previous investigations) that are likely to have significantly impacted the site.



5. Preliminary Conceptual Site Model

A preliminary conceptual site model (CSM) for the risks associated with PFAS contamination at the site has been developed. The purpose of the CSM is to identify known or potential sources of contamination, human health and environmental receptors including exposure mechanisms and pathways between the sources and receptors in consideration of current site conditions and proposed land use. A risk is present where there is a complete source – pathway – receptor linkage. The proposed investigation strategy to quantify potential risks have been included.

The identified potential sources, transport mechanisms, receptors and associated exposure mechanisms are summarised in **Table 5.1** below.

Table 5.1: Preliminary CSM

Source	Pathway	Receptor	Comments	Investigation Strategy
Asbestos and PAH impacted fill materials (Stage 1, Stage 2 and site stockpiles)	Inhalation (asbestos), dermal and ingestion (PAH) during excavation works associated with construction and occupation.	Construction workers, adjacent site users and future site occupants.	Proposed development strategy is to retain asbestos and PAH contaminated fill material on site. Any construction activities or future occupation of the site would require the implementation of appropriate management plans and measures to manage the exposure risks associated with these contaminated materials.	Limited investigations will be undertaken to confirm and validate the presence of these compounds. With respect to asbestos, this strategy is consistent with NEPM (2013 which states that "Depending on the site-specific circumstances and the proposed remediation approach, conservative management of presumed asbestos contamination may avoid the need for a detailed site investigation".
Other potential contamination within impacted fill materials (Stage 1, Stage 2 and site stockpiles). Impacted fill material needs to be assessed in accordance with current and applicable contaminated site guidelines	Inhalation, dermal and ingestion during excavation works associated with construction and occupation.	Construction workers, adjacent site users and future site occupants.	Significant amount of sampling and analysis has been undertaken for materials within Stage 1, Stage 2 and site stockpiles. However, a number of compounds (namely selected heavy metals and hydrocarbons) are assessed differently by current guidelines compared to the guidelines used during earlier site investigations. The potential exposure risk associated with contamination needs to be validated for currency in accordance with current and applicable contaminated site guidelines.	20 test pit locations (including 6 locations targeting fire incident area – see below) across Stage 1, Stage 2 and site stockpiles. 20 soil samples to be analysed for heavy metals, TRH, BTEX, PAH, OCP and PCB and asbestos (gravimetric). 10 soil samples for heavy metals, TRH, BTEX, PAH. 1 soil samples for pH, cation exchange capacity (CEC) and % clay.
Surface staining associated with leaks and spills from parked aircraft	Inhalation, dermal and ingestion during excavation works associated with construction and occupation.	Construction workers and future site occupants.	Areas of surface staining previously observed in unsealed areas surrounding the aviation museum.	Four surface grab samples across unsealed areas of aviation museum. 4 soil samples for TRH.



Potential AFFF use during fire incident (2003)	Inhalation, dermal and ingestion during excavation works associated with construction and occupation.	Construction workers, future site occupants and groundwater	PFAS may be present in areas within and surrounding the location of the fire incident.	6 test pit locations targeting the fire incident area. 6 soil samples for PFAS extended suite. 3 groundwater wells in the vicinity of the fire incident area (also targeting VOC from Boeing site – see below).
				3 groundwater dissolved heavy metals, TRH, low level PAHs, VOCs and PFAS extended suite.
Potential PFAS from hydraulic leaks from planes	Inhalation, dermal and ingestion during excavation works associated with construction and occupation.	Construction workers, future site occupants and groundwater	PFAS from hydraulic leaks may be present in areas of former plane parking.	2 test pit locations (one location within aviation museum and one within former flying school plane parking areas within the western portion of the SWP). 2 soil samples for PFAS
VOCs from Boeing Facility	Inhalation during occupation.	Future site occupants and groundwater	Solvent groundwater contamination known to be present on adjoining Boeing facility. Vapours could partition and accumulate in	extended suite. 2 groundwater wells between the site boundary with the site and the Boeing facility.
			on-site structures (including services).	3 groundwater dissolved heavy metals, TRH, low level PAHs, VOCs and PFAS extended suite.
Western portion of the SWP (not subject to previous investigations). Potential contamination from historical airport operations.	Inhalation, dermal and ingestion during excavation works associated with construction and occupation.	Construction workers, adjacent site users, future site occupants and groundwater.	Possible contamination from historical airport operations including flying schools and spray painting.	10 test pit locations. 10 soil samples to be analysed for heavy metals, TRH, BTEX, PAH, OCP and PCB and asbestos (gravimetric).
				5 soil samples for heavy metals, TRH, BTEX, PAH.
				1 soil samples for pH, cation exchange capacity (CEC) and % clay.
				3 groundwater wells in the vicinity of the former spray painting facility.
				3 groundwater dissolved heavy metals, TRH, low level PAHs, VOCs.



6. Investigation Methodology

The following information details the investigation methodology (based on the current level of information available for the site) to address the data gaps detailed in Section 3 in consideration of the proposed land use for the site (i.e. commercial / industrial).

Preparation of a Safe Work Method Statement (SWMS) that identifies foreseeable risks and provides strategies for removing and/or managing these risks. The SWMS would be submitted to BAL for approval prior to commencement of site works.

Underground service locating by a qualified service locator and Dial Before You Dig Search.

Excavation of test pits and boreholes within the SWP footprint to facilitate soil sampling and groundwater well installation. The numbers of test pit locations are detailed below:

- Test pits 10 locations (western corner of SWP)
- Groundwater wells 3 locations (western corner of SWP). It is proposed to utilize existing groundwater well (BAL-GW05) which is located adjacent to and down gradient of this area
- Test pits 20 locations (remaining area of SWP)
- Surface samples 4 locations around the aviation museum
- Groundwater wells 3 locations (in the vicinity of the fire incident and the Boeing site).

Test pits locations will be positioned to target areas of interest (including potential PFAS source areas and hydrocarbon staining surrounding the aviation museum) and to provide general site coverage.

The proposed investigation locations are presented as Figure 1.

All test pits will be excavated to 3.0 m below ground level (bgl), intersection with the water table or excavation method refusal (whichever is shallower). Soil samples from test pits will be collected as grab samples from the surface of the site, directly from the centre of the excavator bucket at depths of approximately 0.5m and at 1.0m intervals or at other discrete locations where there is evidence of potential contamination (odorous or discoloured soils, erroneous waste or fill). Vapours within soil samples will also be screened for VOC using a hand held photoionization detector (PID).

With respect to the limited asbestos investigation from test pits, the following scope of works is proposed

- 10 litres of material excavated from 20 (on the SWP) and 10 (on the western corner of the SWP) test pit
 locations will be collected from both 0-1m and 1m-2m depth ranges. The 10 litre samples will be spread
 out on black plastic sheeting, raked and inspected for potential asbestos containing materials (ACM)
- Where potential ACM are identified within the 10 litre samples, all observable potential ACM will be collected and weighed.
- Where no potential ACM are identified in the 10 litre samples, a 500ml sample will be collected from material within the top 300mm of the test pit for NATA accredited laboratory identification.

Test pits within the fire incident area will additionally target the interface between the current fill placement and the underlying historical surface level (noting the fire incident occurred in 2003 prior to fill placement).



Surface samples from around the aviation museum (targeting leaks from planes) will be collected as grab samples directly from the surface of the site.

Boreholes will be drilled to facilitate construction of groundwater wells. Borehole locations will be positioned downgradient of the area where the fire incident was suspected of occurring, along the eastern boundary adjacent to the former Boeing facility, up and down gradient of the western corner of SWP.

Boreholes will be drilled with a rotary drill rig using solid flight augers. Boreholes will be drilled to a maximum depth of 10m bgl, 2m below the observed water table or excavation method refusal.

Groundwater wells will be constructed within each of the boreholes. Wells will be constructed using factory decontaminated Class 18 UPVC 50mm screens (to 1 m above the observed water table to allow for seasonal fluctuations) and casing (to ground level). The borehole annulus will be filled with graded sand to a level above the well screen and a bentonite/cement plug to ground level. The well will be capped with a lockable cap and finished flush with surrounding surface levels using a road box.

Groundwater wells will be developed following installation. and sampled in accordance with industry standard methods. Groundwater wells will be purged and sampled using low flow sampling techniques at least 48 hours after development. Groundwater levels and chemistry would be monitored during purging and samples only collected once water chemistry and levels have stabilised. Vapours within groundwater wells will also be screened for VOC using a hand held PID.

Test pit and borehole locations will be surveyed using a non-differential GPS. Heights of groundwater wells will be surveyed to site datum.

6.1.1 Laboratory Analysis

Soil and groundwater samples will be analysed by a National Association of Testing Authorities (NATA) accredited laboratory. Selected samples would be analysed for the following common contaminant compounds:

- 30 soil samples for heavy metals, TRH, BTEX, PAH, OCP and PCB and asbestos (gravimetric)
- 19 soil samples (15 primary + 4 QA/QC) for heavy metals, TRH, BTEX, PAH
- 4 soil samples for TRH (surface samples collected from areas surrounding the aviation museum only)
- 10 soil samples (8 primary + 2 QA/QC) for PFAS extended suite (in the vicinity of the fire incident and plane parking areas)
- 2 soil samples for pH, cation exchange capacity (CEC) and % clay
- 5 groundwater samples (3 primary + 2 QA/QC) for dissolved heavy metals, TRH, low level PAHs, VOCs and PFAS extended suite (in the vicinity of the fire incident and Boeing site)
- 3 groundwater samples for dissolved heavy metals, TRH, low level PAHs, VOCs (western corner of SWP only)
- 1 trip spike and trip blank per soil and groundwater laboratory batch.

6.1.2 Reporting

Jacobs will prepare an investigation report documenting the tasks completed, results and conclusions with respect to endorsed guidelines for commercial/industrial land use and the applicable limits specified within the NEPM (2013), AEPR (1997) and NEMP (2018) guidelines. The report will be prepared in general accordance with the



NSW EPA (1997) guidelines. The investigation report will utilise the information from previous investigations undertaken across the SWP.

The report will provide a statement as to whether the site, in is current state, is suitable or can be made suitable for the proposed commercial/industrial land use from a contamination perspective and will propose remediation required to make the site suitable, broad recommendations will be provided for remediation and/or management of contamination at the site in consideration of the commercial use of the SWP and surrounding areas.





Figures





Appendix A – Summary of Analytical Results





Substance	Number of	Concentration		Ecological		Human	Health	Management	Exceedances	Comments
	Samples Analysed	Range	NEPM EIL	NEPM ESL 5	Airport Regulations – Areas of Environmental Significance ⁴	Commercial / Industrial (D)	Airport Regulations	Limits		
					CES (2005)					
Arsenic	263	<lor 166<br="" to="">mg/kg</lor>	160 ¹		20	3,000 ⁶	500		5 > AEPR EIL 1 > NEPM EIL	
Cadmium	263	<lor 4="" kg<="" mg="" td="" to=""><td>3 ²</td><td></td><td>3</td><td>900 ⁶</td><td>100</td><td></td><td>2 > AEPR EIL 2 > NEPM EIL</td><td></td></lor>	3 ²		3	900 ⁶	100		2 > AEPR EIL 2 > NEPM EIL	
Chromium	263	<lor 58<br="" to="">mg/kg</lor>	670 ³		50	3,600 ⁶	600,000		2 > AEPR EIL	
Copper	263	<lor 356<br="" to="">mg/kg</lor>	198.7 ³		60	240,000 ⁶	5,000		8 > AEPR EIL 2 > NEPM EIL	
Lead	263	<lor 419<br="" to="">mg/kg</lor>	1,810 ³		300	1,500 ⁶	1,500		1 > AEPR EIL	
Mercury	263	<lor 1.4<br="" to="">mg/kg</lor>	1 ²		1	730 ⁶	75		1 > AEPR EIL 1 > NEPM EIL	
Nickel	263	<lor 140<br="" to="">mg/kg</lor>	295 ³		60	6,000 ⁶	3,000		4 > AEPR EIL	
Zinc	263	<lor 790<br="" to="">mg/kg</lor>	425 ³		200	400,000 ⁶	35,000		5 > AEPR EIL	
DDT	120	<lor< td=""><td>640 ¹</td><td></td><td>0.97</td><td></td><td>1,000</td><td></td><td></td><td></td></lor<>	640 ¹		0.97		1,000			
Naphthalene	133	<lor< td=""><td>370 ¹</td><td></td><td>-</td><td>11,000 ⁷</td><td></td><td></td><td></td><td></td></lor<>	370 ¹		-	11,000 ⁷				
Total PCB	NA		-	-	1	7 ⁶	50			
Aldrin	120	<lor< td=""><td>-</td><td>-</td><td>0.05</td><td></td><td>50</td><td></td><td></td><td></td></lor<>	-	-	0.05		50			
Dieldrin	120	<lor< td=""><td>-</td><td>-</td><td>0.2</td><td></td><td>20</td><td></td><td></td><td></td></lor<>	-	-	0.2		20			



Substance	Number of	Concentration		Ecological		Human	Health	Management	Exceedances	Comments
	Samples Analysed	Range	NEPM EIL	NEPM ESL 5	Airport Regulations – Areas of Environmental Significance ⁴	Commercial / Industrial (D)	Airport Regulations	Limits		
F1 (C6 – C10)	132	NA		215	-	310 – 480 ⁸		800		
F2 (>C10 - C16)	132	NA		170	-	20,000 7		1,000		
F3 (>C16 – C34)	132	NA		2,500	-	27,000 ⁷		5,000		
F4 (>C34 - C40)	132	NA		6,600	-	38,000 ⁷		10,000		
Benzene	132	<lor< td=""><td></td><td>95</td><td>0.5</td><td>4-20 ⁸</td><td>1</td><td></td><td></td><td></td></lor<>		95	0.5	4-20 ⁸	1			
Toluene	132	<lor< td=""><td></td><td>135</td><td>3</td><td>99,000 7</td><td>130</td><td></td><td></td><td></td></lor<>		135	3	99,000 7	130			
Ethylbenzene	132	<lor< td=""><td></td><td>185</td><td>5</td><td>27,000 ⁷</td><td>50</td><td></td><td></td><td></td></lor<>		185	5	27,000 ⁷	50			
Xylenes	132	<lor< td=""><td></td><td>95</td><td>5</td><td>81,000 ⁷</td><td>25</td><td></td><td></td><td></td></lor<>		95	5	81,000 ⁷	25			
Benzo(a)pyrene	133	<lor 3.6<br="" to="">mg/kg</lor>		0.7			5		5 > NEPM ESL	6 samples above LOR
TPH (C6 - C9)	132	<lor 8="" kg<="" mg="" td="" to=""><td></td><td>-</td><td>100</td><td></td><td></td><td>800</td><td></td><td>4 samples above LOR</td></lor>		-	100			800		4 samples above LOR
TPH (>C6)	133	<lor 920<br="" to="">mg/kg</lor>		-	1,000			5,000		
Total PAH	133	<lor to<br="">43.1mg/kg</lor>		-	5	4,000 ⁶	100		6 > AEPR EIL	9 samples above LOR
Carcinogenic PAHs (as B(a)P TEQ)	NA	NA				40 ⁶				
DDD + DDE + DDT	120	<lor< td=""><td></td><td></td><td></td><td>3,600 ⁶</td><td></td><td></td><td></td><td></td></lor<>				3,600 ⁶				
Aldrin and dieldrin	120	<lor< td=""><td></td><td></td><td></td><td>45 ⁶</td><td>20</td><td></td><td></td><td></td></lor<>				45 ⁶	20			
Dieldrin	120	<lor< td=""><td></td><td></td><td></td><td></td><td>20</td><td></td><td></td><td></td></lor<>					20			
Chlordane	120	<lor 0.3<br="" to="">mg/kg</lor>				530 ⁶	250			
Endosulfan	120	<lor< td=""><td></td><td></td><td></td><td>2,000 ⁶</td><td>_</td><td></td><td></td><td></td></lor<>				2,000 ⁶	_			
Endrin	120	<lor< td=""><td></td><td></td><td></td><td>100 ⁶</td><td></td><td></td><td></td><td></td></lor<>				100 ⁶				



Substance	Number of	Concentration		Ecological		Human	Health	Management	Exceedances	Comments
	Samples Analysed	Range	NEPM EIL	NEPM ESL 5	Airport Regulations – Areas of Environmental Significance ⁴	Commercial / Industrial (D)	Airport Regulations	Limits		
Heptachlor	120	<lor< td=""><td></td><td></td><td></td><td>50 ⁶</td><td>50</td><td></td><td></td><td></td></lor<>				50 ⁶	50			
HCB	120	<lor< td=""><td></td><td></td><td></td><td>80 ⁶</td><td></td><td></td><td></td><td></td></lor<>				80 ⁶				
Methoxychlor	120	<lor< td=""><td></td><td></td><td></td><td>2,500 ⁶</td><td></td><td></td><td></td><td></td></lor<>				2,500 ⁶				
Mirex	120	<lor< td=""><td></td><td></td><td></td><td>100 ⁶</td><td></td><td></td><td></td><td></td></lor<>				100 ⁶				
Toxaphene	120	<lor< td=""><td></td><td></td><td></td><td>160 ⁶</td><td></td><td></td><td></td><td></td></lor<>				160 ⁶				
Phenols	23	<lor< td=""><td></td><td></td><td>2</td><td></td><td></td><td></td><td></td><td></td></lor<>			2					
FA and AF	19	ND				0.001%				
ACM	19	ND				0.05%				
All forms of asbestos	19	ND				No visible asbestos in surface soils				
					DLA (2009a)					
FA and AF	23	ND				0.001%				
ACM	10	Identified				0.05%				
All forms of asbestos	16	Identified				No visible asbestos in surface soils			16 surface locations	
					DLA (2014)					
Arsenic	88	<lor 30<br="" to="">mg/kg</lor>	160 ¹		20	3,000 ⁶	500		1 > AEPR EIL	
Cadmium	88	<lor 0.8<br="" to="">mg/kg</lor>	3 ²		3	900 6	100			
Chromium	88	6 to 24 mg/kg	670 ³		50	3,600 ⁶	600,000			
Copper	88	6 to 46 mg/kg	198.7 ³		60	240,000 ⁶	5,000			



Substance	Number of	Concentration		Ecological		Human	Health	Management	Exceedances	Comments
	Samples Analysed	Range	NEPM EIL	NEPM ESL ⁵	Airport Regulations – Areas of Environmental Significance ⁴	Commercial / Industrial (D)	Airport Regulations	Limits		
Lead	88	11 to 140 mg/kg	1,810 ³		300	1,500 ⁶	1,500			
Mercury	88	<lor 5="" kg<="" mg="" td="" to=""><td>1 ²</td><td></td><td>1</td><td>730 ⁶</td><td>75</td><td></td><td>1 > AEPR EIL 1 > NEPM EIL</td><td></td></lor>	1 ²		1	730 ⁶	75		1 > AEPR EIL 1 > NEPM EIL	
Nickel	88	4 to 35 mg/kg	295 ³		60	6,000 ⁶	3,000			
Zinc	88	18 to 410 mg/kg	425 ³		200	400,000 ⁶	35,000		1 > AEPR EIL	
DDT	32	<lor< td=""><td>640 ¹</td><td></td><td>0.97</td><td></td><td>1,000</td><td></td><td></td><td></td></lor<>	640 ¹		0.97		1,000			
Naphthalene	88	<lor< td=""><td>370 ¹</td><td></td><td></td><td>11,000 ⁷</td><td></td><td></td><td></td><td></td></lor<>	370 ¹			11,000 ⁷				
Total PCB	32	<lor< td=""><td>-</td><td>-</td><td>1</td><td>7 ⁶</td><td>50</td><td></td><td></td><td></td></lor<>	-	-	1	7 ⁶	50			
Aldrin	32	<lor< td=""><td>-</td><td>-</td><td>0.05</td><td></td><td>50</td><td></td><td></td><td></td></lor<>	-	-	0.05		50			
Dieldrin	32	<lor< td=""><td>-</td><td>-</td><td>0.2</td><td></td><td>20</td><td></td><td></td><td></td></lor<>	-	-	0.2		20			
F1 (C6 – C10)	88	<lor< td=""><td></td><td>215</td><td>-</td><td>310 – 480 8</td><td></td><td>800</td><td></td><td></td></lor<>		215	-	310 – 480 8		800		
F2 (>C10 - C16)	88	<lor< td=""><td></td><td>170</td><td>-</td><td>20,000 7</td><td></td><td>1,000</td><td></td><td></td></lor<>		170	-	20,000 7		1,000		
F3 (>C16 – C34)	88	<lor 610<="" td="" to=""><td></td><td>2,500</td><td>-</td><td>27,000 ⁷</td><td></td><td>5,000</td><td></td><td>3 samples above LOR</td></lor>		2,500	-	27,000 ⁷		5,000		3 samples above LOR
F4 (>C34 - C40)	88	<lor 150<="" td="" to=""><td></td><td>6,600</td><td>-</td><td>38,000 ⁷</td><td></td><td>10,000</td><td></td><td>3 samples above LOR</td></lor>		6,600	-	38,000 ⁷		10,000		3 samples above LOR
Benzene	88	<lor< td=""><td></td><td>95</td><td>0.5</td><td>4-20 ⁸</td><td>1</td><td></td><td></td><td></td></lor<>		95	0.5	4-20 ⁸	1			
Toluene	88	<lor< td=""><td></td><td>135</td><td>3</td><td>99,000 7</td><td>130</td><td></td><td></td><td></td></lor<>		135	3	99,000 7	130			
Ethylbenzene	88	<lor< td=""><td></td><td>185</td><td>5</td><td>27,000 ⁷</td><td>50</td><td></td><td></td><td></td></lor<>		185	5	27,000 ⁷	50			
Xylenes	88	<lor< td=""><td></td><td>95</td><td>5</td><td>81,000 ⁷</td><td>25</td><td></td><td></td><td></td></lor<>		95	5	81,000 ⁷	25			
Benzo(a)pyrene	88	<lor 17<br="" to="">mg/kg</lor>		0.7	-		5		2 > NEPM ESL 1 > AEPR HIL	84 samples above LOR



Substance	Number of	Concentration		Ecological		Human	Health	Management	Exceedances	Comments
	Samples Analysed	Range	NEPM EIL	NEPM ESL ⁵	Airport Regulations – Areas of Environmental Significance ⁴	Commercial / Industrial (D)	Airport Regulations	Limits		
TPH (C6 - C9)	88	<lor< td=""><td></td><td></td><td>100</td><td></td><td></td><td>800</td><td></td><td></td></lor<>			100			800		
Total PAH	88	<lor 190<br="" to="">mg/kg</lor>			5	4,000 ⁶	100		12 > AEPR EIL 1 > AEPR HIL	87 samples above LOR
Carcinogenic PAHs (as B(a)P TEQ)	88	<lor 17mg="" kg<="" td="" to=""><td></td><td></td><td></td><td>40 ⁶</td><td></td><td></td><td></td><td></td></lor>				40 ⁶				
DDD + DDE + DDT	32	<lor< td=""><td></td><td></td><td></td><td>3,600 ⁶</td><td></td><td></td><td></td><td></td></lor<>				3,600 ⁶				
Aldrin and dieldrin	32	<lor< td=""><td></td><td></td><td>5</td><td>45 ⁶</td><td>20</td><td></td><td></td><td></td></lor<>			5	45 ⁶	20			
Dieldrin	32	<lor< td=""><td></td><td></td><td></td><td></td><td>20</td><td></td><td></td><td></td></lor<>					20			
Chlordane	32	<lor< td=""><td></td><td></td><td></td><td>530 ⁶</td><td>250</td><td></td><td></td><td></td></lor<>				530 ⁶	250			
Endosulfan	32	<lor< td=""><td></td><td></td><td></td><td>2,000 ⁶</td><td></td><td></td><td></td><td></td></lor<>				2,000 ⁶				
Endrin	32	<lor< td=""><td></td><td></td><td></td><td>100 ⁶</td><td></td><td></td><td></td><td></td></lor<>				100 ⁶				
Heptachlor	32	<lor< td=""><td></td><td></td><td></td><td>50 ⁶</td><td>50</td><td></td><td></td><td></td></lor<>				50 ⁶	50			
НСВ	32	<lor< td=""><td></td><td></td><td></td><td>80 6</td><td></td><td></td><td></td><td></td></lor<>				80 6				
Methoxychlor	32	<lor< td=""><td></td><td></td><td></td><td>2,500 ⁶</td><td></td><td></td><td></td><td></td></lor<>				2,500 ⁶				
Mirex	32	<lor< td=""><td></td><td></td><td></td><td>100 ⁶</td><td></td><td></td><td></td><td></td></lor<>				100 ⁶				
Toxaphene	32	<lor< td=""><td></td><td></td><td></td><td>160 ⁶</td><td></td><td></td><td></td><td></td></lor<>				160 ⁶				
FA and AF	11	ND				0.001%				
ACM	11	Detected				0.05%			2 samples of ACM	
All forms of asbestos	11	Detected				No visible asbestos in surface soils			2 samples of ACM	
					DLA (2015)					
Arsenic	34	5 to 11 mg/kg	160 ¹		20	3,000 ⁶	500			
Cadmium	34	0.4 to 0.9 mg/kg	3 ²		3	900 ⁶	100			



Substance	Number of	Concentration		Ecological		Human	Health	Management	Exceedances	Comments
	Samples Analysed	Range	NEPM EIL	NEPM ESL 5	Airport Regulations – Areas of Environmental Significance ⁴	Commercial / Industrial (D)	Airport Regulations	Limits		
Chromium	34	10 to 24 mg/kg	670 ³		50	3,600 ⁶	600,000			
Copper	34	23 to 42 mg/kg	198.7 ³		60	240,000 ⁶	5,000			
Lead	34	27 to 70 mg/kg	1,810 ³		300	1,500 ⁶	1,500			
Mercury	34	<lor 0.1<br="" to="">mg/kg</lor>	12		1	730 ⁶	75			
Nickel	34	8 to 27 mg/kg	295 ³		60	6,000 ⁶	3,000			
Zinc	34	47 to 130 mg/kg	425 ³		200	400,000 ⁶	35,000			
DDT	34	<lor< td=""><td>640 ¹</td><td></td><td>0.97</td><td></td><td>1,000</td><td></td><td></td><td></td></lor<>	640 ¹		0.97		1,000			
Naphthalene	34	<lor< td=""><td>370 ¹</td><td></td><td>7/</td><td>11,000 7</td><td></td><td></td><td></td><td></td></lor<>	370 ¹		7/	11,000 7				
Total PCB	34	<lor< td=""><td>-</td><td>-</td><td>1</td><td>7 6</td><td>50</td><td></td><td></td><td></td></lor<>	-	-	1	7 6	50			
Aldrin	34	<lor< td=""><td>-</td><td>-</td><td>0.05</td><td></td><td>50</td><td></td><td></td><td></td></lor<>	-	-	0.05		50			
Dieldrin	34	<lor< td=""><td>-</td><td>-</td><td>0.2</td><td></td><td>20</td><td></td><td></td><td></td></lor<>	-	-	0.2		20			
F1 (C6 – C10)	34	<lor< td=""><td></td><td>215</td><td>-</td><td>310 – 480 ⁸</td><td></td><td>800</td><td></td><td></td></lor<>		215	-	310 – 480 ⁸		800		
F2 (>C10 - C16)	34	<lor< td=""><td></td><td>170</td><td>-</td><td>20,000 7</td><td></td><td>1,000</td><td></td><td></td></lor<>		170	-	20,000 7		1,000		
F3 (>C16 – C34)	34	<lor 310<="" td="" to=""><td></td><td>2,500</td><td>-</td><td>27,000 ⁷</td><td></td><td>5,000</td><td></td><td>12 samples</td></lor>		2,500	-	27,000 ⁷		5,000		12 samples
F4 (>C34 - C40)	34	<lor 350<="" td="" to=""><td></td><td>6,600</td><td>-</td><td>38,000 ⁷</td><td></td><td>10,000</td><td></td><td>7 samples above LOR</td></lor>		6,600	-	38,000 ⁷		10,000		7 samples above LOR
Benzene	34	<lor< td=""><td></td><td>95</td><td>0.5</td><td>4-20 ⁸</td><td>1</td><td></td><td></td><td></td></lor<>		95	0.5	4-20 ⁸	1			
Toluene	34	<lor< td=""><td></td><td>135</td><td>3</td><td>99,000 7</td><td>130</td><td></td><td></td><td></td></lor<>		135	3	99,000 7	130			



Substance	Number of	Concentration		Ecological		Human	Health	Management	Exceedances	Comments
	Samples Analysed	Range	NEPM EIL	NEPM ESL ⁵	Airport Regulations – Areas of Environmental Significance ⁴	Commercial / Industrial (D)	Airport Regulations	Limits		
Ethylbenzene	34	<lor< td=""><td></td><td>185</td><td>5</td><td>27,000 ⁷</td><td>50</td><td></td><td></td><td></td></lor<>		185	5	27,000 ⁷	50			
Xylenes	34	<lor< td=""><td></td><td>95</td><td>5</td><td>81,000 ⁷</td><td>25</td><td></td><td></td><td></td></lor<>		95	5	81,000 ⁷	25			
Benzo(a)pyrene	34	<lor 17<br="" to="">mg/kg</lor>		0.7	-		5		4 > NEPM ESL	34 samples above LOR
TPH (C6 - C9)	34	<lor< td=""><td></td><td>-//</td><td>100</td><td></td><td></td><td>800</td><td></td><td></td></lor<>		-//	100			800		
Total PAH	34	<lor 16<br="" to="">mg/kg</lor>			5	4,000 ⁶	100		10 > AEPR EIL	34 samples above LOR
Carcinogenic PAHs (as B(a)P TEQ)	34	<lor 1.3<br="" to="">mg/kg</lor>				40 ⁶				
DDD + DDE + DDT	34	<lor< td=""><td></td><td></td><td></td><td>3,600 ⁶</td><td></td><td></td><td></td><td></td></lor<>				3,600 ⁶				
Aldrin and dieldrin	34	<lor< td=""><td></td><td></td><td></td><td>45 ⁶</td><td>20</td><td></td><td></td><td></td></lor<>				45 ⁶	20			
Dieldrin	34	<lor< td=""><td></td><td></td><td></td><td></td><td>20</td><td></td><td></td><td></td></lor<>					20			
Chlordane	34	<lor< td=""><td></td><td></td><td></td><td>530 ⁶</td><td>250</td><td></td><td></td><td></td></lor<>				530 ⁶	250			
Endosulfan	34	<lor< td=""><td></td><td></td><td></td><td>2,000 ⁶</td><td></td><td></td><td></td><td></td></lor<>				2,000 ⁶				
Endrin	34	<lor< td=""><td></td><td></td><td></td><td>100 ⁶</td><td></td><td></td><td></td><td></td></lor<>				100 ⁶				
Heptachlor	34	<lor< td=""><td></td><td></td><td></td><td>50 ⁶</td><td>50</td><td></td><td></td><td></td></lor<>				50 ⁶	50			
HCB	34	<lor< td=""><td></td><td></td><td></td><td>80 ⁶</td><td></td><td></td><td></td><td></td></lor<>				80 ⁶				
Methoxychlor	34	<lor< td=""><td></td><td></td><td></td><td>2,500 ⁶</td><td></td><td></td><td></td><td></td></lor<>				2,500 ⁶				
Mirex	34	<lor< td=""><td></td><td></td><td></td><td>100 ⁶</td><td></td><td></td><td></td><td></td></lor<>				100 ⁶				
Toxaphene	34	<lor< td=""><td></td><td></td><td></td><td>160 ⁶</td><td></td><td></td><td></td><td></td></lor<>				160 ⁶				
FA and AF	26	ND to 0.0061%				0.001%				AF/FA identified in one sample only
ACM	26	Detected				0.05%			5 samples of ACM	



Substance	Number of		Ecological			Human Health		Management	Exceedances	Comments
	Samples Analysed	Range	NEPM EIL	NEPM ESL 5	Airport Regulations – Areas of Environmental Significance ⁴	Commercial / Industrial (D)	Airport Regulations	Limits		
All forms of asbestos	26	Detected				No visible asbestos in surface soils			5 samples of ACM	

¹ Generic EILs for aged arsenic/DDT/Naphthalene from Table 1B(5).

⁸ NEPC (2013) Table 1A(3) Soil HSLs for Vapour Intrusion (mg/kg) HSL D Commercial / Industrial.



² EILs from NEPM 1999 (no EILs specified for contaminants in NEPM 2013).

³EILs derived from NEPM 2013 equation ABC+ACL.

⁴ Levels from the Airport Regulations Table 2 – areas of environmental significance

⁵ Table 1B(6) ESLs for TPH fractions F1 – F4, BTEX and Benzo(a)pyrene in soils - NEPM (2013).

⁶ NEPC (2013) Table 1 A(1) Health investigations levels for soil contaminants - Commercial / Industrial D.

⁷ HSL-D Commercial / Industrial Criteria and Intrusive Maintenance Workers detailed within Table A4, Friebel, E

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Preliminary PFAS Risk Assessment for Bankstown Airport

Sydney Metro Airports
IA115500 | FINAL
9 January, 2017



Preliminary PFAS Risk Assessment for Bankstown Airport



Project No: IA115500

Document Title: Preliminary PFAS Risk Assessment for Bankstown Airport

Document No.: IA115500 Revision: FINAL

Date: 9 January, 2017

Client Name: Sydney Metro Airports

Client No:

Project Manager: Derek Langgons Author: Derek Langgons

File Name: J:\IE\Projects\04_Eastern\IA115500\21 Deliverables\IA115500 Preliminary PFAS Risk

Assessment Bankstown Airport DRAFT RevC 21Nov2016.docx

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Document history and status

Revision	Date	Description	Ву	Review	Approved
DRAFT	19/9/16	For client review	DL	MS	DL
DRAFT B	26/10/16	Revised draft for client review	DL	MS	DL
DRAFT C	21/11/16	Revised following Turbomeca inspection	DL	MS	DL
FINAL	9/1/17	Final issue	DL	MS	DL

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Appendix B. Historical Business Listings Report



Executive Summary

Sydney Metro Airports (SMA), the lease holder and operator of Bankstown and Camden Airports, has engaged Jacobs to undertake a preliminary risk assessment of per- and polyfluoroalkyl substances (PFAS) land contamination at Bankstown Airport (the Airport). This report presents the scope of work, findings and recommendations from the risk assessment.

PFAS are a large group of compounds consisting of a fully fluorinated hydrophobic alkyl chain of varying length (typically 4 to 16 carbon atoms) and a hydrophilic end group. In the past, PFAS were often referred to as "PFCs" (per- and polyfluorinated chemicals). However the term PFAS is now used by regulators in Australia. PFAS are emerging contaminants and their sources, fate and transport and toxicity is still not well understood. Similarly, the regulatory framework for the characterisation, assessment and management of risks associated with PFAS is also under development.

A number of potential PFAS sources have been identified at the Airport. The most significant suspected source is associated with the historic use of Aqueous Film Forming Foam (AFFF) containing PFAS at the former fire training ground. However AFFF was also used for fire fighting during fire incidents and for fire training at other locations around the Airport. It is understood that 3M Lightwater was the main AFFF product used at the airport and perfluorooctane sulfonate (PFOS) is the primary PFAS of concern in this product.

Other potential sources of PFAS contamination at the Airport include the storage and use of aviation hydraulic fluid across the Airport, the potential historic use of mist suppressants in plating and other metal processing activities in the former Boeing area and the waste landfills at the Airport. It is noted that no information confirming the use of hydraulic fluids or mist suppressants which contained PFAS has been obtained. Furthermore, unlike the use of AFFF which was applied in large volumes directly to ground surfaces, subsurface impacts from hydraulic fluid and mist suppressants would only have occurred through spills or leaks. Groundwater monitoring around the landfills at the Airport has not detected any significant emissions of PFAS from the landfills to groundwater. Therefore these sources are considered to present a less significant risk than AFFF use.

The Aviation Rescue and Fire Fighting (ARFF) service at the Airport ceased in 1991 and since then fire response services have been provided by NSW Fire & Rescue (off-site). The only current storage or use of PFAS products at the Airport that has been identified during this assessment is the storage of AFFF for emergency use at the Turbomeca engine test cell facility. The AFFF is used in a fixed fire suppression system and is stored in a 200 litre capacity stainless steel above ground tank. The AFFF product contains C6 chain PFAS which are thought to be less persistent and less toxic than PFOS based AFFF products.

A number of soil, surface water and groundwater investigations and monitoring programs have been undertaken at the Airport and these have recently included analysis of PFAS. The programs have not specifically targeted PFAS source areas. However minor concentrations of PFOS and to a lesser extent perfluorooctanoic acid (PFOA) and 6:2 fluorotelomer sulfonate (6:2 FTS) have been reported.

There is no known beneficial use of groundwater at the Airport or immediately hydraulically down gradient. However further data is needed to confirm that the registered well at the residential property on Rickard Rd is not used for drinking water purposes and / or is not influenced by shallow groundwater from the Airport. The most significant exposure pathways are more likely to be human direct contact with PFAS impacted soil at the Airport and exposure to ecological receptors in the Georges River via surface water and groundwater migration from the Airport. While the region of the Georges River where surface water and groundwater from the Airport would discharge is likely to be impacted by other urban contaminants, the advice from Department of Primary Industries against eating fish or shell fish from the Georges River applies upstream of the discharge area. Therefore the potential for people to consume fish impacted by PFAS migration (if present) from the Airport may need to be further assessed.

None of the investigation or monitoring data reviewed as part of this preliminary risk assessment indicates an immediate risk of harm to human health or the environment. Based on the maximum concentrations of PFOS in on-site surface water and on-site groundwater at the Airport, the site would be classified as Priority 2 under the

Preliminary PFAS Risk Assessment for Bankstown Airport



NSW EPA Decision Tree. The NSW EPA Decision Tree states that Priority 2 sites are to be further investigated once investigations at Priority 1 sites are completed.

In order to further assess and manage the risks identified in this preliminary assessment, the following recommendations are made:

- 1) **Investigation of the former fire training area**. A soil and groundwater investigation of the former fire training area is recommended in order to assess the magnitude and extent of PFAS impacts, if any.
- 1) Changes to the current water quality monitoring program. A separate review of the current groundwater monitoring program for the Airport recommended expansion of the current groundwater monitoring network to assess up-gradient and down-gradient groundwater quality. One of the proposed groundwater monitoring well locations was downgradient of the former Sewerage Treatment Plant which is also the location of the former fire training ground. Changes to the current surface water monitoring locations were also recommended including the addition of monitoring in the Georges River. These recommendations are considered relevant based on this preliminary PFAS risk assessment. However it is further recommended that the analysis suites for PFAS are broadened. Analysis costs have fallen over the past 12 months and most labs offer a more comprehensive suite of PFAS compounds that has previously been used for the Airport. As a minimum, perfluorohexane sulfonic acid (PFHxS) should be included in all future PFAS analysis in order to be able to assess concentrations against the enHealth interim criteria.
- 2) Current storage of AFFF (C6 chain) for emergency use at the Turbomeca facility. The AFFF system at the Turbomeca is used in an enclosed helicopter engine test bay with a closed drainage system. If the AFFF was to be used, the foam and water would drain to a holding tank that could be pumped out for appropriate disposal off-site. The drainage system and holding tank is periodically inspected by Turbomeca to ensure it's integrity. The AFFF is stored in an above ground stainless steel tank with clearance between the base of the tank and the concrete floor slab. Any leaks from the tank would therefore likely be detected. No changes to the current system are recommended. However, when the current AFFF product is due for replacement, it is recommended that SMA ensure a review is undertaken and where feasible, the foam should be replaced with a fluorine free foam. Further guidance on environmental issues regarding the ongoing use of AFFF can be obtained from the Queensland Government's Environmental Management of Firefighting Foam Policy (QLD DEHP, 2016).
- 3) Aviation hydraulic fluid. A review of the aviation hydraulic fluid products historically and currently used at the Airport is recommended. The review should aim to determine if the products used contained PFAS, the main PFAS compounds and approximate percentage content. Should this review identify that PFAS containing products have been used then the significance of this source in the conceptual site model may need to be revised.
- 4) GEMS 002 PFC management actions advice. For the purposes of GEMS 002, this Preliminary PFAS Risk Assessment could be used as a Trigger Assessment for new activities at the Airport. For activities that will be located in or in the vicinity of the identified potential PFAS source areas, Preliminary and Detailed Site Investigations in accordance with Schedule A of the NEPM should be undertaken. For activities located outside these areas, the risk of significant PFAS contamination to be present is considered low and further investigation is not considered necessary. However, should a detailed site investigation be undertaken for other reasons (ie. potential presence of non-PFAS contaminants) then it is recommended that PFAS compounds are included in the laboratory analysis suites. Additional data on PFAS concentrations in soil, groundwater or surface water at the Airport should be compiled to support updates to the Conceptual Site Model and revisions of the risk assessment in the future.

Preliminary PFAS Risk Assessment for Bankstown Airport



Important note about your report

The sole purpose of this report is to present the findings of a Preliminary Per- and Polyfluoroalkyl Substances Risk Assessment at Bankstown Airport carried out by Jacobs for Sydney Metro Airports ('the Client'). This report was produced in accordance with and is limited to the scope of services set out in the contract between Jacobs and the Client. That scope of services, as described in this report, was developed with the Client.

The scope of services was not intended to provide a definitive or quantitative investigation of the environmental impacts, performance and compliance of the subject site. Environmental conditions may exist at the site that are beyond the scope of our investigations and this report.

The findings presented in this report are professional opinions based solely upon information and data provided or made available by the Client or otherwise available in the public domain between 28 May, 2016 and 21 November, 2016.

Jacobs has relied upon and presumed that this data is accurate and representative of the conditions at the site. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete or if site conditions change beyond the above dates then it is possible that our conclusions as expressed this report may change. Because regulatory evaluation criteria are constantly changing, concentrations of contaminants present and considered to be acceptable at the time of this report may in the future become subject to different regulatory standards and require assessment.

Opinions and judgements expressed in the report are based on Jacobs' understanding and interpretation of current regulatory standards and should not be construed as legal opinions.

Except as specifically stated in this report, Jacobs makes no statement or representation of any kind concerning the suitability of the site for any purpose or the permissibility of any use.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by Jacobs for use of any part of this report in any other context.

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1. Introduction

Sydney Metro Airports (SMA) has been the lease holder and operator of Bankstown Airport (the Airport) since December, 2003. The Airport property is owned by the Commonwealth and the management of environmental matters on the Airport is regulated under the *Airports Act 1996* and the *Airports (Environment Protection) Regulations 1997*.

Historical activities at the Airport have included the use of Aqueous Film Forming Foams (AFFF) for fire fighting and fire training purposes. At least one of the foam types historically used at the Airport, 3M Lightwater, contained per- and polyfluoroalkyl substances (PFAS). Other activities at the Airport may also have involved the use of products containing PFAS. These chemicals have been identified as presenting potential risks to human health and the environment.

SMA has engaged Jacobs Group (Australia) Pty Ltd (Jacobs) to undertake a preliminary risk assessment of PFAS at the Airport. This report presents the scope of work, findings and recommendations from the risk assessment.

1.1 Scope of work

The risk assessment was limited to:

- an assessment of the potential for PFAS to be present in soil, groundwater or surface water at the Airport;
 and,
- an assessment of whether PFAS in soil, groundwater or surface water, if present, could present a risk to human health or the environment.

The scope of work involved a desktop assessment and brief site reconnaissance only. No environmental sampling was undertaken as part of this assessment.

The scope of work performed included:

- Identification of potential sources of PFAS at the Airport through a review of SMA and tenant activities and submission of information requests to the Department of Infrastructure and Regional Development (DIRD), Airservices Australia and the NSW Fire Brigade.
- A review of the Airport site setting including topography, geology, hydrogeology and hydrology to identify potential PFAS transport pathways.
- Identification of potential receptors to PFAS contamination including on-site and off-site human receptors and on-site and off-site ecological receptors.
- Review of existing soil, groundwater and surface water data at the Airport relating to PFAS contamination.
- Development of a preliminary conceptual site model and a qualitative assessment of PFAS risks.
- Recommendations for further investigation and / or risk management measures as appropriate.



2. Background on Per- and Polyfluoroalkyl substances (PFAS)

2.1 Terminology

PFAS are a large group of compounds consisting of a fully fluorinated hydrophobic alkyl chain of varying length (typically 4 to 16 carbon atoms) and a hydrophilic end group (DER, 2016). In the past, PFAS were often referred to as "PFCs" (per- and polyfluorinated chemicals), but this term can also be understood as perfluorocarbons which contain only carbon and fluorine and have properties and functionalities different from those of PFAS (OECD, 2013).

PFAS and their derivatives are man-made chemicals and have been used in a wide range of industrial processes and consumer products, including in the manufacture of non-stick cookware (although not added to the finished cookware), specialised garments and textiles, Scotchgard™ and similar products (used to protect fabric, furniture, and carpets from stains), metal plating and in some types of fire-fighting foam (NICNAS, 2016).

There are two main groups of PFAS used in industry (NICNAS, 2016):

- perfluoroalkyl sulfonic acids (PFSA) group, including chemicals such as perfluorooctane sulfonate (PFOS)
- the perfluorocarboxylic acid (PFCA) group, including chemicals such as perfluorocatanoic acid (PFOA).

Various organisations have used the term PFCs in the past. However, the US EPA is now utilising the term PFAS to collectively describe PFOA, PFOS and the other chemicals in these groups (US EPA, 2016). The Environmental Health Standing Committee of the Australian Health Protection Principal Committee (enHealth) now refers to this group of chemicals as PFAS (enHealth, 2016) and other Australian regulatory authorities appear to be following this direction.

2.2 Sources of PFAS

PFAS are man made chemicals that have been used since the 1950s. They are resistant to heat, oil, grease, water and acids and this, combined with their surfactant properties, have made them useful for a wide variety of applications.

While PFAS has not been manufactured in Australia, PFOS was a component of the Scotchgard[™] and Scotchban[™] range of products supplied by the 3M Company. Scotchgard[™] was used in commercial / industrial applications in Australia for protecting textiles and leather. Scotchban[™] was used to treat paper containers for fast-food and pet-food. Other products containing PFAS that were used in Australia include Aqueous Film Forming fire fighting Foams (AFFF) and Alcohol-Type Concentrate (ATC) fire fighting foams, industrial coating products, rubber moulding products and acid mist suppressants. (NICNAS, 2013)

The salts of PFSAs (primarily PFOS) have been used as additives with a content of about or less than 0.1% in aviation hydraulic fluids to prevent evaporation, fires and corrosion (OECD, 2013).

Non-polymeric PFAS (such as the potassium, lithium, diethanolamine and ammonium salts of PFOS or 6:2 fluorotelomer sulfonate) have been used as surfactants, wetting agents and mist suppressing agents for both decorative chrome plating and hard chrome plating processes. Recent technology development on using chromium (III) instead of chromium (VI) has made PFOS use in decorative chrome plating obsolete. For hard plating, chromium (III) does not work, and PFOS is still used for this application (OECD, 2013).

The 3M Company stopped manufacturing PFOS chemicals in December 2000 and reformulated all Scotchgard products replacing PFOS with other short-chain PFASs (NICNAS, 2016). Many PFOS containing products were phased out in Australia in December, 2013 (NICNAS, 2013). However in many cases, products containing the C-8 chain PFAS such as PFOS and PFOA have been replaced by products with shorter chain PFAS. For example manufacturers of aqueous film forming foams AFFF have been replacing long-chain fluorosurfactants

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based on PFOS or PFOA derivatives/precursors with shorter-chain fluorosurfactants based on perfluorobutane sulfonate (PFBS) and perfluorohexane sulfonic acid (PFHxS) (Danish Environmental Protection Agency, 2015).

2.3 Fate and transport

PFAS includes thousands of compounds and the fate and transport of these compounds in the environment is not well understood. In general terms, PFAS are known to be persistent, bioaccumulative and toxic and, due to their persistence in the environment and moderate solubility, can be transported long distances (potentially kilometres) in water and air, and transfer between different media (e.g. soil, sediment, surface water and groundwater) (DER, 2016).

Over the pH range normally found in soil, groundwater and surface waters (pH 5-9) PFAS are normally present as anions, and this reduces sorption by soils and sediments, which usually carry a net negative charge. Their retardation during transport in groundwater increases with perfluorocarbon chain length and the fraction of organic carbon in the soil, with PFSAs binding more strongly than PFCAs of the same carbon number. Vapour migration plays only a minor role in assessing the mobility of most PFAS in the environment due to the low to very low vapour pressure of the PFAS. (Concawe, 2016)

While PFAS are generally considered to be recalcitrant to biodegradation via naturally-occurring microorganisms in water or soil, precursors are known to be transformed into PFAS under natural circumstances (Concawe, 2016). Therefore, DER (2016) recommends that the potential for precursor transformation to PFOS and PFOA and other PFAS metabolites should be considered in the overall potential for environmental and human exposure and evaluation of risk to human health, the environment and environmental values when assessing site contamination caused by PFAS.

2.4 Exposure and toxicity

enHealth (2016) notes that because of their widespread use, most people in Australia will have some PFOS and PFOA in their body. PFOS and PFOA are readily absorbed through the gut, and once these chemicals are in a person's body it takes about two to nine years, depending on the study, before those levels go down by half, even if no more is taken in. Outside of the occupational setting, exposure to PFAS can occur from the air, indoor dust, food, water and various consumer products. For most people food is expected to be the primary source of exposure to PFOS and PFOA. Human breast milk may contribute to exposure in infants since PFCs have been detected in human breast milk. For some communities near facilities where PFOS and PFOA have been extensively used, higher levels may be found in the surrounding environment and exposure may occur through other means, including drinking water supplied from groundwater containing PFOS and PFOA..

Studies on laboratory animals exposed to high levels of PFAS have indicated changes in the liver, thyroid, and pancreatic function, as well as some changes in hormone levels. Some, but not all studies in humans have shown that certain PFAS may:

- affect the developing foetus and child, including possible changes in growth, learning, and behaviour;
- decrease fertility and interfere with the body's natural hormones;
- increase cholesterol;
- affect the immune system; and,
- increase cancer risk. (ATSDR, 2016)

As noted in Section 2.2, many products containing C-8 chain PFAS have been replaced by shorter chain PFAS. While these are thought to be less toxic, there is a general lack of toxicological information regarding the short-chain PFAS other than PFHxS. Similarly there is very little information on the environmental fate and transport of short-chain PFAS. (Danish Environmental Protection Agency, 2015)

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2.5 Regulatory framework

Regulators around the world have introduced restrictions on the manufacture, import and use of certain types of PFAS since the early 2000's. As noted in Section 2.2, many types of PFOS containing products were prohibited in Australia from 2003.

However the Commonwealth and State regulatory framework for the management of PFAS impacts to land is still developing. There are no screening guideline values for PFAS included in the National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended 2013 (NEPM). There are no specific published NSW EPA guidelines or requirements for the assessment of PFAS impacts or for the disposal of PFAS impacted waste in NSW. The *Airports (Environment Protection) Regulation 1997* does not provide trigger levels for PFAS in soil or groundwater.

In May, 2015, the Department of Defence issued Interim Screening Criteria for Perfluorooctanesulfonate (PFOS), Perfluorooctanesulfonic acid (PFOA) and 6:2 fluorotelomer sulfonate (6:2FTS) (Defence, 2015). These compounds are PFAS that are commonly present in certain types of AFFF.

In March, 2015, the Department of Infrastructure and Regional Development published the Guideline for Environmental Management 002 "PFC – management actions advice" (GEM 002) (DIRD, 2015). This document is discussed further in Section 2.5.1.

In June, 2015, Airservices Australia commissioned GHD to prepare the report "Managing PFC contamination at Airports, Interim Management Strategy and Decision Framework" (GHD, 2015) which also provides background on the potential presence, transport mechanisms and risks associated with PFAS and presented a recommended management strategy for PFAS impacted land.

The Western Australian Department of Environmental Regulation published "Interim Guideline on the Assessment and Management of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS), Contaminated Sites Guidelines" in February, 2016 (DER, 2016). This document provides recommendations on the assessment, management and remediation of PFAS impacted sites.

enHealth published "Interim national guidance on human health reference values for per- and poly-fluoroalkyl substances for use in site investigations in Australia" in June, 2016 (enHealth, 2016). This guidance provides recommended Tolerable Daily Intake values, Drinking Water Quality Guidelines values and Recreational Water Quality Guideline values for the sum of PFOS and perfluorohexane sulfonate (PFHxS) as well as PFOA.

The QLD Department of Environment and Heritage Protection published the "Operational Policy for the Environmental Management of Fire Fighting Foam" in July, 2016 (DEHP, 2016). This policy sets out requirements for fire fighting foams or materials contaminated with fire fighting foams in Queensland. Under this policy, foams containing PFOS or PFOA and it's precursors must be withdrawn from service. C6 chain flourotelemer foams can be used under certain conditions.

A summary of published guideline values for PFAS in soil, surface water and groundwater is provided in Table 1 on the following page.

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Table 1 : Summary of selected Australian PFAS guideline values

Exposure scenario	PFOS	PFOS + PFHxS	PFOA	6:2 FTS
Tolerable Daily Intake (µg/kg/d)		0.15 ¹	1.5 ¹	
Drinking Water Quality Guideline (µg/L)	0.2 ^{2,5,6}	0.51	5 ¹ 0.4 ^{2,5,6}	5 ^{2,5,6}
Recreational Water Quality Guideline (µg/L)	26	51	50 ¹ 4 ⁶	50 ⁶
Ecological – freshwater (High conservation value – 99% species protection) (µg/L)	0.000233		19 ³	
Ecological – freshwater (Slightly – moderately disturbed ecosystems – 95% species protection) (µg/L)	0.13 ³ 6.66 ^{5,6}		220 ³ 2900 ^{5,6}	
Ecological – freshwater (Highly disturbed ecosystems – 90% species protection) (µg/L)	2 ³		632 ³	
Ecological – freshwater (Highly disturbed ecosystems – 80% species protection) (µg/L)	31 ³		1,824 ³	
Soil – human health residential (mg/kg)	4 ⁴ 6 ^{5,6}		16 ^{5,6}	60 ^{5,6}
Soil – human health industrial / commercial (mg/kg)	100 ⁴ 90 ^{5,6}		240 ^{5,6}	900 ^{6,6}
Soil – ecological terrestrial (mg/kg)	0.373 – 4.71 ^{5,6}		3.73 ^{5,6}	
Surface water – human health consumption of fish (ng/L)	0.65 ^{5,6}		300 ^{5,6}	6.5 ^{5,6}

Sources:

- enHealth (2016)
- 2 Defence (2016) based on US EPA provisional guidance.
- 3 Draft Australian and New Zealand Water Quality Guidelines applicable to aquatic organisms as published in DER (2016) DER (2016)
- 4
- Airservices Australia Guidance (GHD 2015)
- Defence (2016) based on US EPA Region 4 guidance.

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2.5.1 GEM 002 - PFC - management actions advice

GEM 002 – PFC Management Actions Advice (DIRD, 2016) provides a guide to operators of undertakings at federal leased airports on the reasonable and practicable management of PFAS which may be encountered during building activities. GEM 002 was applicable until 30 June, 2016 and SMA has been advised by DIRD that it should still be applied.

The guidance recommends that a Trigger Assessment is conducted to determine if there is a likelihood of known or potential PFAS contaminating activities occurring (presently or in the past) on or in the vicinity of the building activity site. If the Trigger Assessment identifies a likelihood of known or potential contamination then a Preliminary Site Investigation should be conducted as per Schedule A of the National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended in 2013 (referred to as the NEPM) (NEPC, 2013).

Where the Preliminary Site Investigation indicates there is reason to expect PFAS contamination or there is not sufficient information to determine otherwise, then a Detailed Site Investigation should be conducted in accordance with Schedule A of the NEPM.

2.5.2 NSW EPA Decision Tree for Prioritising Sites Potentially Contaminated with PFASs

The NSW EPA commissioned Environmental Risk Sciences Pty Ltd (enEiskS) to prepare a decision tree for prioritising sites potentially contaminated with PFAS (hereafter referred to as the NSW EPA Decision Tree) (enRiskS, 2016). The NSW EPA Decision Tree states that an initial screening assessment involving collection of surface water, groundwater and soil samples is to be undertaken at each potentially impacted site, in the areas of the site most potentially impacted.

Trigger points have been defined based on total PFAS concentrations in the collected samples. Based on these trigger points, a site is classified as either one of the following priority levels:

- Priority 1 sites where PFAS concentrations are elevated and there is a pathway by which people or the
 environment can be exposed to the contamination. Detailed investigations are to be carried out on these
 sites as soon as possible and short term management options to reduce the risks associated with the
 contamination may also be needed.
- **Priority 2** sites are those where PFAS is present above screening guidelines but at lower concentrations than Priority 1 sites. Detailed investigations of these sites are to be performed following the Priority 1 sites.
- **Priority 3** sites are those sites where PFAS concentrations are not detected or are detected below the relevant thresholds. These sites are unlikely to need further investigation but a final decision on the need for such an investigation is to be confirmed once the Australian guidelines for these chemicals are finalised.

The trigger point values are summarised in Table 2 below.

Table 2: NSW EPA Decision Tree trigger point values (summarised from enRiskS, 2016)

Trigger point descriptor	Surface water	Groundwater	Soil leachate
Trigger Point 1 Elevated contamination	10 μg/L	10 μg/L	100 μg/L
Trigger Point 2 Current screening guideline	0.1 μg/L	0.1 μg/L	1 μg/L
Trigger Point 3 Low level of contamination	0.05 μg/L	0.05 μg/L	-
Limit of Reporting as at February, 2016	0.01-0.05 μg/L	0.01-0.05 μg/L	-

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For surface water and groundwater samples, Priority 1 sites are those where on-site results are above Trigger Point 1 or where off-site results exceed Trigger Point 2. Priority 2 sites are those where on-site results are between Trigger Point 1 and Trigger Point 3 or off-site results are between Trigger Point 2 and Trigger Point 3. Priority 3 sites are those where on or off-site results are below Trigger Point 3.

For soil leachate samples, Priority 1 sites are those where results are above Trigger Point 1. Priority 2 sites are those with results between Trigger Point 1 and Trigger Point 2. Priority 3 sites are those with results below Trigger Point 2.



3. Site setting

3.1 Overview

The Airport consists of approximately 313 hectares of commonwealth land located approximately 25 km from the Sydney central business district (CBD). The Airport has three parallel runways, a Helicopter Landing Site and an extensive taxiway system. There are both hardstand and grass areas for aircraft parking as well as 90 separate hangar structures. Not all hangars are used for aircraft storage. Additional activities taking place within the hangar buildings include aircraft maintenance, flying schools, executive flight operations, and air freight. Most of the hangars have annexes or space for supporting ancillary activities such as offices, classrooms, storage, workshops, toilets and kitchens (SMA, 2014).

SMA has approximately 150 tenants at the Airport. The tenant activities can be broadly categorised as:

- 1) Aviation flying schools, emergency services, freight, aircraft maintenance, scenic flights and aircraft couriers:
- 2) Aviation-related light aviation manufacturing, servicing and repairs and industry supply chain activities; and.
- 3) General commercial and industrial fast food retailers, supermarket, service station, logistics, facilities, financial services organisations, manufacturing, commercial offices, telecommunications infrastructure and educational facilities (SMA, 2014).

A general site layout plan is provided as **Appendix A**, **Figure A1**.

3.2 Surrounding properties

Milperra Road is located adjacent to the southern boundary of the Airport property. Bankstown Golf Club and various industrial activities are located further south of Milperra Rd.

The land to the east of the northern section of the eastern Airport property boundary is used for light industrial activities. Condell Park High School is located about 300 meters east of the Airport's eastern boundary. There are also several recreational areas east of the southern section of the Airport's eastern boundary. Residential properties are located further to the east.

Marion Street is located adjacent to the northern Airport boundary. The land further north of Marion Street is predominantly residential.

Georges River Golf Course is located west of the Airport's western boundary with other recreational areas (e.g. tennis courts) located north of the golf course. Henry Lawson Drive is located west of the golf course with the Georges River west of Henry Lawson Drive.

The main surrounding land uses are noted on Appendix A, Figure A1.

3.3 Topography and hydrology

The Airport land is generally flat with elevation rising from approximately 3 meters Australian Height Datum (AHD) in the south to approximately 5 meters AHD in the north.

The Airport is part of the Milperra Catchment which drains surface water to the Georges River. Stormwater from higher areas north east of the Airport as well as from the Airport property is directed to the Georges River through underground pipes, open channels and culverts as indicated in **Figure 1** below.

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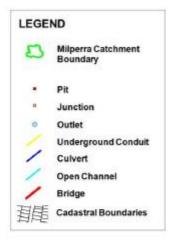




Figure 1 : Stormwater drainage network for the Milperra Catchment. Note red arrows indicate assumed flow direction (BMT WBM, 2013 with mark-ups by Jacobs)

The Georges River is split into two different sections by the Liverpool Weir, located near Liverpool Train Station. The section upstream of the weir is freshwater while downstream is saltwater and tidal. The Georges River and its tributaries form a vertically well-mixed estuary with waters in the lower reaches having essentially marine salinities. It is therefore considered more appropriate to compare water quality monitoring results against the limits for marine water, rather than fresh water.

The NSW DECCW (2006) defines water quality objectives (WQO) for the Georges River. The areas surrounding the Georges River in the near vicinity of the Airport are characterised by urban developments. The NSW

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DECCW (2006) states that the WQO for the Georges River affected by urban development should be selected to protect aquatic ecosystems and recreational contact (both primary and secondary). It is noted in NSW DECCW (2006) that these WQOs may not be achievable in the short term and that the protection of primary recreational users may not be achievable.

The Georges River is highly influenced by inputs from the surrounding urbanised catchment, and although a fishing ban is not in place on the Georges River, the NSW Department of Primary Industries (Fishing and Aquaculture) recommend that fish and shellfish caught in the tidal waters of the Georges River and its tributaries, upstream from Rabaul Road boat ramp at Georges Hall (west of the Airport) to Liverpool Weir should not be eaten due to high levels of pollutants being found in these waters (DPI, 2016). However surface water and groundwater discharges from the Airport to the Georges River would occur south of the Rabaul Road boat ramp and therefore the recommendation on consumption of fish and shell fish would not apply. Oysters cannot be taken anywhere in the Georges River (DPI, 2016).

3.4 Soils and geology

Review of the 1:100,000 Penrith Soil Landscape Series Sheet 9030 (Soil Conservation Service of NSW, 1989) indicated that the area in which the Airport is located has been disturbed by human activity to a depth of at least 100 cm. The original soil has been removed, greatly disturbed or buried. Most of these areas have been levelled to slopes of less than 5%. Landfill includes soil, rock, building and waste materials. The original vegetation has been completely cleared.

The natural soils underlying these disturbed areas consist of fluvial sediments of the Berkshire group of soils. The Berkshire group of fluvial sediments are typically characterised by orange heavy clays and clayey sands, often mottled and with ironstone inclusions. Due to the depositional action of the fluvial sediments, they can exhibit marked differences in soil texture, colour, stoniness and calcium carbonate content.

Review of the 1:100,000 Penrith Geological Sheet 9030 (Geological Survey of NSW, 1991) indicated the Airport is within an area underlain by fluvial sediments. The sediments overlie Ashfield Shale of the Wianamatta Group. The fluvial sediments comprise clayey quartzose sand and clay. The Ashfield Shale comprises dark-grey to black claystone-siltstone and fine sandstone-siltstone laminite.

3.5 Hydrogeology

Regional groundwater flow at the Airport is expected to be towards the Georges River, west and south-west of the Airport. Shallow groundwater is expected to be perched above the residual weathered bedrock and to be recharged predominantly by the infiltration of surface water falling onto the unsealed surfaces of the site.

3.5.1 Beneficial use of groundwater

SMA has advised that there is currently no beneficial use of groundwater at the Airport.

At the time of preparing this risk assessment, Jacobs conducted a search of the Office of Water groundwater database. There were no registered wells identified within the Airport property. Two registered wells (GW106700 and GW047864) were located in the Georges River Golf Course and are listed as having an intended purpose of "recreation".

GW106700 was installed in 2004. It was installed to a depth of 16 meters below ground surface and has a standing water level of 3 meters below ground surface. The water bearing zone is noted to be between 12.5 and 13 meters below ground surface. The license status is noted as "lapsed".

GW047864 was installed in 1979. It was installed to a depth of 252 meters below ground surface and has a standing water level of 21 meters below ground surface. Several water bearing zones were recorded. The license status is noted as "cancelled".

Five registered wells are located south of Milperra Rd near the corner of Ashford Ave. These wells are all noted as monitoring bores.

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Well GW023146 is located in a residential property on Rickard Road, on the western side of the Georges River, approximately 200 meters from the Airport property boundary. This well was completed in 1965 and is listed as a private domestic water use well. The water bearing zone is noted as 4.2 meters below ground surface and the standing water level is noted as 3.6 meters below ground surface. It seems unlikely that this well, if still present, would be used for drinking water purposes. Furthermore, shallow groundwater from the Airport would likely discharge to the Georges River and may not impact on the well located on the opposite side of the river to the Airport.

Well GW108838 is located on the southern side of Bankstown Golf Club, approximately 800 meters south of the Airport property boundary. This well was installed in 2006 and is noted as a test bore. It was installed to 240 meters below ground surface. The license status is "cancelled".

The locations of the registered wells are shown on Figure 2 below.

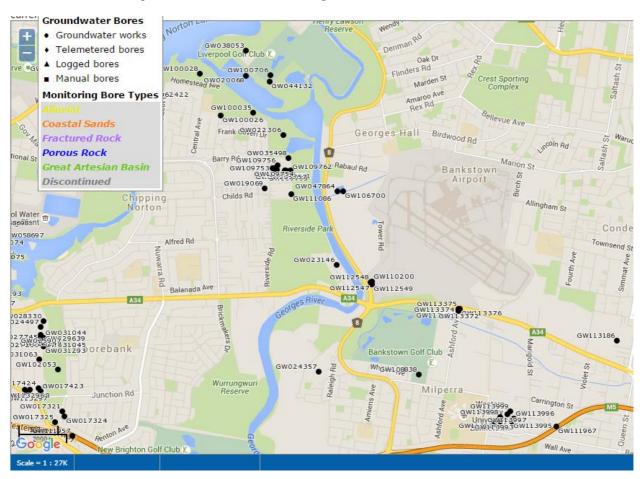


Figure 2 : Registered water bores around Bankstown Airport (Office of Water website search on 14 June, 2016)



4. Potential sources of PFAS at the Airport

This section provides a historical overview of operations at the airport, the results of our historical business listings search and the findings from our communications with the Department of Infrastructure and Regional Development (DIRD), Airservices Australia and NSW Fire & Rescue.

4.1 Historical overview

The site history has been based on a review of the report prepared by Godden Mackay Logan (April 2005) Bankstown Airport, Heritage Management Strategy as well as information in the Bankstown Airport Master Plan and Environment Strategy 2014 (SMA, 2014). A brief outline of the site history is provided below.

- The Bankstown Airport site was formerly occupied by market gardens, poultry farms and commercial premises (including a service station) located at the corner of Milperra and Billiana Roads;
- Construction of the Bankstown Aerodrome commenced in 1940;
- The Royal Australian Air Force (RAAF) established at the site in late 1940. The activities undertaken by the RAAF included airfield and training operations, aircraft assembly and temporary accommodation for RAAF personnel;
- The Women's Australian Auxiliary Air Force (WAAAF) established to the site in 1941. The activities undertaken by the WAAAF included training, administration and accommodation;
- The US Air Force was accommodated at the site from 1942 to 1945. The site was used as a base for a number of squadrons and accommodated the associated personnel;
- The Clyde Engineering Co Pty Ltd undertook maintenance, repair and modification of aircraft from 1942;
- Hawker de Havilland (subsequently Boeing) opened a factory in 1942 for the manufacture of aircraft and parts;
- A Mobile Naval Air Base was commissioned at Bankstown in 1945. As part of this commission, hangers, taxiways and associated facilities were constructed;
- From 1945 to 1950 sections of the site were used to house migrants;
- In 1952, a gravel runway was constructed in the 11/29 direction (914m).
- In 1962, a second 1,190 metre runway was constructed also in the 11/29 direction.
- The control of the Bankstown Airport was divested to the Department of Civil Aviation in 1980.
- Airport ownership was transferred to the Federal Airports Corporation in 1988.
- Ownership of the Airport was transferred to Sydney Airport Corporation Ltd (SACL) in 1998. Bankstown Airport Limited was then separated from SACL in 2001.
- BAL was sold to BaCH consortium in 2003.
- Boeing Aerostructures Australia relocated to Melbourne in 2013.

SMA has been the lease holder and operator of the Airport since December, 2003.

4.2 Historical business listings

Jacobs commissioned Lotsearch Pty Ltd (Lotsearch) to undertake a search of historical Universal Business Directories (UBD) from 1950, 1970 and 1991. Business listings from these directories have been scanned and geo-referenced and the Lotsearch report is provided in **Appendix B**. The search area included the Airport property and the area within 100 meters of the boundary.

The purpose of the historical business listing search was to identify businesses that may have stored or used materials containing PFAS through a review of the category the business was listed under and/or the business

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name. A large number of the listings indicated businesses involved in aircraft maintenance and repair and there is the possibility that these businesses may have stored or used aviation hydraulic fluids containing PFAS.

Two other (non-aviation) activities were identified as having the potential to use PFAS containing products. These are summarised in **Table 2** below.

Table 3: List of non-aviation related activities with potential PFAS use identified through historical UBD listings

Dataset year	Business Activity	Organisation and Address	Comments
1991	Electroplaters	Goninans Platers Pty Ltd 7 Cooraban Rd, Milperra	Located just south of the Airport property. PFAS containing mist suppressants have been used in some electroplating industries. No further information on this business identified through internet search. Likely to be hydrogeologically downgradient of the Airport.
1970	Plastic coating specialist materials, Textile coaters and / or treaters	Coated Fabrics Pty Ltd Milperra Rd, Milperra	PFAS containing products have been used in treating textiles (eg. Scotchgard TM) No further information on this business identified through internet search. Specific location on Milperra Rd unknown. Likely to be hydrogeologically downgradient of the Airport.

4.3 Information from the Department of Infrastructure and Regional Development

A letter was sent to the Department of Infrastructure and Regional Development (DIRD) requesting information on historical activities at the Airport that may have involved the use or storage of PFAS containing materials. A response from DIRD was received (letter to Bankstown Airport Limited dated 23 September, 2016). This response stated that the historical files reviewed by DIRD did not identify the use of PFCs or specific locations which may be of interest. Furthermore, no information on the use of fire fighting foam at Bankstown Airport was identified by DIRD.

4.4 Information from Airservices Australia

Jacobs contacted Airservices Australia (Airservices) to request information on the historic use and storage of AFFF at the Airport.

Airservices advised that Airservices was created in 1995 and has not carried out an Aviation Rescue and Fire Fighting (ARFF) service at Bankstown Airport. It is Airservices' understanding that the ARFF function at Bankstown Airport was last carried out by the Civil Aviation Authority (CAA), and that this ceased around 1991. Airservices stated that although it is likely that an AFFF was used prior to 1991, information with respect to the type of foam used by the CAA should be sourced through DIRD.

Information provided by Airservices to Jacobs in 2010 regarding historic storage or use of AFFF at the Airport identified two potential locations:



- 1) Old Fire Training Ground located in the area of the old sewer treatment works, adjacent to the control tower and adjacent to the eastern side of the golf course.
- Fire Station located in the north eastern section of the airport. The area was characterized by a combination of tarmac hardstand, buildings and some areas of soft cover.

Figure 3 below is a photo of the former fire training ground provided by SMA. The approximate boundary of the area has been marked on the photo by SMA.



Figure 3: Photo of the former fire training area (supplied by SMA)

In a submission to the Senate Inquiry into Contamination at Commonwealth, State and Territory sites in Australia where Fire Fighting Foams containing Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA) were used, Airservices stated that the CAA and Department of Civil Aviation used the AFFF product 3M Lightwater from the early 1980s. 3M Lightwater contained PFOS as an active ingredient and other PFAS such as perfluorooctanoic acid (PFOA). Airservices transitioned to another fire fighting foam called Ansulite in 2003. However this was later found to contain trace concentrations of PFOS and PFOA. In 2010, Airservices transitioned to a PFC free foam, Solberg RF6, at all airports where Airservices provides ARFF services with the exception of the joint civil military airports of Darwin and Townsville (Airservices, 2016).

Airservices (2016) also noted that the ARFF at Bankstown was operated between 1950 and 1991 and 3M Lightwater was used.

4.5 Information from NSW Fire & Rescue

NSW Fire & Rescue was requested to provide information on fire incidents at the Airport, whether AFFF was used during these incidents and the approximate amount of AFFF applied.

In NSW Fire & Rescue's response, it was noted that computerised records of incidents are available from 1987 and AFFF was phased out by NSW Fire & Rescue in 2007. During the period 1987 – 2007, NSW Fire & Rescue responded to three incidents at Bankstown Airport where AFFF was used to extinguish the fire.

1) 7/10/2002 – Aircraft fire on the runway – low expansion alcohol resistant (ATC) foam was used. Information from SMA indicated that this incident occurred on runway 29R. However more details on the location on the runway were not available.

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- 2) 9/11/2002 Special structure fire in a shelter (no further details on location available) low expansion AFFF foam was used. Information from SMA indicated that this was a fire in early hours of the morning at the Qantas test cell area. SMA advised that this is where the Bunnings building is now situated.
- 3) 11/11/2003 Aircraft fire on runway low expansion AFFF foam was used. SMA advised that this incident occurred in an area known as the "southern triangle", north of the aviation museum which has since been developed.

The approximate locations of the incidents on 9/11/2002 and 11/11/2003 are shown on **Figure A1** in **Appendix A**.

4.6 Information from SMA incident records

SMA reviewed the internal incident records as well as relevant Australian Transport Safety Bureau Reports. The following incidents were identified in addition to those presented in Section 4.5 above:

- 1) 11/9/2005 Aircraft crash near the former fire training area. Photos reviewed by SMA indicate that AFFF was applied.
- 2) 2006 Aircraft crash near Link Rd. No further information on the use of AFFF was available.
- 3) 2011 Helicopter fire near the TOLL facility. No further information on the use of AFFF was available.

The approximate locations of the incidents are shown on Figure A1 in Appendix A.

4.7 Information from previous investigations

Jacobs reviewed the Contaminated Sites Register and associated reports for the Airport maintained by SMA. The purpose of this review was to identify potential PFAS sources at the Airport and soil, surface water or groundwater investigations where analysis of PFAS has been performed. The potential PFAS sources are summarised below. Previous soil, surface water or groundwater investigations which have included analysis of PFAS are discussed further in Section 5.

An Environmental Site Assessment for the Airport was undertaken in 2000 (URS, 2000). This assessment involved a review of existing documentation, a site reconnaissance and interviews with Airport personnel. Jacobs identified the following potential PFAS sources based on our review of the environmental assessment:

- The environmental assessment notes that a fire fighting training area was located in the vicinity of the former sewerage treatment plant on the western side of the Airport Property (near Tower Rd). Practices were to set materials alight using fuels such as diesel and white spirits and then put out the fire using foam based fire retardants. Fires were lit once a week during operation of the facility from the 1950s until fire services left the site (noted by Jacobs to be around 1991 based on information provided by Airservices).
- 2) The aircraft component manufacturing activity operated by Hawker de Havilland (and subsequently Boeing) included an alodining line involving various metal treatments such as chromic conversion coating and chromic acid anodising. Jacobs notes that PFAS may have been present in mist suppressants, if any such suppressants were used in these processes.
- 3) Pacific Turbine (sub-tenant to Hawker de Havilland) operated an electroplating activity, constructed in 1978. The plating area was located on metal framework over a concrete pit approximately 2 meters deep. Chemicals for the plating activity were stored outside in bunded lockable dangerous goods storage cabinets. Jacobs notes that mist suppressants used, if any, may have contained PFAS.
- 4) The environmental assessment noted that approximately ten 200 Litre drums of hydraulic oil (two different types of aviation hydraulic oil) were stored in the hydraulic oil storage and pumping station in Building 63. Jacobs notes that aviation hydraulic fluid can contain PFAS.
- 5) Several historical waste landfilling activities were identified in the environmental assessment. These included:

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- anecdotal reports of dumped chemicals from the Department of Civil Aviation or Department of Transport facilities at Waverton during the 1960s and early 1970s in the western area of the Airport (Jacobs notes this is now referred to as Landfill 2);
- b) use of rubbish and building waste from the Airport as fill under the Runway 11 approaches and to a lesser extent under the eastern Runway 29 approaches until 1988;
- c) dumping of sanitary waste cans (night soil) in the eastern side of the Airport (Jacobs notes this is now referred to as Landfill 1); and,
- d) the use of building materials as fill at the former Sewerage Treatment Plant on Tower Rd.

The waste material in these historical landfilling areas may have contained PFAS.

During investigations of the areas known as Site 1 and Site 2 on Link Road in the north of the Airport property in 2016, SMA personnel advised Jacobs that a fire training exercise had been conducted on part of the area. The exercise consisted of lighting a drum on fire and having emergency services put it out with a mixture of water and foam (Jacobs, August 2016a and b). These investigations are discussed further in Sections 5.3 and 5.4.

During an investigation for the Aeromedical Facility in the north east of the Airport, Jacobs was advised that a fire training exercise involving the use of AFFF had occurred approximately 140m north east (hydrogeologically upgradient) of the investigation area in 2006 – 2007 (Jacobs, October 2016). This investigation is discussed further in Section 5.6.

4.8 Current activities

Turbomeca Australasia Pty Ltd (Turbomeca) operates a helicopter engine maintenance facility on leased property at the Airport. The facility opened in 2010. The facility has a fire suppression system which includes use of AFFF. The AFFF product used is Polarfilm AR-AFFFC6 Premium 3/3 supplied by Orion Safety Industries Ltd. The Material Safety Data Sheet (MSDS) for the product indicates that the product does not contain PFOS, PFOA or their precursors. However the product does contain C6 fluorinated surfactants.

Jacobs visited the Turbomeca facility on 31 October, 2016. During the visit, Jacobs observed that the AFFF system is used for fire suppression in engine test bays enclosed within a building. Turbomeca advised that if the AFFF system was to be used, the foam and water would drain into floor drains which are connected to an underground concrete tank in a closed system. The tank can then be pumped out for appropriate off-site disposal. Turbomeca conducts periodic integrity inspections of the drainage system and the tank.

The AFFF product is stored in a stainless steel tank with approximately 200 Litre capacity. The tank is fitted to the outside of the building housing the engine test cell. There is a concrete slab under the tank and a 300 mm clearance between the base of the tank and the slab. There is no secondary containment installed for the tank. A photo of the storage tank is provided as **Figure 4** below.

Turbomeca advised that no fires have occurred in the engine test bay and the AFFF has never been used.



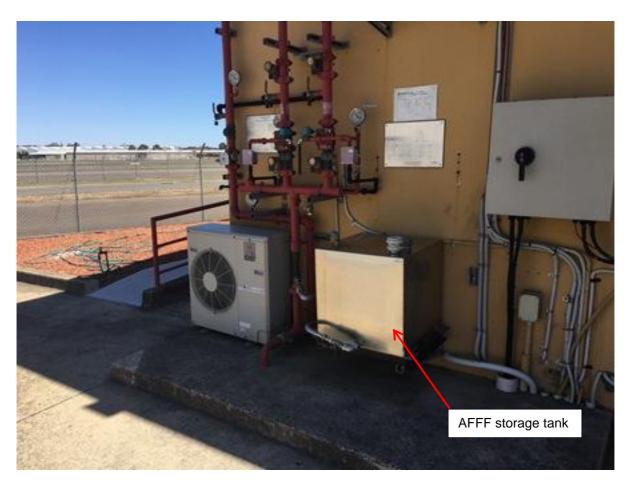


Figure 4: Photo of the AFFF storage tank at the Turbomeca facility

An aeromedical facility operated by TOLL will soon commence operations at the Airport. Solberg RF6 is proposed to be used in fire suppression systems at the facility. As noted in Section 4.4, Solberg RF6 is the AFFF product that Airservices transitioned to in 2010. Airservices Australia has stated that this foam is PFC free (Airservices Australia, 2016) and the product brochure states that the product is fluorosurfactant and fluoropolymer free (Solberg, 2014). Therefore the storage of this product for the facility has been discarded as a potential PFAS source in this assessment.

There are a large number of aviation related activities undertaken by tenants at the Airport where aviation hydraulic fluid may be used and / or stored. Hydraulic fluid may also leak from aircraft in parking areas. As noted in Section 2, small amounts of PFAS (<0.1%) can be present in aviation hydraulic fluids.



4.9 Summary of potential PFAS sources at the Airport

The potential PFAS sources at the Airport identified for this study are summarised in Table 4 below along with a subjective indication of the significance of each source. Where known, the approximate locations of the potential PFAS sources are shown on **Figure 1** in **Appendix A**.

Table 4 : Summary of potential PFAS sources at the Airport

No.	Potential PFAS Source	Significance	Comments
1	Historic use and storage of AFFF in the former fire training area.	High	Regarded as "high" significance as the use of AFFF containing PFAS is confirmed. The AFFF also appears to have been used approximately once per week for up to 40 years. Details of whether the ground was surfaced and whether drainage was present (i.e. site controls) have not been obtained/provided. However it appears likely that a significant amount of AFFF would have entered the ground.
2	Historic use of AFFF for fire training in the area on Link Road.	Moderate	Information provided by SMA indicated that the AFFF was used on one occasion in this area only. This appears to have been in a similar area as the incident in 2006 (potential source area 9 below). An investigation in this area was conducted in 2016 and PFAS compounds were detected in soil and groundwater (discussed further in Section 5.3).
3	Historic use of AFFF for fire training in the north east of the Airport, near Schofields Flying Club	Moderate	Information provided by SMA indicated that a fire training exercise involving the use of AFFF had occurred in this area in 2006 – 2007. Jacobs has assumed this was a one-off exercise (discussed further in Section 5.5).
4	Historic use and storage of AFFF in the former fire station area.	Moderate	It is not clear from the information available if AFFF was used or stored in this area. However if it was used, then the AFFF would have contained PFAS and would have entered the ground.
5	Fire incident on runway 29R on 7/10/2002	Moderate	Location on runway 29R not confirmed. The use of AFFF is confirmed. However this was a one-off incident.
6	Fire incident in former Qantas test cell on 9/11/2002	Moderate	This location is at the current Bunnings Warehouse site. Regarded as "moderate" as the use of AFFF is confirmed. However this was a one-off incident. Earthworks for the development of the Bunnings site may have reduced soil contamination (if any).
7	Fire incident on runway in Southern Triangle on 11/11/2003	Moderate	The use of AFFF is confirmed. However this was a one-off incident.

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No.	Potential PFAS Source	Significance	Comments
8	Fire incident near former fire training area in 2005	Moderate	The use of AFFF is confirmed. However this was a one-off incident.
9	Fire incident near Link Rd in 2006	Moderate	No information on the use of AFFF was obtained. However Jacobs has assumed AFFF was applied. This appears to have been in the same area as potential source no. 2 and as noted above, PFOS was detected in soil and groundwater in this area.
10	Helicopter fire near TOLL facility in 2011	Moderate	No information on the use of AFFF was obtained. However Jacobs has assumed AFFF was applied.
11	Historic and current storage of AFFF at the Turbomeca facility.	Low	The AFFF is currently stored in an above ground tank and has not been used. The product does not contain PFOS, PFOA or their precursors. However the product does contain C6 fluorinated surfactants.
12	Landfill areas 1 and 2	Moderate	There is only limited information about the nature of waste deposited in the landfills.
13	Historic use of mist suppressants at the Hawker de Havilland and Pacific Turbine facility	Low	The use of mist suppressants has not been confirmed. If these were used then the product may not have contained PFAS. Furthermore, unlike AFFF, which was applied in large volumes over ground surfaces during fire fighting and fire fighting training exercises, the mist suppressants would normally have only entered the ground due to leaks or spills.
14	Aviation hydraulic fluid	Low	Aviation hydraulic fluids would normally have only entered the ground from leaks or spills. The PFAS content in these fluids is also understood to be <0.1%. However there is the possibility that low level impacts, if any, would be wide spread due to leaks from aircraft parked on the grass areas of the Airport.



5. Previous PFAS investigations

A review of previous investigations and monitoring reports was undertaken to identify studies where PFAS was included in the laboratory analysis. The findings of this review are summarised below. Locations where PFAS sampling was conducted are presented in **Appendix A**, **Figure A1**.

5.1 Detailed Contamination Assessment, Proposed NETS Facility, 501 Tower Road Bankstown Airport (JBS&G, April, 2016)

This investigation was undertaken as part of the planning approval process for the Newborn and paediatric Emergency Transport Service (NETS) facility. The site has an area of approximately 3,000 m².

Soil sampling was conducted at nine locations and groundwater sampling was conducted from three wells at the site. A total of 13 soil samples and 3 groundwater samples were analysed for an extended PFAS suite. PFOS was reported at concentrations above the laboratory limit of reporting (LOR) in two samples with a maximum concentration of 0.018 mg/kg. The concentration of PFHxS exceeded the LOR in one soil sample with a reported concentration of 0.006 mg/kg.

PFOS concentrations in the three groundwater samples were all below the LOR. However concentrations of Perfluorobutanesulfonic acid (PFBS) (maximum concentration 0.00006 mg/L), PFHxS (maximum concentration 0.00017 mg/L) and Perfluorohexanoic acid (PFHxA) (maximum concentration 0.00006 mg/L) were reported above the LOR.

5.2 Contamination Investigation, National Parks and Wildlife Service Site Tower Road, Bankstown Airport (Jacobs, July 2016)

This investigation involved soil sampling at nine locations in or close to the construction footprint for the upgrade to the National Parks and Wildlife Services Site on Tower Rd. Three of the soil samples were analysed for PFOS, PFOA and 6:2 FTS. All of the samples were collected from the ground surface (i.e. above the groundwater bearing zone). Concentrations of the target PFAS compounds were below the laboratory limit of reporting in all three samples.

5.3 Contamination Investigation, Site 1 (Link Road), Bankstown Airport (Jacobs, August 2016a)

This investigation was undertaken in an area of approximately 20,000 m² that was proposed for development. As noted in Section 4.6, SMA advised Jacobs at the time of the investigation that a fire training exercise using AFFF had been carried out in the south east portion of the area.

A total of 15 soil samples and three groundwater samples were submitted for analysis of PFOS, PFOA and 6:2 FTS. The soil samples were all collected from the ground surface. Concentrations of the target PFAS compounds were above the laboratory reporting limits in 13 of the soil samples. The maximum concentration reported was 5.7 mg/kg of PFOS. While the maximum PFOS concentration in soil exceeded the adopted ecological screening value of 4.71 mg/kg, it was well below the adopted human health based investigation level of 90 mg/kg.

PFOS was the only PFAS compound detected in the groundwater samples at concentrations above the laboratory reporting limits. Concentrations of PFOS above the reporting limits were detected in two of the three wells sampled. The maximum concentration of PFOS reported was 0.02 μ g/L which was below the adopted risk screening level of 0.2 μ g/L.



5.4 Contamination Investigation, Site 2 (Drover Road), Bankstown Airport (Jacobs, August, 2016b)

This investigation covered an area of approximately 35,000 m² that was also proposed for development. The area was located adjacent to Site 1 and to the west of Drover Road. The north west portion of this area was also part of the area used for the fire training exercise referred to in Section 5.3.

A total of 21 soil samples and three groundwater samples were submitted for analysis of PFOS, PFOA and 6:2 FTS. The soil samples were all collected from the ground surface. Concentrations of the target PFAS compounds were above the laboratory reporting limits in nine of the soil samples. The maximum concentration reported was 0.34 mg/kg of PFOS which was below the adopted ecological screening value of 4.71 mg/kg as well as the adopted human health based investigation level of 90 mg/kg.

PFOS was the only PFAS compound detected in the groundwater samples at concentrations above the laboratory reporting limits. Concentrations of PFOS above the reporting limits were detected in two of the three wells sampled. The maximum concentration of PFOS reported was 0.04 μ g/L which was below the adopted risk screening level of 0.2 μ g/L.

5.5 Contamination Investigation, Site 3 (Avro Street), Bankstown Airport (Jacobs, August 2016c)

The area referred to as Site 3 was a development site of approximately 20,000 m² near Avro Street in the north of the Airport. A total of 15 soil samples and three groundwater samples were submitted for analysis of PFOS, PFOA and 6:2 FTS. The soil samples were all collected from the ground surface. Concentrations of the target PFAS compounds were above the laboratory reporting limits in eight of the soil samples. The maximum concentration reported was 0.062 mg/kg of PFOS which was below the adopted ecological screening value of 4.71 mg/kg as well as the adopted human health based investigation level of 90 mg/kg.

PFOS was the only PFAS compound detected in the groundwater samples at concentrations above the laboratory reporting limits. Concentrations of PFOS above the reporting limits were detected in all three wells sampled. The maximum concentration of PFOS reported was 0.05 μ g/L which was below the adopted risk screening level of 0.2 μ g/L.

5.6 Additional Contamination Investigation, Proposed NSW Ambulance Facility, Bankstown Airport (Jacobs, October 2016)

This investigation was conducted prior to the development of the NSW Ambulance Facility on a 30,000 m² area of land located in the east of the Airport. The investigation report noted that information provided by SMA indicated a fire training exercise involving the use of AFFF had occurred approximately 140m north east (hydrogeologically upgradient) of the investigation area in 2006 – 2007.

Two groundwater samples from wells estimated to be downgradient of the suspected fire training area were analysed using a PFAS suite consisting of 20 PFAS compounds including PFOS and PFOA. Concentrations of all analytes were below the laboratory reporting limits.

5.7 Biannual stormwater monitoring

A biannual stormwater monitoring program is in place at the Airport as part of the Airport's Water Quality Management Plan (BAL, 2012). Surface water samples are collected from eight locations representing each of the seven sub-catchments within the Airport property. The sampling locations and stormwater catchment areas are presented in **Figure 5 below**.



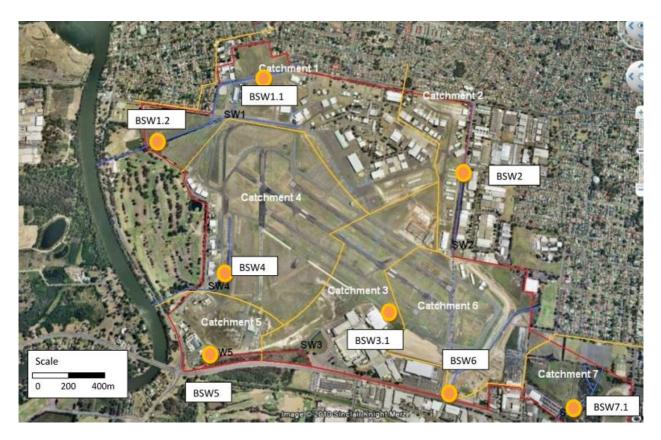


Figure 5: Bankstown Airport surface water catchments and monitoring locations (source: SMA)

Surface water samples collected in February, 2015 (SMA, 2015) and June, 2016 (Jacobs, June 2016) were analysed for PFOS, PFOA, 6:2 FTS and 8:2 FTS. PFAS was not included in the laboratory analysis suite for the August, 2015 sampling round.

PFOS results are summarised in **Figure 6** below. PFOA was detected in one sample only (0.04 μ g/L at BSW1.2 in February, 2016). 6:2 FTS and 8:2 FTS were not detected in any samples.



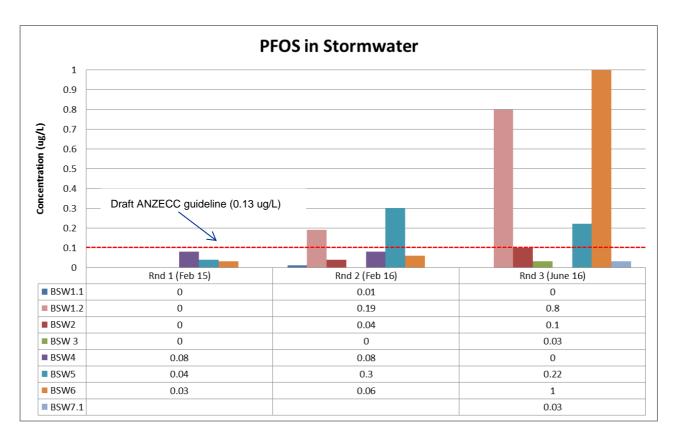


Figure 6: Summary of PFOS concentrations in stormwater samples

The maximum concentration of PFOS in surface water reported to date was 1 μ g/L in the sample collected from location BSW6 in June, 2016. This location is downstream of stormwater Catchment 6 which collects water from the south eastern part of the Airport including the south eastern ends of the runways. The second highest result was 0.8 μ g/L in the sample collected from BSW1.2. This location is downstream of Catchment 1 in the north of the Airport.

Locations BSW1.1 and BSW2 are upgradient locations, established to assess the quality of stormwater entering the Airport stormwater network from upgradient catchment areas. As noted in Figure 6, concentrations of PFOS have been detected in both locations, indicating a source or sources of PFAS upgradient of the Airport.

It is noted that surface water samples are normally collected immediately following a rain event. However the sampling for June, 2016 was conducted in dry conditions with limited water flow. This may have influenced the reported PFOS concentrations for the June, 2016 monitoring event.

In relation to preliminary risk screening values for protection of aquatic ecology, Jacobs has assumed that the values for slightly to moderately disturbed ecosystems (95% species protection) would apply. The reported concentrations of PFOS were all below the Airservices Australia guidance value of 6.66 μ g/L. However there have been several exceedances of the Draft ANZECC guideline value of 0.13 μ g/L.

The maximum reported concentration of PFOS was well below the enHealth recreational water quality guideline value for PFOS + PFHxS of 5 μ g/L. The maximum reported PFOS value in surface water was higher than the Airservices Australia guideline value in surface water for consumption of fish (0.65 μ g/L). It is noted that current laboratory PFOS reporting limits are well above this criterion.

The surface water guideline values apply in the receiving water after dilution. Sampling of the Georges River would be required to further assess PFOS concentrations against the guidelines.



5.8 Annual groundwater monitoring

Groundwater monitoring is undertaken annually at the Airport in accordance with a Water Quality Management Plan (BAL, 2012). The monitoring program focusses on three distinct areas of environmental concern within the Airport – Landfill 1 (2 groundwater monitoring wells), Landfill 2 (3 groundwater monitoring wells) and the former Boeing facility (referred to as Site 533) (16 monitoring wells). The monitoring program does not currently aim to collect data on broader groundwater quality across the Airport property.

The groundwater monitoring round carried out in June, 2016 included analysis of PFOS, PFOA and 6:2 FTS in selected samples (Jacobs, August 2016d). The results are summarised as follows:

- One sample was analysed from Landfill 1. The reported PFOS concentration was 0.14 μ g/L. PFOA and 6:2 FTS concentrations were below the laboratory reporting limits.
- Three samples were analysed from Landfill 2. PFOS concentrations were above the laboratory reporting limit in all three samples with a maximum concentration of 0.17 μg/L. PFOA concentrations were also above the laboratory reporting limit in all three samples with a maximum concentration of 0.09 μg/L. Concentrations of 6:2 FTS were below the laboratory reporting limit in all three samples.
- Five samples from Site 533 were analysed and all of the target PFAS concentrations were below the laboratory limits of reporting.

All PFOS, PFOA and 6:2 FTS concentrations reported for the June, 2016 groundwater monitoring round were below the enHealth interim screening criteria. It is noted that these criteria are set for the summation of PFOS and PFHxS concentrations and PFHxS was not included in the groundwater sample analysis. Despite this, it is considered unlikely that the addition of PFHxS would have resulted in the criteria being exceeded.

5.9 NSW EPA Decision Tree

It is noted that the NSW EPA Decision Tree trigger points have been set for total PFAS. The majority of the testing undertaken at the Airport site to date has used a basic suite of PFAS compounds and PFOS has been the main PFAS contaminant identified.

Based on a maximum reported concentration of PFOS in on-site surface water samples of 0.1 μ g/L and in on-site groundwater samples of 0.17 μ g/L, the Airport would be classified as a Priority 2 site under the NSW EPA Decision Tree.

However it is noted that the groundwater sampling conducted to date has not targeted PFAS source areas such as the former fire training ground. Furthermore, no soil leachate testing for FPAS has been undertaken.



6. Preliminary conceptual site model

A preliminary conceptual site model for the risks associated with PFAS contamination at the Airport has been developed. The purpose of a conceptual site model is to identify known or potential sources of contamination, human health and environmental receptors including exposure mechanisms and pathways between the sources and receptors. A risk is present where there is a complete source – pathway – receptor linkage. The conceptual site model can also be useful in identifying data gaps for further investigation.

The identified potential sources, transport mechanisms, receptors and associated exposure mechanisms are summarised in **Figure 6** below.

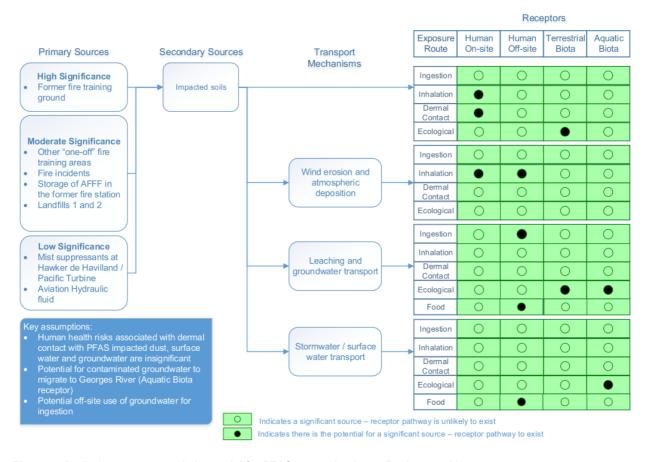


Figure 7: Preliminary conceptual site model for PFAS contamination at Bankstown Airport

Further investigations on the extent of PFAS contamination sources, if any, the potential for wind erosion, surface water and groundwater transport and a review of toxicological information would be required to further refine the model.

As noted in Section 3.5.1, a registered water well for domestic use was identified during a review of the Office of Water groundwater database. The well was noted to have been installed in 1965 and was located in a residential property on Rickard Road, on the western side of the Georges River, approximately 200 meters from the Airport property boundary. While it seems unlikely that groundwater would be used for domestic consumption in the area and it is unlikely that shallow groundwater from the Airport influences the area on the western side of the Georges River, this pathway is currently noted as potentially significant until further data is obtained.

Human consumption of food is a potential pathway if the Georges River is impacted with PFAS and fish from the river is consumed. As noted in Section 3.3, the Department of Primary Industries advise against eating fish

Preliminary PFAS Risk Assessment for Bankstown Airport



or shell fish from the Georges River upstream of the Rabaul Rd boat ramp. However, surface water and groundwater discharge from the Airport would occur downstream of this point.



7. Conclusions and recommendations

PFAS are emerging contaminants and their sources, fate and transport and toxicity is still not well understood. Similarly, the regulatory framework for the characterisation, assessment and management of risks associated with PFAS is evolving.

A number of potential PFAS sources have been identified at the Airport. The most significant potential source is associated with the historic use of AFFF containing PFAS at the former fire training ground. However AFFF was also used for fire fighting during incidents and for fire training at other locations around the Airport. It is understood that 3M Lightwater was the main AFFF product used at the airport and PFOS is the primary PFAS of concern in this product.

Other potential sources of PFAS contamination at the Airport include the storage of AFFF for emergency at the Turbomeca facility, aviation hydraulic fluid across the Airport, the potential historical use of mist suppressants in plating and other metal processing activities in the former Boeing area and the waste landfills at the Airport. It is noted that no information confirming the use of hydraulic fluids or mist suppressants which contained PFAS has been obtained. Furthermore, unlike the use of AFFF which was applied in large volumes directly to ground surfaces, sub-surface impacts from hydraulic fluid and mist suppressants would only have occurred through spills or leaks. Groundwater monitoring around the landfills at the Airport has not detected any significant emissions of PFAS from the landfills to groundwater. Therefore these sources are considered to present a less significant risk than the historic AFFF use in the former fire training area.

A number of soil, surface water and groundwater investigations and monitoring programs have been undertaken at the Airport and these have recently included analysis of PFAS. The programs have not specifically targeted PFAS source areas. However minor concentrations of PFOS and to a lesser extent PFOA and 6:2 FTS have been reported.

There is no known beneficial use of groundwater at the Airport or immediately hydraulically down gradient. However further data is needed to confirm that the registered well at the residential property on Rickard Rd is not used for drinking water purposes and / or is not influenced by shallow groundwater from the Airport. The most significant exposure pathways are more likely to be human direct contact with PFAS impacted soil at the Airport and exposure to ecological receptors in the Georges River via surface water and groundwater migration from the Airport. While the region of the Georges River where surface water and groundwater from the Airport would discharge is likely to be impacted by other urban contaminants, the advice from Department of Primary Industries against eating fish or shell fish from the Georges River applies upstream of the discharge area. Therefore the potential for people to consume fish impacted by PFAS migration (if present) from the Airport may need to be further assessed.

None of the investigation or monitoring data reviewed as part of this preliminary risk assessment indicates an immediate risk of harm to human health or the environment. Based on the maximum concentrations of PFOS in on-site surface water and on-site groundwater at the Airport, the site would be classified as Priority 2 under the NSW EPA Decision Tree. The NSW EPA Decision Tree states that Priority 2 sites are to be further investigated once investigations at Priority 1 sites are completed.

In order to further assess and manage the risks identified in this preliminary assessment, the following recommendations are made:

- 1) **Investigation of the former fire training area**. A soil and groundwater investigation of the former fire training area is recommended in order to assess the magnitude and extent of PFAS impacts, if any.
- 2) Changes to the current water quality monitoring program. A separate review of the current groundwater monitoring program for the Airport recommended expansion of the current groundwater monitoring network to assess up-gradient and down-gradient groundwater quality. One of the proposed groundwater monitoring well locations was downgradient of the former Sewerage Treatment Plant which is also the location of the former fire training ground. Changes to the current surface water monitoring locations were also recommended including the addition of monitoring in the Georges River. These recommendations are considered relevant based on this preliminary PFAS risk assessment. However it is

Preliminary PFAS Risk Assessment for Bankstown Airport



further recommended that the analysis suites for PFAS are broadened. Analysis costs have fallen over the past 12 months and most labs offer a more comprehensive suite of PFAS compounds that has previously been used for the Airport. As a minimum, perfluorohexane sulfonic acid (PFHxS) should be included in all future PFAS analysis in order to be able to assess concentrations against the enHealth interim criteria.

- 3) Current storage of AFFF (C6 chain) for emergency use at the Turbomeca facility. The AFFF system at the Turbomeca is used in an enclosed helicopter engine test bay with a closed drainage system. If the AFFF was to be used, the foam and water would drain to a holding tank that could be pumped out for appropriate disposal off-site. The drainage system and holding tank is periodically inspected by Turbomeca to ensure it's integrity. The AFFF is stored in an above ground stainless steel tank with clearance between the base of the tank and the concrete floor slab. Any leaks from the tank would therefore likely be detected. No changes to the current system are recommended. However, when the current AFFF product is due for replacement, it is recommended that SMA ensure a review is undertaken and where feasible, the foam should be replaced with a fluorine free foam. Further guidance on environmental issues regarding the ongoing use of AFFF can be obtained from the Queensland Government's Environmental Management of Firefighting Foam Policy (QLD DEHP, 2016).
- 4) Aviation hydraulic fluid. A review of the aviation hydraulic fluid products historically and currently used at the Airport is recommended. The review should aim to determine if the products used contained PFAS, the main PFAS compounds and approximate percentage content. Should this review identify that PFAS containing products have been used then the significance of this source in the conceptual site model may need to be revised.
- 5) **GEMS 002 PFC management actions advice**. For the purposes of GEMS 002, this Preliminary PFAS Risk Assessment could be used as a Trigger Assessment for new activities at the Airport. For activities that will be located in or in the vicinity of the identified potential PFAS source areas, Preliminary and Detailed Site Investigations in accordance with Schedule A of the NEPM should be undertaken. For activities located outside these areas, the risk of significant PFAS contamination to be present is considered low and further investigation is not considered necessary. However, should a detailed site investigation be undertaken for other reasons (ie. potential presence of non-PFAS contaminants) then it is recommended that PFAS compounds are included in the laboratory analysis suites. Additional data on PFAS concentrations in soil, groundwater or surface water at the Airport should be compiled to support updates to the Conceptual Site Model and revisions of the risk assessment in the future.



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Preliminary PFAS Risk Assessment for Bankstown Airport



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Appendix A. Additional Figures



Bankstown airport

PFOS sampling location

- Groundwater sampling
- Surface water sampling
- Soil sampling
- Site ID PFOS detected (label)
- PFHxS detected (label)
 - Potential PFAS sources:
 - 1 Use and storage of AFFF in the former fire training area.2 Use of AFFF for fire training in the area on Link Road.
 - 3 Use of AFFF for fire training in the north east of the Airport, near Schofields Flying Club
 - 4 Use and storage of AFFF in the former fire station area
- 5 Fire incident on runway 29R on 7/10/2002 (location not identified)
- 6 Fire incident in former Qantas test cell on 9/11/2002
- 7 Fire incident on runway in Southern Triangle on 11/11/2003
- 8 Fire incident near former fire training area in 2005
- 9 Fire incident near Link Rd in 2006
- 10 Helicopter fire near TOLL facility in 2011
- 11 Storage of AFFF at the Turbomeca facility
- 12 Landfill areas 1 and 2
- 13 Historic use of mist suppressants at the Hawker de Havilland and Pacific Turbine facility
- 14 Aviation hydraulic fluid (location not identified)



Note: PFOS was not detected in the NETS site investigation by JBS+6 (2016). However PFHxS was detected and has been shown on this figure.





Bankstown airport

PFOS sampling location

- Groundwater sampling
- Surface water sampling
- Soil sampling
- Site ID PFOS detected (label)
- PFHxS detected (label)
 - Potential PFAS sources:
 - 1 Use and storage of AFFF in the former fire training area.
 - 2 Use of AFFF for fire training in the area on Link Road.
 - 3 Use of AFFF for fire training in the north east of the Airport, near Schofields Flying Club
 - 4 Use and storage of AFFF in the former fire station area
- 5 Fire incident on runway 29R on 7/10/2002 (location not identified)
- 6 Fire incident in former Qantas test cell on 9/11/2002
- 7 Fire incident on runway in Southern Triangle on 11/11/2003
- 8 Fire incident near former fire training area in 2005
- 9 Fire incident near Link Rd in 2006
- 10 Helicopter fire near TOLL facility in 2011
- 11 Storage of AFFF at the Turbomeca facility
- 12 Landfill areas 1 and 2
- 13 Historic use of mist suppressants at the Hawker de Havilland and Pacific Turbine facility
- 14 Aviation hydraulic fluid (location not identified)



Note: PFOS was not detected in the NETS site investigation by JBS+6 (2016). However PFHxS was detected and





Appendix B. Historical Business Listings Report



Historical Business Activity Report

Bankstown Airport, Bankstown, NSW 2200

Report Buffer: 100m

Report Date: 07 Sep 2016 10:38:18

Disclaimer:

The purpose of this report is to provide an overview of some of the site history, environmental risk and planning information available, affecting an individual address or geographical area in which the property is located. It is not a substitute for an on-site inspection or review of other available reports and records. It is not intended to be, and should not be taken to be, a rating or assessment of the desirability or market value of the property or its features. You should obtain independent advice before you make any decision based on the information within the report. The detailed terms applicable to use of this report are set out at the end of this report.

Dataset Listing

Datasets contained within this report, detailing their source and data currency:

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	Land and Property Information	11/06/2014	11/06/2014		-	-	-
UBD Business to Business Directory 1991	Hardie Grant			Not required	23	130	130
UBD Business Directory 1991 Motor Garages/Service Stations	Hardie Grant			Not required	0	3	10
UBD Business Directory 1970	Hardie Grant			Not required	83	168	168
UBD Business Directory 1970 Drycleaners & Motor Garages/Service Stations	Hardie Grant			Not required	0	4	18
UBD Business Directory 1950	Hardie Grant			Not required	19	25	25
UBD Business Directory 1950 Drycleaners & Motor Garages/Service Stations	Hardie Grant			Not required	0	0	5

Aerial Imagery 2014

Bankstown Airport, Bankstown, NSW 2200

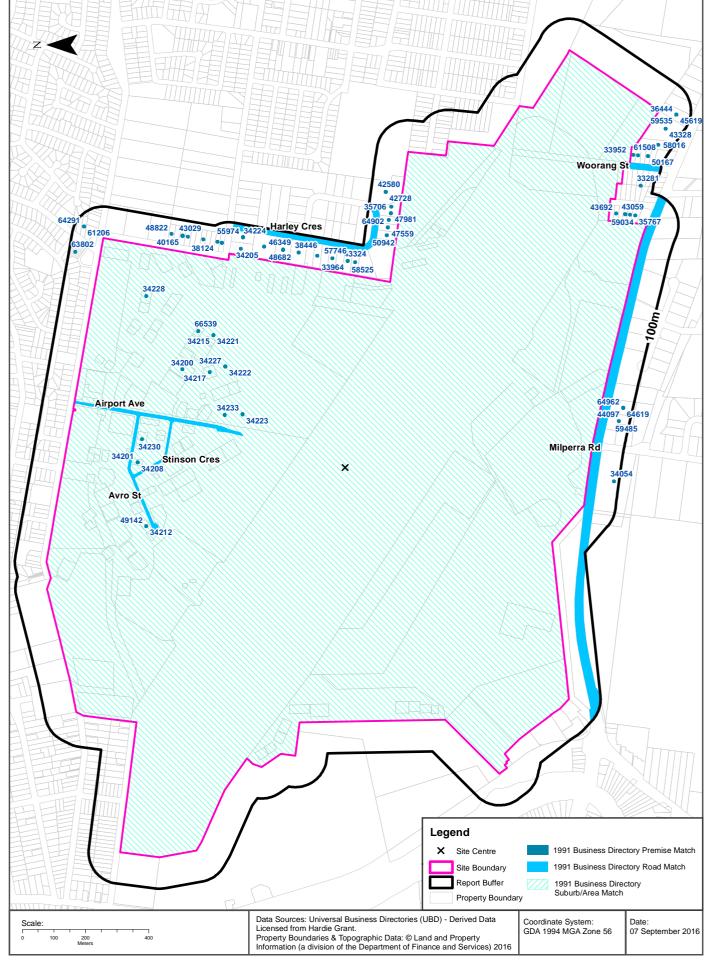




1991 Historical Business Directory Records

Bankstown Airport, Bankstown, NSW 2200





Historical Business Directories

Bankstown Airport, Bankstown, NSW 2200

1991 Business to Business Directory Records

Records from the 1991 UBD Business to Business Directory within 100m of the site:

Business Activity	Organisation	Address	Ref No.	Location Confidence	Distance	Direction
Aircraft Component Parts Mfrs &/or Imps &/or Dists	Aero Supply	497 Avro St Bankstown Airport 2200	34201	Premise Match	0m	Onsite
Aircraft Equipment & Parts Mfrs &/or Dists	Aero Supply	497 Avro St Bankstown Airport 2200	34208	Premise Match	0m	Onsite
Aircraft Maintenance & Repair	Aero Support Pty Ltd	Hangar 271, Bankstown Airport, 2200	34215	Premise Match	0m	Onsite
Aircraft Mfrs &/or Imps &/or Dists	Aerospatiale Helicopters	Bldg 491, Avro St, Bankstown 2200	34230	Premise Match	0m	Onsite
Aircraft Maintenance & Repair	Airag Services Pty Ltd	Hangar 17, Bankstown Airport, Bankstown 2200	34217	Premise Match	0m	Onsite
Aircraft Maintenance & Repair	Chopper Shop, The	Hangar 271, Bankstown Airport, 2200	34221	Premise Match	0m	Onsite
Aircraft Mfrs &/or Imps &/or Dists	Civil Flying Service Pty Ltd	Hangar 299, Bankstown Airport, Bankstown 2200	34233	Premise Match	0m	Onsite
Aircraft Maintenance & Repair	Dasyl Avionics Pty Ltd	Hangar 273, Bankstown Airport, 2200	34222	Premise Match	0m	Onsite
Aircraft Maintenance & Repair	Fawcett Aviation Pty Ltd	Hangar 276, Bankstown Airport, 2200	34223	Premise Match	0m	Onsite
Aircraft Component Parts Mfrs &/or Imps &/or Dists	Fawcett Aviation Pty Ltd	Hangar 276, Bankstown Airport, 2200	34204	Premise Match	0m	Onsite
Aircraft Maintenance & Repair	Hawker Pacific Pty Ltd	Hangar 330, Bankstown Airport, Bankstown, 2220	66539	Premise Match	0m	Onsite
Aircraft Charter Services	Illawarra Flying School Pty Ltd	Hangar 276, Bankstown Airport Bankstown 2000	34194	Premise Match	0m	Onsite
Instrument Aircraft Mfrs &/or Imps &/or Dists	Navitron Pty Ltd	Hangar 484 Avro St Bankstown 2200	49142	Premise Match	0m	Onsite
Aircraft Equipment & Parts Mfrs &/or Dists	Navitron Pty Ltd	Hangar 484, Avro St, Bankstown 2200	34212	Premise Match	0m	Onsite
Aircraft Maintenance & Repair	P & T Aviation	Hangar 273, Rearwin PI, Bankstown Airport, 2200	34227	Premise Match	0m	Onsite
Aircraft Charter Services	Skywise Aviation Pty Ltd	Hangar 400, Comper St, Bankstown Airport, 2200	34200	Premise Match	0m	Onsite
Aircraft Maintenance & Repair	Winrye Aviation Pty Ltd	Hangar 506, Miles St, Bankstown Airport, 2200	34228	Premise Match	0m	Onsite
Aircraft Charter Services	Australian Flying Training School	62 Airport Ave., Bankstown Airport 2200	34189	Road Match	0m	Onsite
Aircraft Maintenance & Repair	Aviation & Marine Instrument Services Pty Ltd	Avro St, Bankstown Airport 2200	34219	Road Match	0m	Onsite
Aircraft Charter Services	Navair	Avro St, Bankstown 2200	34196	Road Match	0m	Onsite
Aircraft Maintenance & Repair	Navair	Avro St, Bankstown 2200	34226	Road Match	0m	Onsite
Aircraft Maintenance & Repair	Aviation Welding Service	Stinson Cr, Bankstown Airport 2200	34220	Road Match	0m	Onsite
Aircraft Charter Services	Adams Aviation Pty Ltd	Hangar 144, Bankstown Airport, Bankstown 2200	34188	Suburb/Area Match	0m	Onsite
Engineers Aeronautical	Hawker De Havilian Aust Pty Ltd	Milperra Rd Bankstown 2200	43302	Road Match	0m	South
Motor Garages & Service Stations	Total Milperra Service Station	Milperra Rd., Milperrra	53960	Road Match	0m	South
Fencing Contractors	Clarence Timbers	Woorang St Milperra 2214	45417	Road Match	0m	South East
Sawmillers	Lever I.R.	Woorang St Miperra 2214	61559	Road Match	0m	South East
Air Conditioning Industrial, Commercial &/or Domestic Specialists	Metalair Pty. Ltd.	18 Woorang St., Milperra 2214	33952	Premise Match	6m	South East
Tile Floor &/or Wall Mfrs &/or Imps &/or Merchants	Galasso E. Pty Ltd	64 Allingham St Condell Park 2200	64196	Premise Match	20m	North East

Business Activity	Organisation	Address	Ref No.	Location Confidence	Distance	Direction
Engineers Fabricating	Aska Engineering Pty Ltd	9 Cooraban Rd Milperra 2214	43692	Premise Match	20m	South East
Salt Mfrs &/or W/salers &/or Merchants	Diamond Salt	16 Woorang St Milperra 2214	61508	Premise Match	21m	South East
Battery Mfrs &/or Dists	A & A Engineering	1 Coorban Rd, Milperra 2214	35767	Premise Match	23m	South East
Printers Lithographic (Offset)	Baybliss Pty. Ltd.	5 Cooraban Rd Milperra 2214	59034	Premise Match	24m	South East
Engineers Reclamation	Goninans Platers Pty Ltd	7 Cooraban Rd Milperra 2214	44750	Premise Match	24m	South East
Electroplaters	Goninans Platers Pty.Ltd.,	7 Cooraban Rd., Milperra. 2214	43059	Premise Match	24m	South East
Publishers	Care & Share Products Pty Ltd	44B Harley Cr Condell Park 2200	59809	Premise Match	25m	East
Greeting Card Mfrs &/or Dists	Care & Share products Pty. Ltd.	44B Harley Cr Condell Park 2200	47981	Premise Match	25m	East
Booksellers Wholesale	Care & Share Products Pty. Ltd.,	44B Harley cr., Condell Park. 2200.	36458	Premise Match	25m	East
Bathroom Equipment &/or Fittings Mfrs &/or Dists	Donson Industries Pty Ltd	44A Harley Cr, Condell Park 2200	35706	Premise Match	27m	East
Furniture Importers	Art Veneto Pty Ltd	42 Harley Cr Condell Park 2200	46858	Premise Match	29m	East
Transmission Equipment Mfrs &/or Dists	Eaton Pty Ltd	40 Harley Cr Condell Park 2200	64902	Premise Match	29m	East
Gearbox Mfrs &/or Dists	Eaton Pty Ltd	40 Harley Cr Condell Parl 2200	47559	Premise Match	29m	East
Lubricating Equipment Mfrs &/or Dists	Trilube Services Pty Ltd	38 Harley Cr Condell Park 2200	50942	Premise Match	29m	East
Lock Mfrs &/or Dists	Yale Securities	40 Harley Cr Condell Park 2200	50917	Premise Match	29m	East
Gas Works Equipment &/or Plant Mfrs &/or Dists	Sydney Valve & Fitting Pty Ltd	63 Birch St Condell Park 2200	47523	Premise Match	39m	North East
Pipe &/or Pipe Fittings Mfrs &/or Dists	Sydney Valve & Fitting Pty. Ltd	63 Birch St Condell Park 2200	57679	Premise Match	39m	North East
Hotel &/or Motel Equipment &/or Supplies	Andale Beverage System	8/10 Harley Cr Condell Park 2200	48679	Premise Match	40m	East
Hotel &/or Motel Equipment &/or Supplies	Anson Beer Plumbing Pty Ltd	8/10 Harley Cr Condell Park 2200	48682	Premise Match	40m	East
Newspapers, Journals &/or Periodicals	Anson Beer Plumbing Pty Ltd	8/10 Harley Cr Condell Park 2200	55828	Premise Match	40m	East
Glass Washing Machine Mfrs &/or Dists	Anson Beer plumbing Pty. Ltd.	8/10 Harley Cr Condell Park 2200	47869	Premise Match	40m	East
Diamond Tool Mfrs &/or Dists	Boart Australia Ltd,	Unit 5/10 Harley Cr., Condell Park. 2200	41375	Premise Match	40m	East
Engineers General	Bretter Engineering Pty Ltd	Unit 7/10 Harley Cr Condell Park 2200	43944	Premise Match	40m	East
Blind Mfrs Supplies	Bretter Engineering Pty Ltd	Unit 7/10 Harley Cr, Condell Park 2200	36051	Premise Match	40m	East
Motor Engineers	Condell Park Automotive Repairs	Unit 6/10 Harley Cr Condell Park 2200	53100	Premise Match	40m	East
Motor Garages & Service Stations	Condell Park Automotive Repairs	Unit 6/10 Harley Cr, Condell Park 2200	53658	Premise Match	40m	East
Fork Lift Truck Hirers	Condell Park Forklifts	Unit 6/10 Harley Cr Condell Park 2200	46308	Premise Match	40m	East
Fork Lift Truck Service Maintenance &/or Repairs	Condell Park Forklifts	Unit 6/10 Harley Cr Condell Park 2200	46349	Premise Match	40m	East
Aircraft Maintenance & Repair	Hawker Pacific Pty Ltd	4 Harley Cr, Bankstown Airport 2200	34224	Premise Match	40m	East
Aircraft Component Parts Mfrs &/or Imps &/or Dists	Hawker Pacific Pty Ltd	4 Harley Cr, Bankstown Airport 2200	34205	Premise Match	40m	East
Partition Mfrs &/or Dists	J.A.R.R. Partitions Pty. Ltd.	Unit 2/10 Harley Cr. Condell Park 2200	56879	Premise Match	40m	East
Plasterers Supplies & Equipment	Modern Interior Linings Pty. Ltd.	24 Harley Cr Condell Park 2200	57746	Premise Match	40m	East
Carriers &/or Cartage Contractors	Nash, John Transport Pty. Ltd.,	14 Harley Cr., Condell Park 2200	38446	Premise Match	40m	East
Plastic Bottle &/or Container Mfrs &/or Dists	Plimco Pty. Ltd.	2/20 Harley Cr Condell Park 2200	57809	Premise Match	40m	East
Furnace &/or Combustion Equipment Mfrs &/or Imps &/or Dists	Prior Industries Pty Ltd	Unit 9/10 Harley Cr Condell Park 2200	46797	Premise Match	40m	East
Boiler Plant Mfrs &/or Imps &/or Dists	Prior Industries Pty Ltd	Unit 9/10 Harley Cr, Condell Park 220	36298	Premise Match	40m	East

Business Activity	Organisation	Address	Ref No.	Location Confidence	Distance	Direction
Instrument Industrial Mfrs &/or Imps &/or Dists	Sentinel Controls	Unit 1/10 Harley Cr Condell Park 2200	49231	Premise Match	40m	East
Electrical Contractors	Sentinel Controls,	Unit.1/10 Harley Cr, Condell Park 2200	42573	Premise Match	40m	East
Engineers Air Conditioning	Sainsbury J & Co Pty Ltd	28 Harley Cr Condell Park 2200	43324	Premise Match	41m	East
Engineers Combustion &/or Furnace	Sainsbury J & Co Pty Ltd	28 Harley Cr Condell Park 2200	43407	Premise Match	41m	East
Air Conditioning Industrial, Commercial &/or Domestic Specialists	Sainsbury, J. & C. Co. Engineers Pty. Ltd.	28 Harley Cr., Condell Park 2200	33964	Premise Match	41m	East
Powder Coating Equipment Service	Service Powder Coating Pty. Ltd.	30 Harley Cr Condell Park 2200	58525	Premise Match	41m	East
Sports Goods Mfrs &/or Imps &/or W/salers	York Barbell Pty Ltd	Unit 2/28 Harley Cr Condell Park 2200	62946	Premise Match	41m	East
Engineers Air Conditioning	Smith A E & Son Pty Ltd	291 Milperra Rd Milperra 2214	43328	Premise Match	47m	South East
Instrument Industrial Mfrs &/or Imps &/or Dists	Automation Instrument Service	47 Birch St Bankstown	49187	Premise Match	49m	North East
Instrument Measuring Mfrs &/or Imps &/or Dists	Automation Instrument Service	47 Birch St Bankstown 2200	49249	Premise Match	49m	North East
Instrument Repairers	Automation Instrument Service	47 Birch St Bankstown 2200	49310	Premise Match	49m	North East
Engineers Electronic	Automation Instrument Service	47 Birch St Bankstown 2208	43655	Premise Match	49m	North East
Electronic Equipment Maintenance &/or Repairs	Automation Instrument Service,	47 Birch st, Bankstown, 2200.	42873	Premise Match	49m	North East
Electronic Equipment Mfrs &/or Dists	Automation Instrument Service,	47 Birch st, Bankstown, 2200.	42911	Premise Match	49m	North East
Computer Hardware Mfrs &/or Imps &/or Dists	Automation Statham Pty. Ltd.,	47 Birch St, Bankstown 2200	40033	Premise Match	49m	North East
Computer Sales &/or Services	Automation Statham Pty. Ltd.,	47 Birch St, Bankstown 2200	40165	Premise Match	49m	North East
Instrument Industrial Mfrs &/or Imps &/or Dists	Barbe Colman	47 Birch St Bankstown	49189	Premise Match	49m	North East
Hydraulic Hose Mfrs &/or Dists	Esdan Flavell Pty Ltd	43 Birch St condell Park 2200	48822	Premise Match	49m	North East
Cardboard Box &/or Carton &/or Tube Mfrs &/or Suppliers	Inpress Boxes	61 Birch St., Condell Park 2200	38124	Premise Match	49m	North East
Mining Machinery &/or Equipment Mfrs &/or Imps &/or Dists	Traction Controls Pty Ltd	47 Birch St Bankstown 2200	51898	Premise Match	49m	North East
Electronic Equipment Mfrs &/or Dists	Traction Controls Pty Ltd	47 Birch st, Bankstown, 2200.	43029	Premise Match	49m	North East
Rectifier Mfrs &/or Dists	Traction Controls Pty Ltd	47 Birch Street, Bankstown. 2200	60892	Premise Match	49m	North East
Electroplaters Equipment &/or Supplies	Traction Controls Pty. Ltd.	47 Birch St, Bankstown 2200	43098	Premise Match	49m	North East
Electric Vehicle Mfrs &/or Dists	Traction Controls Pty. Ltd.	47 Birch St, Bankstown. 2200	42371	Premise Match	49m	North East
Rectifier Mfrs &/or Dists	Traction Controls Pty. Ltd.	47 Birch St, Bankstown. 2200	60893	Premise Match	49m	North East
Electric Switch & Control Gear Mfrs &/or Imps &/or Dists	Traction Controls Pty. Ltd.,	47 Birch St., Bankstown. 2200.	42327	Premise Match	49m	North East
Lighting Equipment Industrial Mfrs &/or Imps &/or Dists	Wadey Walter & Co Pty Ltd	55 Birch St Condell Park 2200	50828	Premise Match	49m	North East
Motor Garages & Service Stations	Wright JC & Co. Pty Ltd	49 Birch St., Bankstown	54000	Premise Match	49m	North East
Kitchen Units Mfrs &/or Dists &/or Installers	Forbena Pty Ltd	12Woorang St., Milperra, N.S.W. 2214	50166	Premise Match	49m	South East
Kitchen Units Mfrs &/or Dists &/or Installers	Forbena Pty. Ltd.	12 Woorang St., Milperra. 2214	50167	Premise Match	49m	South East
Electrical Supplies &/or Appliances Mfrs &/or W/salers	Solar Electric & Engineering Supplies Pty. Ltd.	46 Harley Cr, Condell Park. 2200	42726	Premise Match	51m	East
Electrical Contractors	Star Electrical Co. Pty. Ltd.	46 Harley Cr., Condell Park 2200	42580	Premise Match	51m	East
Electrical Supplies &/or Appliances Mfrs &/or W/salers	Star Electrical Co. Pty. Ltd.	46 Harley Cr., Condell Park. 2200.	42728	Premise Match	51m	East
Electric Lamp Globe &/or Tube Mfrs &/or Dists	Bryce, Robert & Co. Ltd.	287 Milperra Rd., Revesby. 2212	42028	Premise Match	53m	South East

Business Activity	Organisation	Address	Ref No.	Location Confidence	Distance	Direction
Engineers Filtration	Industrial Equipment	287 Milperra Rd Revesby 2212	43853	Premise Match	53m	South East
Filter Mfrs &/or Dists	Industrial Equipment	287 Milperra Rd Revesby 2212	45619	Premise Match	53m	South East
Propeller Repairs	Intergraphika	287 Milperra Rd Revesby 2212	59535	Premise Match	53m	South East
Bookbinders Supplies	Intergraphika,	287 Milperra Rd., Revesby.2212	36444	Premise Match	53m	South East
Plastic Moulders	Bell Plastics Sydney Pty. Ltd.	297 Millperra Rd Revesby 2212	58016	Premise Match	56m	South East
Refrigeration Equipment Mfrs &/or Dists	Coldright Heat Transfer Products	5/60 Allingham St Bankstown 2200	60993	Premise Match	57m	North East
Office Equipment &/or Supplies Mfrs &/or Imps &/or W/salers	Consol Steel Products Pty Ltd	Unit 4/60 Allingham St Condell Park 2200	55974	Premise Match	57m	North East
Electrical Contractors	Luka Electrical Pty. Ltd.	Unit 5/60 Allingham St., Condell Park 2200	42535	Premise Match	57m	North East
Motor Engineers	R & B Auto Repairs	Unit 2/60 Allingham St Condell Park 2200	53398	Premise Match	57m	North East
Tyre Dealers &/or Retreaders &/or Vulcanisers	R & B Auto Repairs	Unit 2/60 Allingham St Condell Park 2200	65332	Premise Match	57m	North East
Motor Panel Beaters &/or Spray Painters	R & D Smash Repairs	Unit 1/60 Allingham St, Condell Park 2200	54714	Premise Match	57m	North East
Air Conditioning Units &/or Machinery Mfrs &/or Dists	VAC Equipment (NSW) Pty Ltd	5/60 Allingham St, Bankstown 2200	34049	Premise Match	57m	North East
Engineers Refrigeration	VAC Equipment Pty Ltd	5/60 Allingham St Bankstown 2200	44764	Premise Match	57m	North East
Abrasive Blasting	B.G.C. Marine Services Pty Ltd	321 Milpera Rd., Revesby 2212	33281	Premise Match	58m	South East
Motor Engineers	Anka J & B Automotives Pty Ltd	Harley Cr Condell Park 2200	52976	Road Match	61m	East
Furniture Mfrs &/or W/salers Office	Betterbuilt Furniture Pty Ltd	Harley Cr Condell Park 2200	47185	Road Match	61m	East
Furniture Mfrs &/or W/salers General	Lavender Furniture	Harley Cr Condell Park 2200	47078	Road Match	61m	East
Printing Ink Mfrs &/or Dists	Premier Inks	258 Milperra Rd Milperra 2214	59485	Premise Match	63m	South
Fence &/or Gate Mfrs &/or Dists	Callan Wrought Iron	16/254 Milperra Rd Milperra 2214	45364	Premise Match	68m	South
Security Doors &/or Windows &/or Grilles	Callan Wrought Iron	16/254 Milperra Rd., Milperra. 2214	61858	Premise Match	68m	South
Window Frame Mfrs &/or Dists Aluminum	F & H Aluminum Windows & Doors	3/254 Milperra Rd Milperra 2214	66245	Premise Match	68m	South
Toolmakers	H.K Engineering	4/254 Milperra Rd Milperra 2214	64619	Premise Match	68m	South
Engineers General	H.K. Engineering	4/254 Milperra Rd Milperra 2214	44097	Premise Match	68m	South
Kitchen Units Mfrs &/or Dists &/or Installers	Kitchen Place	2/254 Milperra Rd Milperra 2214	50218	Premise Match	68m	South
Cabinet Makers	Kitchen Place, The	2/254 Milperra Rd., Milperra. 2214	37868	Premise Match	68m	South
Kitchen Units Mfrs &/or Dists &/or Installers	Madouris C & N	14/254 Milperra Rd., Milperra. 2214	50234	Premise Match	68m	South
Trophy Mfrs &/or Suppliers	Trophy Factory	10/254 Milperra Rd Milperra 2214	64962	Premise Match	68m	South
Tilers &/or Slaters Roof	Harrison Ric	43 Surrey Ave Georges Hall 2198	64291	Premise Match	69m	North East
Roofing Contractors &/or Repairers	Harrison, Ric	43 Surrey Ave Georges Hall 2198	61206	Premise Match	69m	North East
Swimming Pool Mfrs &/or Construction Contractors	Pool Owners Clus Of Aust Pty Ltd	Pool Owners Club Of Aust Pty Ltd	63802	Premise Match	78m	North East
Air Control Equipment	Goyen Controls Co. Pty. Ltd.	268 Milperra Rd, Milperra 2214	34054	Premise Match	82m	South

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

Bankstown Airport, Bankstown, NSW 2200

1991 Business Directory Motor Garages & Service Stations

Motor Garages & Service Stations from the 1991 UBD Business Directory within 1km of the site:

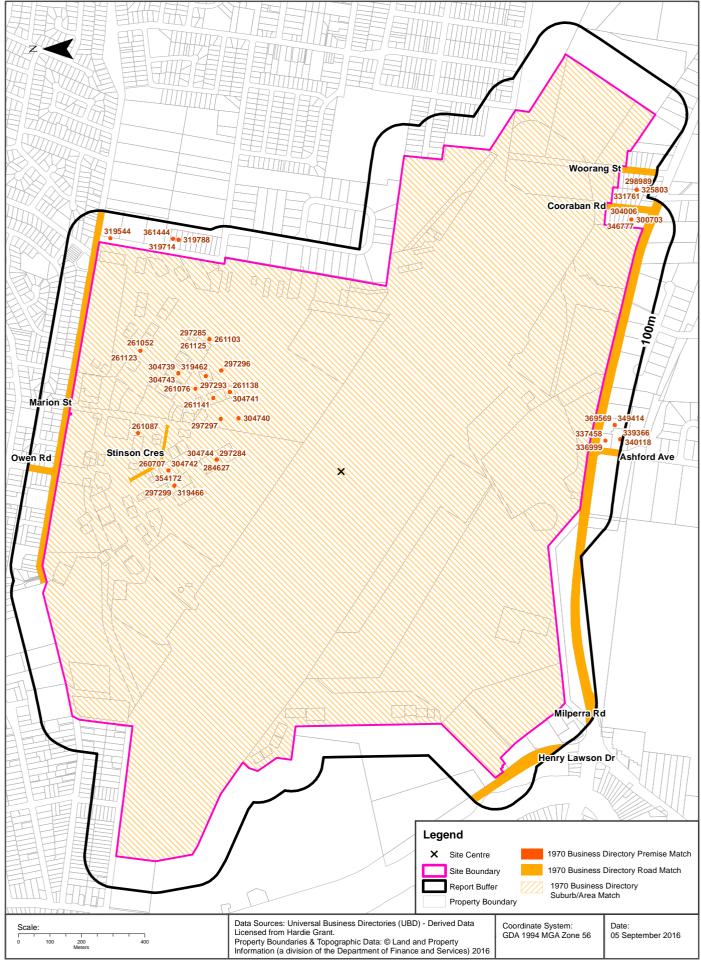
Business Activity	Organisation	Address	Ref No.	Location Confidence	Distance	Direction
Motor Garages & Service Stations	Total Milperra Service Station	Milperra Rd., Milperrra	53960	Road Match	0m	South
Motor Garages & Service Stations	Condell Park Automotive Repairs	Unit 6/10 Harley Cr, Condell Park 2200	53658	Premise Match	40m	East
Motor Garages & Service Stations	Wright JC & Co. Pty Ltd	49 Birch St., Bankstown	54000	Premise Match	49m	North East
Motor Garages & Service Stations	Total Self Serve	299 Milperra Rd., Revesby	53961	Premise Match	109m	South East
Motor Garages & Service Stations	Kentucky Service Station,	Coleman Park, Georges Hall. 2198	53765	Premise Match	203m	North West
Motor Garages & Service Stations	Towie Motor Repairs	7/15A Works Pl., Milperra	53963	Premise Match	393m	South
Motor Garages & Service Stations	Jeffson Automotive Repairs	5/380 Marion St., Bankstown. 2200	53754	Premise Match	421m	North East
Motor Garages & Service Stations	Jeffson Automotive Repairs,	Unit C2/380 Marion St, Bankstown. 2200	53755	Premise Match	421m	North East
Motor Garages & Service Stations	Professional Mechanical Repairs	11/66 Ashford Ave., Milperra	53785	Premise Match	643m	South
Motor Garages & Service Stations	Bullecourt Auto Port	Bullecourt Ave., Milperra. 2214	53604	Road Match	912m	South

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1970 Historical Business Directory Records







Historical Business Directories

Bankstown Airport, Bankstown, NSW 2200

1970 Business Directory Records

Records from the 1970 UBD Business Directory within 100m of the site:

Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
AGRICULTURAL SPRAYING SERVICES (A235)	Aerial Agricultural Pty. Ltd., Hangar 17, Aerodrome.Bankstown	260665	Premise Match	0m	Onsite
AIRCRAFT MAINTENANCE SPECIALISTS (A285)	Aerial Agricultural Pty. Ltd., Hangar 17, Aerodrome.Bankstown	261101	Premise Match	0m	Onsite
AIR CHARTER SERVICES (A236)	Aerial Agriculture Pty. Ltd., Hangar 17, Aerodrome, Bankstown	260693	Premise Match	0m	Onsite
AIRCRAFT COMPONENT PARTS MFRS (A270)	Aero Engine Services (Aust.) Pty. Ltd., Hangar 457, Bankstown Airport, 2200	261052	Premise Match	0m	Onsite
AIRCRAFT MFRS. &/OR DISTS.(A290)	Aero Engine Services (Aust.) Pty. Ltd., Hangar 457, Bankstown Airport, 2200	261123	Premise Match	0m	Onsite
AIRCRAFT ELECTRICAL EQUIPMENT SALES & SERVICE	AIRBORNE ACCESSORIES PTY LTD,BUILDING 107, AIRPORT, BANKSTOWN, 2200	261076	Premise Match	0m	Onsite
AIRCRAFT EQUIPMENT MFRS. &/OR DISTS. (A280)	Ansett General Aviation Pty. Ltd., Hangar 14, Bankstown Aerodrome	261082	Premise Match	0m	Onsite
AIRCRAFT MAINTENANCE SPECIALISTS (A285)	Ansett General Aviation Pty. Ltd., Hangar 14, Bankstown Aerodrome	261102	Premise Match	0m	Onsite
AIRCRAFT COMPONENT PARTS MFRS (A270)	Ansett General Aviation Pty. Ltd., Hangar 14, Bankstown Aerodrome	261055	Premise Match	0m	Onsite
AIRCRAFT MFRS. &/OR DISTS.(A290)	Ansett General Aviation Pty. Ltd., Hangar 14, Bankstown Aerodrome	261124	Premise Match	0m	Onsite
ENGINEERS-AERONAUTICAL (E480)	Ansett General Aviation Pty.Ltd,Hangar 14,Bankstown Aerodrome	297284	Premise Match	0m	Onsite
ENGINEERS-AERONAUTICAL (E480)	Austersene Pty.Ltd,Hangar 271,Aerodrome,Bankstown	297285	Premise Match	0m	Onsite
AIRCRAFT MAINTENANCE SPECIALISTS (A285)	Austerserve Pty. Ltd., Hangar 271, Aerodrome, Bankrtown	261103	Premise Match	0m	Onsite
AIRCRAFT EQUIPMENT MFRS. &/OR DISTS. (A280)	Austerserve Pty. Ltd., Hangar 271, Aerodrome, Bankstown	261084	Premise Match	0m	Onsite
AIRCRAFT COMPONENT PARTS MFRS (A270)	Austerserve Pty. Ltd., Hangar 271, Aerodrome, Bankstown	261057	Premise Match	0m	Onsite
AIRCRAFT MFRS. &/OR DISTS.(A290)	Austerserve Pty. Ltd., Hangar 271, Aerodrome, Bankstown	261125	Premise Match	0m	Onsite
AIR SERVICES OPERATORS (A265)	Austerserve Pty. Ltd., Hangar_271, Aerodrome, Bankstown	260988	Premise Match	0m	Onsite
AIRCRAFT RADIO EQUIPMENT-SALES & SERVICE	AVIOTRONICS PTY LIMITED,HANGAR 120, AIRPORT, BANKSTOWN, N.S.W, 2200	261144	Premise Match	0m	Onsite
RADIO &/OR TELEVISION SALES & SERVICEMEN (R090)	Aviotronics Pty. Ltd.,Hangar 120,Bankstown AerodromeBANKSTOWN	354172	Premise Match	0m	Onsite
AIRCRAFT EQUIPMENT MFRS. &/OR DISTS. (A280)	Avmar Pty Limited, Bldg 422, Bankstown Airport	261087	Premise Match	0m	Onsite
AIR CHARTER SERVICES (A236)	Commercial Aviation Pty. Ltd., Hangar 400, BankstownAirport	260698	Premise Match	0m	Onsite
FLYING SCHOOLS (F395)	Commercial Aviation Pty.Ltd.,Hangar 400,BankstownAirport	304739	Premise Match	0m	Onsite
AIRCRAFT COMPONENT PARTS MFRS (A270)	Fawcett Aviation Pty. Ltd., Hangar 276, Aerdrme, Bnkstwn	261062	Premise Match	0m	Onsite
AIRCRAFT EQUIPMENT MFRS. &/OR DISTS. (A280)	Fawcett Aviation Pty. Ltd., Hangar 276, Aerodrome, Bankstown	261090	Premise Match	0m	Onsite
AIRCRAFT MFRS. &/OR DISTS.(A290)	Fawcett Aviation Pty. Ltd., Hangar 276, Aerodrome, Bankstown.	261133	Premise Match	0m	Onsite
AIRCRAFT MAINTENANCE SPECIALISTS (A285)	Fawcett Aviation Pty. Ltd., Hangar 276, Aerodrome, Bnkstwn	261107	Premise Match	0m	Onsite
ENGINEERS-AERONAUTICAL (E480)	Fawcett Aviation Pty.Ltd.,Hangar 276,Airport Bnkstwn	297289	Premise Match	0m	Onsite
AIR CHARTER SERVICES (A236)	Illawarra Flying School Pty. Ltd., Hangar 276, Airport,Bankstown	260702	Premise Match	0m	Onsite
FLYING SCHOOLS (F395)	illawarra Flying School Pty.Ltd.,Hangar 276,Airport,Bankstown	304740	Premise Match	0m	Onsite
ENGINEERS-AERONAUTICAL (E480)	Jamieson & Walker, Hangar 276, Airfield, Bankstown	297292	Premise Match	0m	Onsite

Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
AIRCRAFT COMPONENT PARTS MFRS (A270)	Kingsford Flying Service Pty. Ltd., Hangar 274, Bankstown Airport	261066	Premise Match	0m	Onsite
AIRCRAFT MAINTENANCE SPECIALISTS (A285)	Kingsford Flying Service Pty. Ltd., Hangar 274, Bankstown Airport	261111	Premise Match	0m	Onsite
AIRCRAFT MAINTENANCE SPECIALISTS (A285)	Kingsford Flying Service Pty. Ltd., Hangar 274, Bankstown Airport	261116	Premise Match	0m	Onsite
AIRCRAFT MFRS. &/OR DISTS.(A290)	Kingsford Flying Service Pty. Ltd., Hangar 274, Bankstown Airport	261138	Premise Match	0m	Onsite
ENGINEERS-AERONAUTICAL (E480)	Kingsford Flying Service Pty.Ltd,Hangar 274,Bankstown Airport	297293	Premise Match	0m	Onsite
FLYING SCHOOLS (F395)	Kingsford Flying Service Pty.Ltd.,Hangar 274,Bankstown Airport.	304741	Premise Match	0m	Onsite
AIR SERVICES OPERATORS (A265)	Kingsford Smith Flying Service PtyLimited, Hangar 274,Aerodrome, Bankstown	260999	Premise Match	0m	Onsite
AIRCRAFT EQUIPMENT MFRS. &/OR DISTS. (A280)	Kingsford Smith Flying Services Pty. Ltd., Hanger 274 Bankstown Aerodrome	261093	Premise Match	0m	Onsite
AIR CHARTER SERVICES (A236)	Kingsford-Smith Flying Service Pty. Ltd., Hangar 274,Bankstown Aerodrome	260704	Premise Match	0m	Onsite
AIRCRAFT MAINTENANCE SPECIALISTS (A285)	Marshall Airways, Hangar 273, Aerodrome, Bankstown	261112	Premise Match	0m	Onsite
AIR CHARTER SERVICES (A236)	Marshall Airways, Hangar 273, Bankstown Aerodrome	260705	Premise Match	0m	Onsite
AIR SERVICES OPERATORS (A265)	Marshall Airways, Hangar 273, Bankstown Aerodrome.72 3957	261001	Premise Match	0m	Onsite
ENGINEERS-AERONAUTICAL (E480)	Marshall Airways, Hangar 273, Aerodrome, Bankstown.	297296	Premise Match	0m	Onsite
AIRCRAFT MFRS. &/OR DISTS.(A290)	Milton, John Pty. Ltd., Hangar 16, Bankstown Aerodrome	261141	Premise Match	0m	Onsite
AIRCRAFT MAINTENANCE SPECIALISTS (A285)	Milton, John Pty. Ltd., Hangar 16, Bankstown Aerodrome	261114	Premise Match	0m	Onsite
AIRCRAFT MFRS. &/OR DISTS.(A290)	Navair Pty. Ltd., Hangar 120, Airport, Bankstown	261142	Premise Match	0m	Onsite
AIR CHARTER SERVICES (A236)	Navair Pty. Ltd., Hangar 120, Airport, Bankstown	260707	Premise Match	0m	Onsite
PHOTOGRAPHERS-AERIAL (P264)	Navair Pty. Ltd.,Hangar 120,Airport,Bankstown		Premise Match	0m	Onsite
FLYING SCHOOLS (F395)	Navair Pty.Ltd.,Hangar 120,Airport,Bankstown		Premise Match	0m	Onsite
AIRCRAFT MAINTENANCE SPECIALISTS (A285)	Ray & Larkin Pty. Ltd., Hangar, 299, Aerodrome, Bankstown		Premise Match	0m	Onsite
ENGINEERS-AERONAUTICAL (E480)	Ray & Larkin Pty.Ltd,Hangar 299,Bankstown Aerodrome		Premise Match	0m	Onsite
AIR CHARTER SERVICES (A236)	Rex Air Charter, Hangar 400, Bankstown Airport.		Premise Match	0m	Onsite
AIRCRAFT MAINTENANCE SPECIALISTS (A285)	Rex Aviation Ltd, Hangar 400, Aerodrome, Bankstown		Premise Match	0m	Onsite
AIRCRAFT EQUIPMENT MFRS. &/OR DISTS. (A280)	Rex Aviation Ltd, Hangar 400, Aerodrome, Bankstown	261098	Premise Match	0m	Onsite
INSTRUMENTS-AIRCRAFT- SPECIALISTS (1370)	Rex Aviation Ltd.,Hangar 400,Aerodrome,Bankstown	319462	Premise Match	0m	Onsite
AIRCRAFT MFRS. &/OR DISTS.(A290)	Rex Aviation Sales (N.S.W.) Pty. Ltd., Hangar 400, Aerodrome, Bankstown	261143	Premise Match	0m	Onsite
AIR SERVICES BOOKING AGENTS (A260)	Rex Aviation Sales (N.S.W.) Pty. Ltd., Hangar 400, Bankstown Aerodrome	260961	Premise Match	0m	Onsite
AIR SERVICES OPERATORS (A265)	Rex Aviation Sales (N.S.W.) Pty. Ltd., Hangar 400, Bankstown Aerodrome	261007	Premise Match	0m	Onsite
FLYING SCHOOLS (F395)	Rex Flying School Commercial Aviation, Hangar 400, Bankstown Airport.	304743	Premise Match	0m	Onsite
CLUBS & SPORTING BODIES (C487)	Royal Aero Club of N.S.W(The), Hangars 14 & 15, Airport,Bankstown	284627	Premise Match	0m	Onsite
FLYING SCHOOLS (F395)	Royal Aero Club of N.S.W.(The),Hangars 14 & 15,Airport,Bankstown	304744	Premise Match	0m	Onsite
AIRCRAFT MAINTENANCE SPECIALISTS (A285)	Wilmor Accessories Pty. Ltd., Hangar 131, Bankstown Aerodrome	261120	Premise Match	0m	Onsite
INSTRUMENTS-AIRCRAFT- SPECIALISTS (1370)	Wilmor Accessories Pty. Ltd.,Hangar 131,BankstownAerodrome	319466	Premise Match	0m	Onsite
ENGINEERS-AERONAUTICAL (E480)	Wilmor Accessories Pty.Ltd,Hangar 131,Bankstown Aerodrome	297299	Premise Match	0m	Onsite
AIRCRAFT EQUIPMENT MFRS. &/OR DISTS. (A280)	Armstrong Airwork Pty Ltd, Stinson Cres., Bankstown Airport	261083	Road Match	0m	Onsite
AIRCRAFT COMPONENT PARTS MFRS (A270)	Armstrong Airwork Pty. Ltd., Stinson Cres, BankstownAirport	261056	Road Match	0m	Onsite
INSTRUMENTS-AIRCRAFT- SPECIALISTS (1370)	Armstrong Airwork Pty. Ltd.,Stinson Cr.,Bankstown Airport	319454	Road Match	0m	Onsite

Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
AIRCRAFT MAINTENANCE SPECIALISTS (A285)	Aviation Welding Service, Stinson Cres, Bankstown Aerodrome	261105	Road Match	0m	Onsite
WELDERS-ELECTRIC &/OR OXY(W145)	Aviation Welding Service, Stinson Cres, Bankstown Aerodrome	373449	Road Match	0m	Onsite
TUBE BENDERS (T695)	Aviation Welding Service, Stinson Cres., Bankstown Aerodrome	371399	Road Match	0m	Onsite
AIRCRAFT COMPONENT PARTS MFRS (A270)	Airborne Accessories Pty. Ltd., Bankstown Airport, Bankstown, 2200	261053	Suburb/Area Match	0m	Onsite
INSTRUMENTS-AIRCRAFT- SPECIALISTS (1370)	Airborne Accessories Pty. Ltd.,Bankstown Airport,Bankstown,2200	319452	Suburb/Area Match	0m	Onsite
RADIO TRANSMITTER MFRS. (R103)	Airborne Radio Services, Bankstown Airport, Bankstown	354664	Suburb/Area Match	0m	Onsite
AIRCRAFT EQUIPMENT MFRS. &/OR DISTS. (A280)	Airporn Accessories Pty. Ltd., Bankstown Airport, Bankstown, 2200	261081	Suburb/Area Match	0m	Onsite
ASSOCIATIONS-EMPLOYERS INDUST.& PROFESSIONAL (A610)	Association of Commercial Flying Organisations of Aust.,Bankstown Aerodrome, Bankstown	263607	Suburb/Area Match	0m	Onsite
AIRCRAFT MAINTENANCE SPECIALISTS (A285)	Jamieson & Walker Pty. Ltd., Airport, Bankstown	261110	Suburb/Area Match	0m	Onsite
CLUBS & SPORTING BODIES (C487)	Truscott Club for Aeronauts (The), Aerodrome, Bankstown	284719	Suburb/Area Match	0m	Onsite
ASSOCIATIONS & SOCIETIES (A612)	Ultra-Light Aircraft Association of Australia, BankstownAirport	263231	Suburb/Area Match	0m	Onsite
AIRCRAFT COMPONENT PARTS MFRS (A270)	Wilmor Pty. Ltd., Bankstown Aerodrome, Bankstown	261075	Suburb/Area Match	0m	Onsite
AIRCRAFT MAINTENANCE SPECIALISTS (A285)	Wiltshire Engineering Co, Bankstown Aerodrome, Bankstown	261121	Suburb/Area Match	0m	Onsite
ENGINEERS-AERONAUTICAL (E480)	Wiltshire Engineering Co,Bankstown Aerodrome,Bankstown	297300	Suburb/Area Match	0m	Onsite
ENGINEERS-GENERAL &/OR MFRG.&/OR MECHANICAL (E615)	Wiltshire Engineering Co.,Bankstown Aerodrome,Bankstown	299792	Suburb/Area Match	0m	Onsite
ENGINEERS-HYDRAULIC (E645)	Wiltshire Engineering Co.,Bankstown Aerodrome,Bankstown	300033	Suburb/Area Match	0m	Onsite
BUILDING SOCIETIES & COMPANIES (B824)	Bankstown Permanent Co-operative Building Society, Marion St, Banksown	271742	Road Match	0m	East
FLYING SCHOOLS (F395)	Chieften Aviation Pty.Ltd.,Milperra Rd.,BankstownAerodrome	304738	Road Match	0m	South
PLASTIC COATING SPECIALISTS' MATERIAL, Etc. (P548)	COATED FABRICS PTY. LTD,MILPERRA RD.,MILPERRA	349319	Road Match	0m	South
PLASTIC COATING SPECIALISTS' MATERIAL, Etc. (P548)	Coated Fabrics Pty. Ltd., Milperra Rd., Milperra.	349320	Road Match	0m	South
TEXTILE COATERS &/OR TREATERS (T238)	Coated Fabrics Pty.Ltd.,Milperra Rd.,Milperra.	367978	Road Match	0m	South
SHEET METAL WORKERS (S230)	Crane & Engineering Co. Ltd.,Milperra Rd.,Bankstown.,	360585	Road Match	0m	South
AIRCRAFT MAINTENANCE SPECIALISTS (A285)	De Havilland Aircraft Pty. Ltd, Milperra Rd, Bankrtown	261106	Road Match	0m	South
BOAT, LAUNCH & YACHT BUILDERS.&/OR REPAIRERS (B450)	De Havilland Marine, Miiperra Rd., Bankstown	267505	Road Match	0m	South
ALUMINIUM PRODUCTS MFRS. (A320)	Hawker De Havilland Aust Pty. Ltd., Milperra Rd., Bankstown	261237	Road Match	0m	South
METAL MANUFACTURERS (M256)	Hawker De Havilland Aust. Pty. Ltd.,Milperra Rd.,Bankstown	329753	Road Match	0m	South
METAL PRESSERS/STAMPERS (M268)	Hawker De Havilland Aust. Pty. Ltd.,Milperra Rd.,Bankstown	329948	Road Match	0m	South
INSTRUMENTS-AIRCRAFT- SPECIALISTS (1370)	Hawker De Havilland Aust. Pty. Ltd.,Milperra Rd.,Bankstown	319458	Road Match	0m	South
ENGINEERS-DESIGNING (E560)	Hawker De Havilland Aust.Pty.Ltd.,Milperra Rd.,Bankstown	297952	Road Match	0m	South
ENGINEERS-PRECISION (E705)	Hawker de Havilland Aust.Pty.Ltd.,Milperra Rd.,Bankstown	300408	Road Match	0m	South
ENGINE IMPORTERS &/OR DISTRIBUTORS (E435)	Hawker De Havilland Aust.Pty.Ltd.,Milperra Rd.,Bnkstwn.	296988	Road Match	0m	South
AIRCRAFT COMPONENT PARTS MFRS (A270)	Hawker de Havilland AustPty. Ltd., Milperra Rd, Bankstown	261063	Road Match	0m	South
SHEET METAL WORKERS (S230)	Hawker De Havllland Aust. Pty. Ltd., Milpejra Rd., Bankstown	360633	Road Match	0m	South
PAPER BAG MFRS. &/OR DISTS. (PI 12)	St Regis-ACI Pty. Limited, Incorporating Bates A/asia. Pty. Ltd.,Milperra Rd.,Bankstown	346954	Road Match	0m	South
BAG & SACK MANUFACTURERS (B040)	St. Regis-A.C.I. Pty. Ltd, Incorporating Bates A/Asia Pty.Ltd., Milperra Rd., Bankstown	264374	Road Match	0m	South
BAG & SACK MERCHANTS (B045)	St. Regis-A.C.I. Pty. Ltd, Incorporating Bates A/Asia Pty.Ltd., Milperra Rd., Bankstown	264402	Road Match	0m	South

Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
PLASTIC FABRICATORS Cr VACUUM FORMERS (P556)	St. Regis-ACI Pty. Limited (Inc. Bates A/asia Pty. Ltd.),Milperra Rd.,Bankstown	349563	Road Match	0m	South
MOTOR GARAGES & ENGINEERS (M6S6)	Total Service Station, Milperra Rd. MILPERRA	338773	Road Match	0m	South
FOUNDERS-NON-FERROUS (F540)	Campbell Giilman & Co.Pty.Ltd.,Lot 104 Corraban Rd.,Milperra	306079	Road Match	0m	South East
PATTERN MAKERS-ENGINEERING (P198)	Campbell,Gillman & Co. Pty. Ltd.,Lot 104,Cooraban Rd.,Milperra	347347	Road Match	0m	South East
FENCING CONTRACTORS (F095)	Clarence Timbers, Woorang St, Milperra	302291	Road Match	0m	South East
ENGINEERS-STRUCTURAL (E165)	McGlone, J. Pty. Ltd., Cooraban Rd., Milperra	301143	Road Match	0m	South East
BAKERS' & PASTRYCOOKS' MACHINERY MFRS., IMP&/OR DISTS (B070)	McGlone, JPty. Ltd., Cooraban Rd., Milperra	264459	Road Match	0m	South East
ENGINEERS-FABRICATING (E580)	McGlone, J, Pty. Ltd., Cooraban Rd., Milperra	298559	Road Match	0m	South East
STEEL ERECTORS (S569)	McGlone,J. Pty. Ltd.,Cooraban Rd.,Milperra	365103	Road Match	0m	South East
STEEL FABRICATORS (S673)	McGlone, J. Pty. Ltd., Cooraban Rd., Milperra	365306	Road Match	0m	South East
ENGINEERS-GENERAL &/OR MFRG.&/OR MECHANICAL (E615)	McGlone, J. Pty. Ltd., Cooraban Rd., Milperra	298960	Road Match	0m	South East
MOULD & ROLL ENGRAVERS	Swane's Joinery Pty. Ltd., Woorang St., 'Milperra	342891	Road Match	0m	South East
JOINERY MANUFACTURERS (J240)	Swane's Joinery Pty. Ltd., Woorang St., Milperra	321901	Road Match	0m	South East
TIMBER MERCHANTS (T385)	Swane's Joinery Pty.Ltd.,Woorang St., Mllperra	369066	Road Match	0m	South East
MOTOR SERVICE STATIONS- PETROL,OIL,Etc. (M716)	Kentucky Service Station, Henry Lawson Drv.BANKSTOWN	341242	Road Match	0m	West
INSTRUMENTS-INDUSTRIAL- MFRS.&/OR DISTRIBUTORS (1400)	Automation Instrument Services. 7 Birch St.,Bankstown	319544	Premise Match	16m	North East
GROCERS-RETAIL (G655)	Sears,G. H. J. & P.,Owen Rd.,Bankstown	312990	Road Match	20m	North
GROCERS-RETAIL (G655)	Svars,G. H. J. & P.,Owen Rd.,Bankstown	313060	Road Match	20m	North
PAINTERS-SPRAY (P096)	Brookhouse,C. & Son Pty. Ltd.,1 Cooraban Rd.,Milperra	346777	Premise Match	23m	South East
ELECTRIC LIGHT FITTINGS (SHADES,STANDARD BRACKETS,ETC)MFRS.&/OR DISTS. (E165)	Brookhouse, C.& Son Pty.Ltd, 1 Cooraban Rd, Milperra	293821	Premise Match	23m	South East
FLEXIBLE SHAFTING & TUBING MFRS.&/OR DISTS.(F295)	Brookhouse,C.& Son Pty.Ltd.,1 Cooraban Rd.,Milperra	304006	Premise Match	23m	South East
ENGINEERS-REPETITION (E735)	Brookhouse,C.& Son Py.Ltd.,1 Cooraban Rd.,Milperra	300703	Premise Match	23m	South East
MATERIAL-HANDLING EQUIP.MANUFACTURERS (M164)	Hyster Australia Pty. Ltd.,Ashford Ave.,Milperra	325840	Road Match	29m	South
LOGGING MACHINERY-MFRS.&/OR DISTRIBUTORS 0.680)	Hyster Australia Pty. Ltd., Ashford Ave., Milperra	323867	Road Match	29m	South
ROAD MAKING MACHINERY IMPORTS. &/OR DISTS. (R365)	Hyster Australia Pty. Ltd., Ashford Ave., Milperra	357402	Road Match	29m	South
FORK-LIFT TRUCK MFRS. (F515)	Hyster Australia Pty.Ltd.,Ashford Ave.,Milperra	305935	Road Match	29m	South
EARTH MOVING EQUIP.MFRS.,IMPORTERS &/OR DISTS. (E020)	Hyster Australia Pty.Ltd.,Ashford Ave.,Milperra	292974	Road Match	29m	South
MOTOR ENGINE RECONDITIONERS (M624)	Buchanan,E.,262 Milperra Rd.,Revesby	336999	Premise Match	45m	South
MOTOR GARAGES & ENGINEERS (M6S6)	Buchanan,E.,262 Milperra Rd.REVESBY	337458	Premise Match	45m	South
INSTRUMENTS-ELECTRICAL- MANUFACTURERS (I390)	Automation Instrument Services,47 Birch St.,Bankstown	319497	Premise Match	49m	North East
INSTRUMENT REPAIRERS (I360)	Automation Instrument Services,47 Birch St.,Bankstown	319335	Premise Match	49m	North East
INSTRUMENT-MEASURING-MFRS&/OR IMPORTS. &/OR DISTS. (I410)	Automation Instrument Services,47 Birch St.,Bankstown	319373	Premise Match	49m	North East
INSTRUMENTS-AIRCRAFT- SPECIALISTS (I370)	Automation Instrument Services,47 Birch St.,Bankstown	319455	Premise Match	49m	North East
ELECTRONICS-INDUSTRIAL CONTROL EQUIPMENT MFRS.(E360)	Automation Instrument Services,47 Birch St.,Bankstown	296471	Premise Match	49m	North East
ELECTRONIC EQUIPMENT MFRS.&/OR DISTRIBUTORS (E355)	Automation Instrument Services,47 Birch St.,Bankstown	296328	Premise Match	49m	North East
ENGINEERS-ELECTRONIC (E575)	Automation Instrument Services,47 Birch St.,Bankstown	298338	Premise Match	49m	North East

Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
ELECTRIC MOTOR INSTALLATION/MAINTENANCE SPECIALISTS (E200)	Automation instrument Services,47 Birch St.,Bankstown,2200	294035	Premise Match	49m	North East
ELECTRIC MOTOR WINDING/REWINDING SPECIALISTS (E205)	Automation Instrument Services,47.Birch St.,Bankstown,2200.	294086	Premise Match	49m	North East
INSTRUMENT-MEASURING-MFRS&/OR IMPORTS. &/OR DISTS. (I410)	Exactel Instrument Co.,47 Birch St.,Bankstown	319391	Premise Match	49m	North East
INSTRUMENTS-PRECISION-MFRS.&/OR DISTRIBUTORS (1430)	Exactel Instrument Co.,47 Birch St.,Bankstown	319646	Premise Match	49m	North East
INSTRUMENTS-SCIENTIFIC- IMPORTERS,MANUFACTURERS&/OR DISTRIBUTORS (1440)	Exactel Instrument Co.,47 Birch St.,Bankstown	319714	Premise Match	49m	North East
INSTRUMENTS-SURVEYING,GEO- DETIC/GEOPHYSICAL-DIST. (1460)	Exactel Instrument Co.,47 Birch St.,Bankstown	319788	Premise Match	49m	North East
INSTRUMENTS-INDUSTRIAL- MFRS.&/OR DISTRIBUTORS (1400)	Exactel Instrument Co.,47 Birch St.,Bankstown,2200	319560	Premise Match	49m	North East
AIRCRAFT MAINTENANCE SPECIALISTS (A285)	Martin Aviation Pty. Ltd., 45 Birch St, Bankstown	261113	Premise Match	49m	North East
AIRCRAFT COMPONENT PARTS MFRS (A270)	Martin Aviation Pty. Ltd., 45 Birch St, Bankstown	261069	Premise Match	49m	North East
AIRCRAFT EQUIPMENT MFRS. &/OR DISTS. (A280)	Martin Aviation Pty. Ltd., 45 Birch St, Bankstown	261095	Premise Match	49m	North East
SHOVEL MFRS./DISTRIBUTORS (S285)	Martin Aviation Pty. Ltd.,45 Birch St.,Bankstown	361444	Premise Match	49m	North East
ELECTRONIC EQUIPMENT MFRS.&/OR DISTRIBUTORS (E355)	Martin Electronics Pty.Ltd.,45 Birch St.,Bankstown	296411	Premise Match	49m	North East
ENGINEERS-LIFTING/HANDLING(E670)	Coles Cranes Ltd,321 Milperra Rd,Bankstown	300108	Premise Match	58m	South East
CRANES & DERRICKS-MFRS. &/OR DISTS. (C728)	Coles Cranes Ltd., 321 Milperra Rd., Bankstown	286213	Premise Match	58m	South East
CRANES-MOBILE-IMPORTERS &/OR DISTRIBUTORS (C731)	Coles Cranes Ltd., 321 Milperra Rd., Bankstown	286359	Premise Match	58m	South East
CRANES-MOBILE-MANUFACTURERS &/OR DISTRIBUTORS (C734)	Coles Cranes Ltd., 321 Milperra Rd., Bankstown	286370	Premise Match	58m	South East
ENGINEERS-GENERAL &/OR MFRG.&/OR MECHANICAL (E615)	Coles Cranes Ltd.,321 Milperra Rd.,Bankstown	298989	Premise Match	58m	South East
ENGINEERS-HEAVY (E630)	Coles Cranes Ltd.,321 Milperra Rd.,Bankstown	299814	Premise Match	58m	South East
ENGINEERS-FABRICATING (E580)	Coles Cranes Ltd.,321 Milperra Rd.,Bankstown	298460	Premise Match	58m	South East
MATERIAL HANDLING EQUIPMENT IMPORTS. &/OR DISTS. (M160)	Coles Cranes Ltd.,321 Milperra Rd.,Bankstown	325734	Premise Match	58m	South East
MATERIAL-HANDLING EQUIP.MANUFACTURERS (M164)	Coles Cranes Ltd.,321 Milperra Rd.,Bankstown	325803	Premise Match	58m	South East
MINING MACHINERY & EQUIPMENT IMPORTERS,DISTRIBUTORS &/OR MANUFACTURERS (M396)	Coles Cranes Ltd.,321 Milperra Rd.,Bankstown	331761	Premise Match	58m	South East
PATTERN MAKERS-ENGINEERING (P198)	Australian Tool & Jig Co. Pty. Ltd.,258 Milperra Rd.,Revesby	347339	Premise Match	63m	South
PLASTIC DIE/MOULD MFRS. (P552)	Australian Tool & Jig Co. Pty. Ltd.,258 Milperra Rd.,Revesby	349414	Premise Match	63m	South
TOOL MAKERS (T480)	Australian Tool & Jig Co.Pty.Ltd.,258 Milperra Rd.,Revesby	369569	Premise Match	63m	South
DIE & PRESS TOOL MAKERS (D231)	Australian Tool & Jig Co.Pty.Ltd.,258 Milperra Rd.,Revesby	289393	Premise Match	63m	South
MOTOR GARAGES & ENGINEERS (M6S6)	Fenquin,9 Ashford Ave.MILPERRA	337795	Premise Match	90m	South
MOTOR PAINTERS (M672)	Hickey,R. H.,9 Ashford Ave.,Milperra,2214	339366	Premise Match	90m	South
MOTOR PANEL BEATERS (M680)	Hickey,R. H.,9 Ashford Ave.,Milperra,2214	340118	Premise Match	90m	South

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

Bankstown Airport, Bankstown, NSW 2200

1970 Business Directory Drycleaners & Service Stations

Drycleaners, Motor Garages & Service Stations from the 1970 UBD Business Directory within 1km of the site:

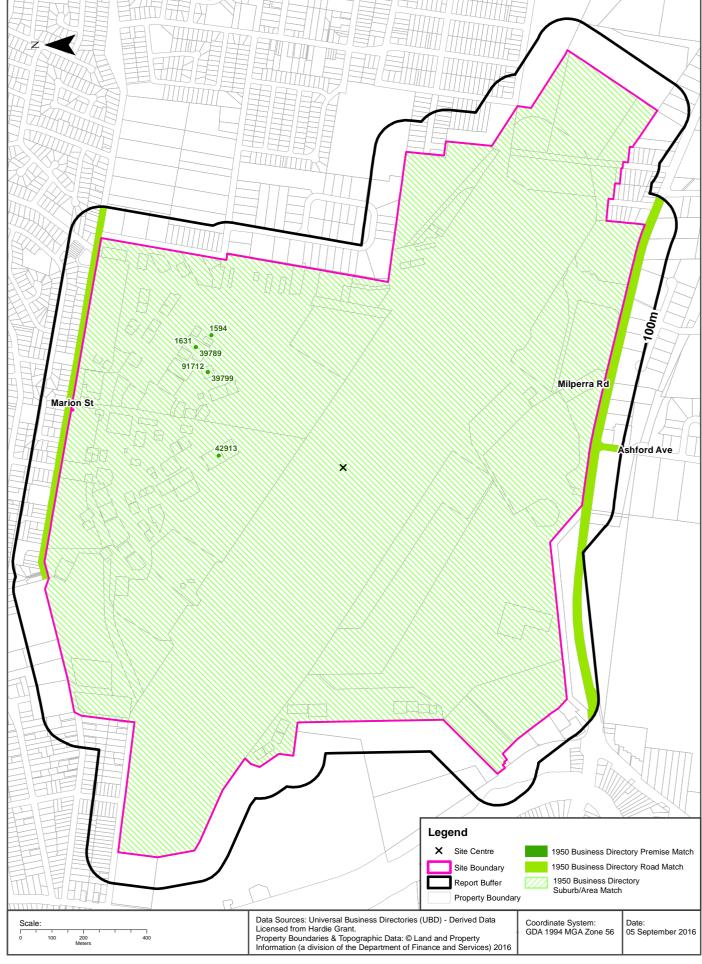
Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
MOTOR GARAGES & ENGINEERS (M6S6)	Total Service Station, Milperra Rd. MILPERRA	338773	Road Match	0m	South
MOTOR SERVICE STATIONS- PETROL,OIL,Etc. (M716)	Kentucky Service Station,Henry Lawson Drv.BANKSTOWN	341242	Road Match	0m	West
MOTOR GARAGES & ENGINEERS (M6S6)	Buchanan,E.,262 Milperra Rd.REVESBY	337458	Building Match	45m	South
MOTOR GARAGES & ENGINEERS (M6S6)	Fenquin,9 Ashford Ave.MILPERRA	337795	Building Match	90m	South
MOTOR SERVICE STATIONS- PETROL,OIL,Etc. (M716)	Total Service Station,Cnr. Woorang St. & Milperra Rd.MILPERRA	341576	Road Intersection	135m	South East
MOTOR SERVICE STATIONS- PETROL,OIL,Etc. (M716)	Kendall's Service Station,Coleman ParkGEORGE'S HALL	341239	Building Match	203m	North West
MOTOR SERVICE STATIONS- PETROL,OIL,Etc. (M716)	Ampol Milperra Service Station,174 Milperra Rd.REVESBY	340763	Building Match	222m	South East
MOTOR SERVICE STATIONS- PETROL,OIL,Etc. (M716)	Esso Servicentre (Moorebank),5 Newbridge Rd.MOOREBANK	341104	Building Match	266m	South West
MOTOR GARAGES & ENGINEERS (M6S6)	B.P. Showground Service Station,160 Milperra Rd.REVESBY	337253	Building Match	288m	South East
MOTOR GARAGES & ENGINEERS (M6S6)	Golden Fleece Service Station,138 Milperra Rd.REVESBY	337881	Building Match	476m	South East
MOTOR SERVICE STATIONS- PETROL,OIL,Etc. (M716)	Kentucky Service Station, Henry Lawson Dr. GEORGE'S HALL	341241	Road Match	583m	North West
MOTOR GARAGES & ENGINEERS (M6S6)	Allround Car Repairs,135 Eldridge Rd.BANKSTOWN	337181	Building Match	778m	East
MOTOR GARAGES & ENGINEERS (M6S6)	Snodgrass,R. Motors Pty. Ltd.,109 Carrington St.REVESBY	338622	Building Match	792m	South East
MOTOR GARAGES & ENGINEERS (M6S6)	Mag Wheel Centre (The),17 Ilma St.BANKSTOWN	338187	Building Match	892m	South East
MOTOR SERVICE STATIONS- PETROL,OIL,Etc. (M716)	Cullen's,Pat Service Station,110 Newbridge Rd.MOOREBANK	340999	Building Match	904m	West
MOTOR GARAGES & ENGINEERS (M6S6)	Hilltop Service Station,110 Newbridge Rd.MOOREBANK	338013	Building Match	904m	West
MOTOR GARAGES & ENGINEERS (M6S6)	Golden Fleece Service Station,112 Newbridge Rd.MOOREBANK	337879	Building Match	914m	West
MOTOR GARAGES & ENGINEERS (M6S6)	Thomas,J. W.,7 Ilma St.BANKSTOWN	338724	Building Match	957m	South East

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1950 Historical Business Directory Records

Bankstown Airport, Bankstown, NSW 2200





Historical Business Directories

Bankstown Airport, Bankstown, NSW 2200

1950 Business Directory Records

Records from the 1950 UBD Business Directory within 100m of the site:

Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
AIR SERVICES OPERATORS	Airflite Pty. Ltd., Hangar 275, Aerodrome, Bankstown	1569	Premise Match	0m	Onsite
AIRCRAFT MAINTENANCE SPECIALISTS	Airflite Training Pty. Ltd., Hangar 275, Aerodrome, Bankstown (P.O. Box 4)	1631	Premise Match	0m	Onsite
ENGINEERS-AERONAUTICAL	Airflite Training Pty. Ltd., Hangar 275, Aerodrome, Bankstown, P.O. Box 4	39789	Premise Match	0m	Onsite
AIR SERVICES OPERATORS	Curtis Madsen Aircraft Pty. Ltd., Hangar 17, Aerodrome (Box 25), Bankstown	1584	Premise Match	0m	Onsite
ELECTRICAL ENGINEERS	Curtis, Madsen Aircraft Pty. Ltd (Aero), Hangar 17, .Aerodrome (Box 25), Bankstown	38060	Premise Match	0m	Onsite
ENGINEERS-AERONAUTICAL	Curtis, Madsen Aircraft Pty. Ltd., Hangar 17, Aerodrome (Box 25), Bankstown	39799	Premise Match	0m	Onsite
EXPORTERS	Graclin Import and Export Coy. Pty. Ltd., Hangar 14, Bankstown Aerodrome	42913	Premise Match	0m	Onsite
AIR SERVICES OPERATORS	Morris Air Service, Hangar 271, Aerodrome, Bankstown	1594	Premise Match	0m	Onsite
PHOTOGRAPHERS-AERIAL	Skyway Services Pty. Ltd., 17 Hangar, Bankstown Aerodrome	91712	Premise Match	0m	Onsite
ENGINEERS-AERONAUTICAL	Clyde Engineering Co. Lid, Aerodrome, Bankstown	39797	Suburb/Area Match	0m	Onsite
AIRCRAFT IMPORTERS' &/OR MANUFACTURERS REPRESENTATIVES	De Havilland Aircraft Pty. Ltd. Bankstown Aerodrome	1629	Suburb/Area Match	0m	Onsite
AIRCRAFT MANUFACTURERS & DISTRIBUTORS	De Havilland Aircraft Pty. Ltd. Bankstown Aerodrome	1638	Suburb/Area Match	0m	Onsite
AIR SERVICES OPERATORS	Kingsford Smith Aviation Service, Bankstown Aerodrome	1590	Suburb/Area Match	0m	Onsite
FLYING SCHOOLS	Kingsford Smith Aviation Service, Bankstown Aerodrome	46435	Suburb/Area Match	0m	Onsite
AIR SERVICES OPERATORS	Marshall Airways, Aerodrome, Mascot Bankstown	1591	Suburb/Area Match	0m	Onsite
AIR SERVICES OPERATORS	Mashall, S. D., Aerodrome, Bankstown	1593	Suburb/Area Match	0m	Onsite
AIR SERVICES OPERATORS	New England Airways, Aerodrome, Bankstown	1595	Suburb/Area Match	0m	Onsite
AIRCRAFT MANUFACTURERS & DISTRIBUTORS	New England Airways, Bankstown Aerodrome and Mascot	114825	Suburb/Area Match	0m	Onsite
CLUBS & SPORTS BODIES	Truscott Club for Aeronauts (The), Aerodrome, Bankstown	25452	Suburb/Area Match	0m	Onsite
ELECTRICAL SUPPLIES & APPLIANCES RETAILERS	Bankstown Electricity Show Room, Marion St., Bankstown	38381	Road Match	0m	East
ANIMAL & BIRD DEALERS	Condie, Harold, Marion St., Bankstown	1767	Road Match	0m	East
ANIMAL &/OR BIRD FOOD SUPPLIERS	Condie, Harold, Marion St., Bankstown	1773	Road Match	0m	East
POULTRY FARMERS	Tyson Bros., Milperra Rd., Bankstown	94334	Road Match	0m	South
POULTRY FARMERS	Humphris, P. G., Ashford Ave., Milperra	94083	Road Match	29m	South
POULTRY FARMERS	Thoroughgood, R. C., Ashford Ave., Milperra	94320	Road Match	29m	South

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

Bankstown Airport, Bankstown, NSW 2200

1950 Business Directory Drycleaners & Service Stations

Drycleaners, Motor Garages & Service Stations from the 1950 UBD Business Directory within 1km of the site:

Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
MOTOR GARAGES &/OR ENGINEERS	Phipps Bros., Milperra Rd., Revesby	84214	Road Match	686m	South East
MOTOR SERVICE STATIONS-PETROL, Etc.	Phipps Bros., Milperra Rd., Revesby	86287	Road Match	686m	South East
MOTOR GARAGES &/OR ENGINEERS	Buchanan, E., 108 Newbridge Rd., Moorebank	83521	Premise Match	891m	West
MOTOR SERVICE STATIONS-PETROL, Etc.	Hilltop Service Station, 110 Newbridge Rd., Moorebank	86059	Premise Match	904m	West
MOTOR GARAGES &/OR ENGINEERS	Hilltop Service Station, HO Newbridge Rd., Moorebank	83870	Premise Match	904m	West

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Contamination Investigation Site 1 (Link Road) Bankstown Airport

Bankstown Airport Limited

3 | FINAL

28 September 2016





Contamination Investigation - Site 1 (Link Road), Bankstown Airport

Project no: IA110700

Document title: Contamination Investigation –Site 1 (Link Road), Bankstown Airport

Document No.: 1
Revision: 3

Date: 28 September 2016

Client name: Bankstown Airport Limited

Client no:

www.jacobs.com

Project manager: Blair Cummings

Author: Blair Cummings/Michael Stacey

File name: J:\IE\Projects\04_Eastern\IA110700\21 Deliverables\Site 1\IA110700_Bankstown Airport

Contamination Investigation Site 1 - Rev3.docx

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Document history and status

Revision	Date	Description	Ву	Review	Approved
V1	14/07/16	Technical Review	ВС	MS	MS
Draft	14/07/16	Client Review	вс	вн	MS
V2	19/08/16	Client Comments	MS	MS	MS
V3	28/09/16	AEO Review	MS	MS	MS

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1 Introduction

Jacobs Group (Australia) Pty Ltd (Jacobs) was commissioned by Bankstown Airport Limited (BAL) to undertake a contamination investigation of the proposed development site known as Site 1, Link Road (referred to hereinafter as the site) located on a portion of airside land at Bankstown Airport, NSW. Based on information provided by BAL, the footprint of development at the site will occupy an area of approximately 20,000 m².

The location of the site is presented as **Figure 1-1**.

This report details the works undertaken during the contamination investigation undertaken at the site, field observations and the sampling results and analysis with an assessment against the limits listed in *Airports* (*Environment Protection*) Regulations 1997 (the Airport Regulations), Table 1 – areas of an airport generally and those guidelines endorsed by the NEPC National Environment Protection (Assessment of Site Contamination) Measure 1999 as revised 2013 (NEPM 2013).

The investigation was undertaken in general accordance with the Jacobs *Proposal for Contamination and Geotechnical Investigations – Proposed Sites 1, 2 and 3, Bankstown Airport* dated 15 March 2016 and subsequent email for additional sampling dated 16 May 2016.

This report has been generally prepared in general accordance with the requirements specified for a Detailed Site Investigation as detailed in the NSW EPA (1997) *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites*.

1



2 Objectives and Scope of Works

The objectives of the contamination investigation were as follows.

- Identify the nature and extent of any pre-existing potential contamination at the site that may be encountered during development
- Identify the nature and extent of potential contamination at the site that would deem the suite unsuitable for the proposed continued airport land use (i.e. commercial/industrial land use).

The scope of works undertaken to address the objectives are detailed below. Sampling locations are presented on **Figure 2-1**.

2.1 Soil Contamination Investigation

- Undertook preliminary investigations including a detailed site inspection, review of available historical aerial photographs (held by Jacobs and BAL) and interviews with BAL staff with site knowledge
- Service locating for services by a qualified service locator and Dial Before You Dig Search
- Excavation of 20 test pit locations (A1-TP01 to A1-TP20) across the site with aid of a backhoe. All test pits were excavated to 1.0 m below ground level (bgl), intersection with the water table or excavation method refusal (whichever was shallower). 13 test pit locations (A1-TP02, A1-TP04, A1-TP05, A1-TP07, A1-TP08, A1-TP10, A1-TP11, A1-TP12, A1-TP13, A1-TP14, A1-TP16, A1-TP19, A1-TP20) were excavated to 2.5 m bgl, to assess the depth to groundwater (if observed) and were additionally used for the asbestos investigation (refer below).
- Drilling of 10 borehole locations (A1-BH01 to A1-BH10) across the site with the aid of a tracked drilling rig. All boreholes were drilled to 10 m bgl or excavation method refusal (whichever was shallower).
- The 20 test pit and 10 borehole locations completed as part of the contamination investigation meet the minimum sampling points required for site characterisation outlined in the NSW EPA (1995) Contaminated Sites: Sampling Design Guidelines for a site with an area of 20,000 m².
- Soil samples were collected from the test pits and boreholes with selected samples (primary and QC samples) submitted to a National Association of Testing Authorities (NATA) accredited laboratory for laboratory analysis for a range of common contaminant compounds including Perfluorinated Chemicals (PFCs).

2.2 Asbestos Investigation

With the absence of assessment criteria for asbestos in soils in the Airport Regulations, an asbestos assessment was undertaken in accordance with the Western Australia Department of Health (May 2009) *Guidelines for the Assessment and Management of Asbestos-Contaminated Sites in Western Australia* (WADOH 2009). In accordance with *Table 1 – Triggers and Types of Asbestos Investigations* from the WADOH (2009) guidelines, Jacobs has assumed that there was a possible likelihood of asbestos being present on the site and that the asbestos (if present) could be in any form. Based on the possible likelihood, the investigation regime comprised an assessment from 15 test pit locations to be excavated as part of the contamination investigation. The scope of works for the asbestos investigation is detailed below:

Contamination Investigation - Site 1 (Link Road) Bankstown Airport



- Excavation of 11 test pit locations (A1-TP02, A1-TP04, A1-TP05, A1-TP07, A1-TP08, A1-TP11, A1-TP12, A1-TP13, A1-TP14, A1-TP16 and A1-TP19) across the site with aid of a backhoe. All test pits were excavated to a depth 2.5 m bgl.
- Excavation of four test pit locations (A1-TP01, A1-TP06, A1-TP09 and A1-TP18) across the site with the aid of a backhoe. All test pits were excavated to a maximum depth of 1.2 m bgl.
- Select material excavated from the test pits was inspected for potential asbestos containing materials (ACM)
- Soil samples were collected from the test pits with selected samples submitted to a NATA accredited laboratory for ACM, fibrous asbestos (FA) and asbestos fines (AF) identification.

2.3 Groundwater Investigation

- Drilling of three boreholes (A1-GW1 to A1-GW3) at anticipated hydraulic up gradient and down gradient positions with the aid of a tracked drill rig and installation of groundwater monitoring wells. All boreholes for groundwater well installation were drilled to a maximum depth of 8 m bgl, 1 m below the observed static water level or excavation method refusal (whichever was shallower)
- Groundwater samples were collected from the wells with samples (primary and QC samples) submitted to a NATA accredited laboratory for analysis for a range of common contaminant compounds including PFCs.
- Groundwater well location heights were surveyed to site datum.

2.4 Reporting

Preparation of a report detailing the results of the contamination investigation and laboratory analysis. The report includes an assessment as to the suitability of the site for continued airport land use and an assessment as to the potential impacts to development of the site (with respect to contamination).



3 Data Quality Objectives

Data Quality Objectives (DQO) are an important component of any sampling and analysis programme as they outline the aims and objectives of the investigation program with respect to the integrity of the data collection and interpretation. In order to address the DQO and to ensure that they have been achieved the following seven-step process was undertaken. The DQO process has been adopted from the Australian Standard (AS 4482.1-2005) *Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds.*

Step 1 - State the Problem

The problem was potential contamination attributable to historical site usage above the NSW EPA endorsed guidelines for commercial/industrial land use, airport regulations and protection of beneficial groundwater users and receiving environments.

Step 2 - Identify the Decision Statement

The primary decision statement that the contamination investigation will attempt to resolve is:

"Does contamination at the site pose an unacceptable risk to human or environmental health which may prevent the development and operation of the site for continued airport use"?

Step 3 - Identify inputs to the decision

The following informational inputs were required to resolve the decision statement:

- National Environment Protection (Assessment of Site Contamination) Measure 1999 (as revised 2013) Schedule B1 Guideline on Investigation levels for Soil and Groundwater (NEPC, 2013)
- Airports (Environment Protection) Regulations 1997 (the Airport Regulations)
- Western Australia Department of Health (May 2009) Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated Sites in Western Australia (WA Guidelines)
- GHD (June 2015) Managing PFC contamination at Airports, Interim Management Strategy and Decision Framework
- National Health and Medical Research Council (2008) Guidelines for Managing Risks in Recreational Waters (NHMRC, 2008)
- enHealth (June 2016) Guidance Statements on Pefluorinated Chemicals Interim Values (enHealth, 2016).

Step 4 - Define the Boundaries of the Study

The investigation extended laterally across accessible areas of the site for coverage and to target areas of environmental interest. All locations were extended vertically to the limit of the investigation or excavation method refusal.

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Step 5 - Develop a Decision Rule

The purpose of this step was to define the parameter of interest, specify the action level and combine the outputs of the previous DQO steps into an "if...then..." decision rule that defines the conditions that would cause the decision maker to choose alternative actions.

The parameters of interest (or Contaminants of Concern) have been determined based on background information and to establish baseline chemical conditions and contaminant concentrations. The action level (Site Assessment Criteria) will be used to decide if the parameter represents a potentially unacceptable risk for commercial/industrial land use, human health and/or the environment. If the measured concentration of a compound exceeds the action levels in soils, water and vapour, then this is deemed to present a potential unacceptable risk considering the current land use, adjoining land use and environmental receptors. This also indicates that refinement of the Site Assessment Criteria (SAC) by undertaking Detailed Risk Assessment (DRA) is warranted. Should this DRA action value be exceeded, remediation will be required. In some instances (such as presence of free phase hydrocarbons), the development of the DRA can be by-passed and intervention through remediation applied directly.

Step 6 - Specify Acceptable Limits on Decision Errors

There were decided to be two types of errors:

- a) Deciding that the site is acceptable for continued airport use (i.e. no risk to site users and/or receptors)
 when it actually is not acceptable. The consequence of this error may be unacceptable health risk for
 site users, adjoining site users and receiving environments; or
- b) Deciding that the site is unacceptable for continued airport use (i.e. risk to site users and/or receptors) when it actually is acceptable. The consequence of this error is that the client will pay for further investigation / remediation that are not necessary.

The more severe consequences are with decision error (a) since the risk of jeopardising human health and/or the environment outweighs the consequences of paying more for remediation. It will not be possible to conduct statistical hypothesis tests as the proposed sampling programme as part of this contamination investigation consists of the collection of one round of samples only.

Step 7 - Optimising the Design for Obtaining Data

The purpose of this step was to identify a resource-effective data collection design for generating data that are expected to satisfy the DQO.

The resource effective data collection design that was expected to satisfy the DQO is described in detail in **Sections 10** of this report. To ensure the design satisfies the DQO a comprehensive Quality Assurance and Quality Control Plan was implemented as described in **Section 11** of this report.



4 Site Information

The site information presented below is based on a review of readily available government information sources and information provided by BAL.

4.1 Site Identification

Based on information from NSW Department of Finance and Services, Land and Property Information Spatial Information Exchange (SIX), the site is located within the local government area (LGA) of Canterbury-Bankstown and comprises the following lots (whole or a portion of):

- Lot 5013 deposited plan (DP) 1176822
- Lot 308, DP 10774400
- Lot 309, DP 10774400
- Lot 310, DP 10774400.

4.2 Site Zoning and Landuse

The current zoning of the site is SP2 – Air Transport Facility under the Bankstown Local Environment Plan (LEP) 2015. At the time of preparing this report, the site was being used as an airport.

4.3 Geology

Review of the 1:100,000 Penrith Geological Sheet 9030 (Edition 1, 1991) indicated the site is within an area underlain by fluvial sediments. The sediments overlie Ashfield Shale of the Wianamatta Group. The fluvial sediments comprise clayey quartzose sand and clay. The Ashfield Shale comprises dark-grey to black claystone-siltstone and fine sandstone-siltstone laminite.

4.4 Soils

Review of the 1:100,000 Penrith Soil Landscape Series Sheet 9030 (1989) indicated that the area in which the site is located has been disturbed by human activity to a depth of at least 100 cm. The original soil has been removed, greatly disturbed or buried. Most of these areas have been levelled to slopes of less than 5%. Landfill includes soil, rock, building and waste materials. The original vegetation has been completely cleared.

The natural soils underlying these disturbed areas consist of fluvial sediments of the Berkshire group of soils. The Berkshire group of fluvial sediments are typically characterised by orange heavy clays and clayey sands, often mottled and with ironstone inclusions. Due to the depositional action of the fluvial sediments, they can exhibit marked differences in soil texture, colour, stoniness and calcium carbonate content.

4.5 Hydrogeology

Groundwater within the catchment occupied by the site is expected to flow to the west and south-west towards the Georges River. Shallow groundwater beneath the site is expected to be perched above the residual weathered bedrock and to be recharged predominantly by the infiltration of surface water falling onto the unsealed surfaces of the site.

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Surface water flowing across sealed taxiways and runways would be directed towards the drainage channels located to the west of the site.

The Georges River is located less than one kilometre to the west of the site.

4.6 Acid Sulfate Soils

Areas of the site are defined in the Liverpool Acid Sulfate Soil (ASS) Risk Map (Edition 2, 1997) as disturbed terrain with an elevation of 2 m to greater than 4 m AHD. Disturbed terrain is defined as filled areas, which often occur during reclamation of low-lying wetlands and floodplains for urban development. Other disturbed terrain includes areas which have been mined or dredged, or have undergone heavy ground disturbance through general urban development or construction of dams or levees.

No suspected ASS were observed in the material excavated during the contamination investigation because fill and natural soil did not exhibit the following characteristics (as defined in the ASSMAC 1998):

- Fill and soils did not exhibit a sulphurous smell
- There was no evidence of shell
- · No jarositic horizons or substantial iron oxide mottling was observed; or
- Fill and soils were not classified as unripe muds (soft, buttery, blue grey or dark greenish grey) or estuarine silty sands or sands (mid to dark grey) or bottom sediments of estuaries or tidal lakes (dark grey to black).

The Bankstown Local Environment Plan (LEP) 2015 ASS map sheet defines the areas below the site as Class 3.



5 Site History

The site history has been based on a review of the report prepared by Godden Mackay Logan (April 2005) Bankstown Airport, Heritage Management Strategy. The Godden Mackay Logan (April 2005) report outlines the history of the entire Bankstown Airport site. It should be noted that the historical operations/activities detailed may have not been specifically undertaken on the site (i.e. Site 1). A brief outline of the site history is provided below.

- The Bankstown Airport site was formerly occupied by market gardens, poultry farms and commercial premises (including a service station) located at the corner of Milperra and Billiana Roads
- Construction of the Bankstown Aerodrome commenced in 1940
- The Royal Australian Air Force (RAAF) established at the site in late 1940. The activities undertaken by the RAAF included airfield and training operations, aircraft assembly and temporary accommodation for RAAF personnel
- The Women's Australian Auxiliary Air Force (WAAAF) established to the site in 1941. The activities undertaken by the WAAAF included training, administration and accommodation
- The US Air Force were accommodated at the site from 1942 to 1945. The site was used to as a base for a number of squadrons and accommodated the associated personnel
- The Clyde Engineering Co Pty Ltd undertook maintenance, repair and modification of aircraft from 1942
- Hawker de Havilland opened a factory in 1942 for the manufacture of aircraft and parts
- A Mobile Naval Air Base was commissioned at Bankstown in 1945. As part of this commission, hangers, taxiways and associated facilities were constructed
- From 1945 to 1950 sections of the site were used to house migrants
- The control of the Bankstown Airport was divested to the Department of Civil Aviation in 1980.



6 Preliminary Investigation

Jacobs undertook a preliminary investigation of the site to assess whether historical land use and/or activities undertaken on and/or adjacent to the site could have contaminated the site. The preliminary investigation also included an assessment of the potential for PFCs contamination in general accordance with the Department of Infrastructure and Regional Development GEM-002 *PFC – management actions advice.*

The results of the preliminary investigation were used to refine the intrusive investigation plan so as to target potential areas of interest and contaminants of concern (where identified). The results of the preliminary investigation are detailed below.

6.1 Aerial Photograph Review

Aerial photographs held by Jacobs and BAL were examined to provide a visual indication of the potential historical activities and changes which have taken place at or within areas adjoining the subject site. Historical aerial photos held by Jacobs were examined for the years 1943, 1951, 1986, 2000, 2005, 2007, 2009, 2011 and 2015, while historical aerial photos held by BAL were examined for the years 1950, 1956, 1957, 1961, 1977, 1979, 1980, 1986 and 2000. From a review of the historical aerial photos the subject site and it's surrounds appeared vacant and was covered with low lying shrubs and bushes except for some shelter and accommodation type buildings observed adjacent and directly to the north of the western portion of the site and east of the site in aerial photos from 1943. An open drain also appears to run along the southern boundary of the site. The shelter and accommodation type buildings to the north and east of the site no longer appear in aerial photos from 1950. The southern portion of the site appears to have been cleared of low lying shrubs and bushes in aerial photos from 1961 with the northern and central portions of the site still remaining vegetated. Formalised runways also appeared to the south and south east of the site. A very small shed type structure was observed directly north of the western portion of the site in aerial photos from 1979. From 1980 onwards a small round windsock type concrete pad appears on the western portion of the site. An open drainage line running diagonally north east to south west through the site was observed in aerial photos from 1986. One large and one medium rectangular storage type containers and three large hanger type structures appear directly east of the site in an aerial photo from 2000, Small aircraft appear on the concrete aprons adjacent of the three large rectangular hangers directly east of the site periodically in aerial photos from 2000 onwards. Land adjacent and directly north of the western portion of the site also appears to have been stripped of vegetation. A bus depot appears adjacent and directly north of the western portion of the site on land previously stripped of vegetation and two helipads, one located on the central portion of the site and one directly north of the site were observed in aerial photos from 2005. Land east of the site and adjacent and directly south of a large rectangular hanger appears to have been periodically used to park small planes and a truck in aerial photos from 2007 onwards. The wind sock located on the western portion of the site and helipad directly north of the site can no longer be observed in aerial photos from 2011.



6.2 Interviews

An interview was conducted with Mr Craig Smith, Facilities Management Coordinator at BAL on the 11 May 2016 prior to conducting a site inspection and walkover to gain an understanding of any potentially contaminating events or activities that may have occurred on the site in the past. Of particular interest were any fires, crashes, spills or structures that may have caused potential contamination (including PFC contamination). Anecdotal information from Mr Smith indicated that he had worked at the airport for approximately 20 years and had spoken to a few employees who had been there for a similar period of time. Mr Smith provided the following anecdotal information regarding past activities on and around the site that may have contributed to potential contamination of the site:

- A firefighting exercise had been conducted on the south eastern portion of the site within the past five years. The exercise consisted of lighting a drum on fire and having emergency services put it out with a mixture of water and foam. The exercise was identified as an activity that could have resulted in PFC contamination of surface soils and of groundwater beneath the site. This triggered the requirement for PFC analysis of groundwater and soil samples collected from across the site.
- The eastern portion of the site was identified as having been used in the past as a clay pigeon shooting range. It was noted that lead shot could be present within the surface soils across this portion of the site.
- A past plane crash site was identified directly to the north east of the site.

6.3 Site Inspection

A site inspection and walkover was conducted on 11 May 2016. During the course of the site inspection and walkover, no obvious signs of ACM, fuel or chemical spills, evidence of fires, crashes or staining of soils were observed across the surface of the site. Areas of fill material were observed across the majority of the surface of the site and consisted of a silty clay material with gravel. A small mounded area of fill material was observed on the western portion of the site.



7 Site Description

At the time of the investigation, the site was located airside and comprised a vacant grassed area and helipad. The surrounding area consisted of taxi zones for aircraft which led to the main runway, a bus depot, access roads, an open drain and large sheds, which were likely used as hangars/workshops for small aircraft.

Operations that were undertaken at the site during the time of the investigation included:

- Aircraft activity: this involved aircraft leaving the hangars adjacent and directly east of the site and travelling along the taxi zone towards the main runway
- Helicopter activity within the helipad area located on the site
- Airport vehicles travelling along the runway/taxi zone
- · Possible refuelling activities within the hanger area adjacent to site
- Operation of bus depot adjacent to site.



8 Fieldwork - Soil Investigation

Jacobs undertook the contamination investigation works at the site between 24 May 2016 and 30 May 2016. The site investigation and sampling was undertaken in accordance with documented Jacobs procedures by an experienced Jacobs environmental scientist.

8.1 Sampling Pattern

Sample locations were positioned across the proposed footprint of the development (based on information provided by BAL) as follows:

- To undertake sufficient sample locations to meet the NSW EPA (1995) Contaminated Sites: Sampling Design Guidelines Table A: Minimum Sampling Points Required for Site Characterisation Based on Detecting Circular Hot Spots by Using Systematic Sampling Pattern. The 20 test pit and 10 borehole locations (30 sample locations in total) meet the minimum sampling points required for site characterisation for a site with an area of 20,000 m² as outlined in the NSW EPA (1995) Contaminated Sites: Sampling Design Guidelines.
- To undertake sufficient sample locations to meet WADOH (2009) Table 1 Triggers and Types of Asbestos Investigations. Based on the possible likelihood, the investigation regime comprised an asbestos assessment from 15 test pit locations (i.e. half of the overall sample locations) excavated as part of the contamination investigation.
- To target areas of potential concern as identified during the preliminary investigation.
- To assess groundwater quality migrating onto and from the site.

Sampling locations and the proposed development footprint are presented in Figure 2-1.

8.2 Depth Intervals of Sampling

8.2.1 Soil Contamination Investigation

For the soil contamination investigation, soil samples were collected as follows:

- As grab samples from the surface of the site and directly from the centre of the excavator bucket at depths of approximately 0.5 m and at 1.0 m intervals or at other discrete locations where there was evidence of potential contamination (odorous or discoloured soils, erroneous waste or fill).
- As grab samples from the surface and from a decontaminated SPT sampler during the drilling of boreholes at approximately 0.5 m and 1.5 m bgl.

8.2.2 Asbestos Investigation

For the asbestos investigation, sampling intervals were as follows:

10 litres of representative material excavated from test pits was collected from both 0.0 – 1.0 m and 1.0 – 2.0 m depth ranges where fill material was observed. The 10 litre samples were spread out on black plastic sheeting, raked and inspected for potential ACM



- Where potential ACM was identified within the 10 litre samples, all observable potential ACM was collected and weighed.
- Where no potential ACM was identified in the 10 litre samples, a 500 ml sample was collected from material within the top 300 mm of the test pit.

8.3 Method of Sample Collection

8.3.1 Soil Contamination Investigation

All soil samples at depth were collected directly from the excavator bucket, as grab samples from surface soils or as undisturbed samples from a decontaminated SPT sampler. Samples were transferred to sample containers by Jacobs field staff by hand using disposable nitrile gloves.

Care was taken to ensure that representative samples were obtained from the depth required and that the integrity was maintained, particularly when dealing with potentially volatile and semi-volatile components.

8.3.2 Asbestos Investigation

Potential ACM as fragments of fibre cement sheeting were observed in test pits A1-TP05 (at 0.3m and 0.4m), A1-TP08 (0.4m), A1-TP09 (0.2m and 0.4m), A1-TP11 (0.3m and 0.4m), A1-TP12 (0.4m), A1-TP14 (0.2m) and A1-TP15 (0.2m) excavated for the asbestos investigation. The potential ACM identified was collected for identification and bulk samples were collected as grab samples from material representing the top 300 mm of soil observed at the respective test pit locations.

8.4 Sample Containers, Method of Sample Storage and Handling

All soil samples for the soil investigation were placed in jars provided by the primary laboratory Eurofins MGT (Eurofins). All sample jars were fitted with Teflon lined lids. Zip lock bags were used to contain the bulk samples collected as part of the asbestos investigation. The jars and zip lock bags were completely filled with soil, labelled with the date, unique sampling point identification and sampler information.

The soil jars and zip lock bags once filled with sample and sealed, were immediately placed in an esky/cool box in which a cooling medium had been added to keep the samples below a temperature of approximately 4 °C. At the end of the sampling program the samples in the cool box were transported to the laboratory. Custody seals were placed on the esky / cool box for delivery to the laboratory.

8.5 Decontamination Procedures

Samples from test pits and surface samples were collected as grab samples from material at the centre of the excavator bucket or directly from the surface of the site using new disposable nitrile gloves, changed between sample locations.

Samples from boreholes were collected from a decontaminated SPT sampler using new disposable nitrile gloves, changed between sample locations. The SPT sampler was decontaminated between sample locations by washing in potable water and then rinsed in potable water.

8.6 Sample Logging and Documentation

Experienced Jacobs field staff completed soil logs during the field investigation. The logs recorded the following data:

Contamination Investigation - Site 1 (Link Road) Bankstown Airport



- · Sample number and depth
- Soil classification, colour, consistency or density, moisture content and obvious indications of contamination
- Depth of excavation
- Excavation refusal
- Method of excavation.

In addition, the physical attributes of samples such as soil/fill characteristics, obvious signs of contamination such as discolouration and/or odour were noted on the logs.

All samples, including QA samples, were transported to the primary laboratory under Chain-of-Custody (CoC) procedures and maintained in an ice-filled cool box. The CoC detailed the following information:

- Site identification
- · The sampler
- Nature of the sample
- Collection time and date
- Analyses to be performed
- Sample preservation method.

8.7 Laboratory Analysis

Soil samples were selected for analysis based generally on providing vertical and lateral coverage of the site and on visual observations.

8.7.1 Soil Contamination Investigation

Soil samples were analysed for the following potential contaminants of concern:

- 32 samples (26 primary + 6 QA/QC) for heavy metals, Total Recoverable Hydrocarbons (TRH), monocyclic aromatic hydrocarbons (BTEX), polycyclic aromatic hydrocarbons (PAH)
- 15 samples for heavy metals, TRH, BTEX, PAH, organochlorine pesticides (OCP) and polychlorinated biphenyls (PCB).
- 15 samples for perfluorinated compounds (PFOS, PFOA and 6:2 FTS)
- One sample for pH, cation exchange capacity (CEC) and %clay
- Two trip spike/trip blank for BTEX.



8.7.2 Asbestos Investigation

Laboratory analysis for the asbestos investigation comprised the following:

- 10 samples of fibre cement sheeting fragments for asbestos identification
- 15 bulk soil/fill samples from the surface soils (0-300 mm) for ACM, AF and FA.

8.8 Analytical Parameters and Methods

Jacobs commissioned Eurofins MGT (Eurofins) as the primary laboratory and Australian Laboratory Services (ALS) as the secondary laboratory. Both Eurofins and ALS are NATA accredited for the testing undertaken.

Where appropriate, the soil samples were analysed in accordance with NEPC *National Environment Protection* (Assessment of Site Contamination) Measure 1999, as amended 2013 (NEPC, 2013) guidelines using methods based on US Environment Protection Agency (US EPA) and American Public Health Association (APHA) approved analytical methods.

Asbestos identification was undertaken in accordance with the analytical methods detailed in the WADOH (2009) guidelines.



9 Fieldwork - Groundwater Investigation

Three groundwater wells (A1-GW1, A1-GW2 and A1-GW3) were installed to assess groundwater quality beneath and migrating onto the site and to identify any potential impacts to environmental receptors and beneficial groundwater users from the migration of contaminated groundwater (if present) onto and from the site. The groundwater investigation comprised:

- Construction of groundwater wells using new, Class 18, 50 mm UPVC with machine slotted screen sections, natural sand pack, bentonite seal and grout/bentonite to the surface. The wells were completed flush with the ground level with a gatic cover.
- Survey of the groundwater wells to site datum to allow for the calculation of groundwater gradients.
- Measuring of water levels within all wells to assess depth to groundwater.
- Development, purging and sampling of all newly installed groundwater wells.

Sampling locations and the proposed development footprint are presented in Figure 2-1.

9.1 Well Development and Sample Collection

Fieldwork was undertaken in accordance with documented Jacobs procedures by experienced staff. Groundwater wells were developed using a submersible pump.

Following development, the wells were allowed to stabilise for a minimum of 48 hours before being purged and sampled. The monitoring wells were purged prior to sampling in order to remove standing or stagnant water in the well and to ensure that samples collected were representative of the groundwater within the aquifer.

Monitoring wells were purged and sampled using a peristaltic pump. The pump had flow control to minimise drawdown and new dedicated, disposable polyethylene and silicon tubing was used for the collection of each sample. Care was taken to minimise the potential for volatile losses during sampling.

The electrodes of a calibrated water quality meter were used to measure pH, redox potential (Eh), electrical conductivity, dissolved oxygen and temperature in water purged from the wells. Samples were collected following stabilisation of these water quality parameters (generally \pm 10%). A calibration certificate for the water quality meter is presented in **Appendix D**.

9.2 Decontamination Procedures

The submersible pump was decontaminated between groundwater well locations by washing in potable water and then rinsed in potable water.

Dedicated, single use sample tubing was used to purge and to sample all wells. All samples were collected using new disposable nitrile gloves, changed between sample locations.

9.3 Sample Containers

Laboratory supplied sample containers were used to contain the groundwater samples. Sample containers were filled in order of volatility, with samples for the most volatile substances collected first.



9.4 Method of Sample Collection, Storage and Handling

All sample containers were labelled with the sample number, project number, date obtained and sampler and site name. This information was repeated on the CoC form.

Sample containers were filled in order of the most volatile substances. Care was taken to minimise disturbance of the sample to avoid aeration by minimising the distance between the outlet tubing and the container and tilting the container so that discharge flowed gently down the inner walls. Samples for dissolved heavy metals in groundwater were field filtered using 0.45 micron single use stericups.

Once filled, the caps were checked to ensure that they were secure (and that there were no air bubbles/head space within the glass vials and bottles) then placed within an esky / cool box in which a cooling medium had been added to keep the samples below a temperature of approximately 4 $^{\circ}$ C. Custody seals were placed on the esky / cool box for delivery to the laboratory.

9.5 Sample Logging and Documentation

While on site, the Jacobs field staff completed sampling field data sheets which document (where applicable):

- Time of sample collection
- Weather
- Unique sample identification number
- Sample location and depth
- Static Water Level
- Water quality screening results (DO, Temperature, Redox potential, pH and conductivity)
- Presence or absence of odour (nature and intensity)
- Colour of the water
- Presence or absence of sediment in the well
- Well condition and purging volumes.

All samples, including QA samples, were transported to the primary laboratory under CoC procedures and maintained in an ice-filled cooler. The CoC detailed the following information:

- Site identification
- The sampler
- Nature of the sample
- Collection date of the sample
- Analyses to be performed



Sample preservation method.

9.6 Laboratory Analysis – Water

Four (three primary and one QA/QC samples) groundwater samples were collected and analysed for dissolved heavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn), TRH, BTEX, PAH, PFOS, PFOA and 6:2 FTS.

9.7 Analytical Parameters and Methods

Jacobs commissioned Eurofins as the primary laboratory. Eurofins are NATA accredited for the analysis undertaken.

Where appropriate, the groundwater samples were analysed in accordance with NEPC (2013) using methods based on US EPA and APHA approved analytical methods.



10 Quality Control Plan

Field and laboratory QA/QC requirements compliant with NEPC (2013) requirements (where applicable) were undertaken as part of the field work program as outlined below.

10.1 Field QA/QC Programme

Field QA/QC for this project consisted of the collection of blind replicate, split replicate, trip blank and trip spike samples.

10.1.1 Environmental Samples

Environmental samples or field samples were the representative soil and groundwater samples collected for analysis to determine aspects of their chemical composition.

10.1.2 Blind Replicate Samples

Blind replicate samples were provided by the collection of two environmental samples from the same location. These samples were preserved, stored, transported, prepared and analysed in an identical manner. As a minimum, the results of analyses on the blind replicate sample pair were assessed by calculating the Relative Percentage Differences (RPDs) between the results. The RPD was calculated as the difference between the results divided by their mean value and expressed as a percentage. If the RPD exceeded the value adopted for any analytes, additional investigation would be required, or justification provided for not conducting additional investigation.

Blind replicate samples were generally collected at a rate of one duplicate for every 20 environmental samples in accordance with AS 4482.1-2005.

10.1.3 Split Samples

Split samples provided a check on the analytical proficiency of the laboratories. Split samples were provided by the collection of two environmental samples from the same location. These samples were preserved, stored and transported in an identical manner. The split samples were analysed by the secondary laboratory. As a minimum, the results of analyses on the split replicate sample pair were assessed by calculating the RPDs between the results. The RPD was calculated as the difference between the results divided by their mean value and expressed as a percentage. If the RPD exceeded the value adopted for any analytes, additional investigation would be required, or justification provided for not conducting additional investigation.

Split replicate samples were generally collected at a rate of one duplicate for every 20 environmental samples in accordance with AS 4482.1-2005.

10.1.4 Trip Blanks

The trip blanks consisted of laboratory-supplied purge water and clean sand. The purpose of trip blanks was to detect potential contamination during sample transport. These samples were kept within eskies during sampling activities and were not opened in the field. Trip blanks were analysed at the laboratory as regular samples for BTEX compounds only.

Trip blanks were submitted with every batch of soil and water samples delivered to the respective primary laboratories.



10.1.5 Laboratory-Prepared Trip Spike

Laboratory-prepared trip spikes consisted of purge water or sand spiked with known concentrations of BTEX. These samples were submitted for BTEX analysis with the results compared with the known additions. Generally, samples were spiked with concentrations of 15, 15, 15 and 30 ppm of benzene, toluene, ethylbenzene and total xylenes respectively. The purpose of these samples was to monitor VOC losses during transit.

Trip spikes were submitted with every batch of soil and water samples delivered to the respective primary laboratories.

10.2 Laboratory QA/QC Programme

The reliability of test results from the analytical laboratories was monitored according to the QA/QC procedures used by the NATA accredited laboratory. The QA/QC programme employed by Eurofins (the primary laboratory) specified holding times, extraction dates, method descriptions, Chain of Custody (COC) requirements, analysis, LORs and acceptance criteria for the results. Laboratory QA/QC requirements undertaken by Eurofins and ALS are based on NEPM requirements and are outlined below (NEPC, 2013).

10.2.1 Laboratory Duplicate Samples

Laboratory duplicates provided data on analytical precision for each batch of samples.

Laboratory duplicates were performed at a rate of one duplicate for batches of 8-10 samples with an additional duplicate for each subsequent ten samples.

10.2.2 Laboratory Control Samples

Laboratory control samples consisted of a clean matrix (de-ionised water or clean sand) spiked with a known concentration of the analyte being measured. These samples monitored method recovery in clean samples and were used (where required) to evaluate matrix interference by comparison with matrix spikes.

10.2.3 Surrogates

For organic analyses, a surrogate was added at the extraction stage in order to verify method effectiveness. The surrogate was then analysed with the batch of samples and percentage recovery calculated.

10.2.4 Matrix Spike

Matrix spikes consisted of samples spiked with a known concentration of the analyte being measured, in order to identify properties of the matrix that may hinder method effectiveness. Samples were spiked with concentrations equivalent to 5 to 10 times the LOR and percentage recovery calculated.

10.2.5 Method Blanks

Method blanks (de-ionised water or clear sand) were carried through all stages of sample preparation and analysis at a rate of approximately 10%. Analyte concentrations in blanks should be less than the stated LOR. Reagent blanks were run if the method blank exceeded the LOR. The purpose of method blanks was to detect laboratory contamination.



10.3 Data Acceptance Criteria

The QA/QC Data will be assessed against the Data Acceptance Criteria (DAC) provided in Table 10.1.

Table 10.1: QA/QC Compliance Assessment

QA/QC Sample Type	Method of Assessment	Acceptable Range
Field QA/QC		
Blind Replicates and Split Samples	The assessment of split replicate is undertaken by calculating the Relative Percent Difference (RPD) of the replicate concentration compared with the original sample concentration. The RPD is defined as: X1 - X2	The acceptable range depends upon the levels detected: • 0 - 100% RPD (When the average concentration is < 5 times the LOR) • 0 - 75% RPD (When the average concentration is 5 to 10 times the LOR) • 0 - 50% RPD (When the average concentration is > 10 times the LOR)
Blanks (Rinsate and Trip Blanks)	Each blank is analysed as per the original samples.	Analytical Result < LOR
Laboratory-prepared Trip Spike	The trip spike is analysed after returning from the field and the % recovery of the known spike is calculated.	70% - 130%
Laboratory QA/QC		
Laboratory Duplicates	Assessment as per Blind Replicates and Split Samples.	The acceptable range depends upon the levels detected: • 0 - 100% RPD (When the average concentration is < 4 times the LOR) • 0 - 50% RPD (When the average concentration is 4 to 10 times the LOR) • 0 - 30% RPD (When the average concentration is > 10 times the LOR)
Surrogates Matrix Spikes	Assessment is undertaken by determining the percent recovery of the known spike or addition to the sample.	 70% - 130% (General Analytes) 50% - 130% (Phenols) 60% - 130% (OP Pesticides)
Laboratory Control Samples	C - A % Recovery = 100 x B Where: A = Concentration of analyte determined in the original sample; B = Added Concentration; C = Calculated Concentration.	



QA/QC Sample Type	Method of Assessment	Acceptable Range		
Method Blanks	Each blank is analysed as per the original samples.	Analytical Result < LOR		
Note: LOR = Laboratory Level of Reporting (LOR) or the minimum detection limit for a particular analyte.				



11 Quality Assurance and Quality Control

For the purpose of assessing the quality of data presented in this report, Jacobs collected and analysed various Quality Control (QC) samples (blind duplicate and blind triplicate sample), trip spike and trip blank samples, while the laboratory completed their own internal QC. The current section of this report is focused on the presentation of the results of these QC samples, adherence to Quality Assurance (QA) systems and discussion of deviations, if any from the DAC.

11.1 Field Quality Assurance

All samples were collected by experienced Jacobs environmental scientists and engineers, under established Jacobs protocols. Adherence to Jacobs protocols by experienced field staff trained in sample collection and handling techniques ensures the quality and representativeness of the samples collected.

11.2 Field Quality Control

The following QC samples were collected for laboratory analysis.

- Blind Duplicate: A1-QC01 (duplicate of soil sample A1-TP19_0.0), A1-QC03 (duplicate of soil sample A1-TP16_0.0), A1-QC05 (duplicate of soil sample A1-TP13_0.4) and A1-QC07 (duplicate of water sample A1-GW1)
- Split Replicate: A1-QC02 (duplicate of soil sample A1-TP19_0.0), A1-QC04 (duplicate of soil sample A1-TP16_0.0) and A1-QC06 (duplicate of soil sample A1-TP13_0.4)
- Trip Spike sample for soil and water TS160517-4 (soil), TS160517-5 (soil) and TS160614-15 (water).
- Trip Blank sample for soil and water TB160517-4 (soil), TB160517-5 (soil) and TB160614-15 (water).

Four blind duplicate samples, three soil samples and one water sample were analysed to assess the quality control during the field sampling program. This equates to 7% blind duplicate soil analysis and 33% blind duplicate water analysis. This blind duplicate analysis exceeds and therefore conforms to the Australian Standard (AS 4482.1 - 2005) Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds requirement of 5%.

The Relative Percentage Differences (RPDs) for all analytes for the blind duplicates taken during the soil sampling program conformed to the DAC with the exception of:

- Benzo(a)pyrene TEQ (lower bound) (RPD 105%) between primary soil sample A1-TP16_0.0 and blind duplicate A1-QC03
- PAHs (Sum of total) (178 % RPD) between primary soil sample A1-TP16_0.0 and blind duplicate A1-QC03
- C29-C36 Fraction (106 % RPD) between primary soil sample A1-TP16_0.0 and blind duplicate A1-QC03.
- C10 C36 (Sum of total) (130 % RPD) between primary soil sample A1-TP16_0.0 and blind duplicate A1-QC03



RPDs calculate the difference in magnitude between two samples and do not take into account the minor differences in actual concentrations. With respect to Benzo(a)pyrene TEQ (lower bound), PAHs (Sum of total), C29 – C36 Fraction and C10 – C36 (Sum of total) concentrations reported in samples A1-TP16_0.0 and A1-QC03 represent values significantly lower than the site assessment criteria (where applicable). The blind duplicate pair was collected from fill material. It is inherently difficult to obtain representative duplicate samples from heterogeneous fill materials especially when they cannot be homogenised because of potential loss of volatiles.

As a conservative approach Jacobs have assessed soil quality using the higher reported concentration for Benzo(a)pyrene TEQ (lower bound), PAHs (Sum of total), C29 – C36 Fraction and C10 – C36 (Sum of total) (primary sample). It is unlikely that the exceedances of the RPDs for Benzo(a)pyrene TEQ (lower bound), PAHs (Sum of total), C29 – C36 Fraction and C10 – C36 (Sum of total) will affect the overall usability of the data set. RPD results for soil are presented in **Table C**.

The RPDs for all analytes for the blind duplicate pair taken during the groundwater monitoring program conformed to the DAC. RPD results for groundwater are presented in **Table D**.

Three split replicate samples for soil were analysed to assess the quality control during the field sampling program. This equates to 7% split replicate soil analysis. This split replicate analysis exceeds and therefore conforms to the Australian Standard (AS 4482.1 - 2005) *Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds* requirement of 5%.

The RPDs for all analytes for the split replicates taken during the soil sampling program conformed to the DAC with the exception of:

- Benzo(a)pyrene TEQ (lower bound) (RPD 105%) between primary soil sample A1-TP16_0.0 and split replicate A1-QC04
- C10 C36 (Sum of total) (RPD 133%) between primary soil sample A1-TP16_0.0 and split replicate A1-QC04.

RPDs calculate the difference in magnitude between two samples and do not take into account the minor differences in actual concentrations. The split replicate pair were collected from fill material. It is inherently difficult to obtain representative duplicate samples from heterogenous fill materials especially when they cannot be homogenised because of potential loss of volatiles.

As a conservative approach Jacobs have assessed soil quality using the higher reported concentration for Benzo(a)pyrene TEQ (lower bound) and C10 – C36 (Sum of total) (primary sample). It is unlikely that the exceedances of the RPDs for Benzo(a)pyrene TEQ (lower bound) and C10 – C36 (Sum of total) will affect the overall usability of the data set. RPD results for soil are presented in **Table C**.

A split replicate for the water samples was not collected due to the small number of samples collected for laboratory analysis. In consideration of the low number of water samples collected, that all samples were collected by experienced personnel in accordance with documented procedures and that all other blind duplicate analysis and split replicate analysis (soils only) indicate useable data sets, the non-collection of a split replicate water sample is unlikely to affect the usability of the data.



One trip spike was submitted with each batch of soil and water samples delivered to the laboratory. The trip spike samples were analysed for BTEX only. The trip spikes for soil and water returned concentrations of BTEX within the acceptable range (70% - 130%) as outlined in the DAC.

One trip blank was submitted with each batch of soil and water samples delivered to the laboratory for analysis of BTEX. The concentrations of BTEX compounds in the trip blank samples were below the respective laboratory LORs and therefore conformed to the DAC.

11.3 Laboratory QA

All analysis was undertaken by a NATA accredited laboratory using NATA accredited analytical methods.

11.4 Laboratory QC

Laboratory QC data is presented in full in the laboratory certificates in Appendix E.

11.4.1 Laboratory Duplicates

RPDs for all laboratory duplicates for soil samples conformed to the DAC with the exception of:

- Lead, RPD 44% (502324)
- Lead, RPD 36% (502800)

The laboratory (Eurofins) applied the NEPM 2013 acceptance criteria of 0-30% for laboratory duplicate sample recoveries. Laboratory duplicate sample recoveries for Lead in Eurofins batch 502800 while not conforming to the NEPM 2013 acceptance criteria did conform to the laboratories (Eurofins) own laboratory acceptance criteria of no limit for when the results are < 10 times the LOR and also conformed to the Jacobs DAC of 0-100% when the average concentration is < 4 times the LOR. Considering that the laboratory duplicate sample recovery complied with Eurofins NATA accredited acceptance criteria and the Jacobs DAC, the recovery outlying the applied NEPM criteria are considered unlikely to affect the usability of the data set.

The laboratory duplicate sample recovery for Lead in Eurofins batch 502324 while not conforming to the NEPM 2013 acceptance criteria did conform to the laboratories (Eurofins) own laboratory acceptance criteria of no limit for when the results are < 10 times the LOR and also conformed to the Jacobs DAC of 0 - 50% when the average concentration is 4 to 10 times the LOR. Considering that the laboratory duplicate sample recovery complied with Eurofins NATA accredited acceptance criteria and the Jacobs DAC, the recovery outlying the applied NEPM criteria are considered unlikely to affect the usability of the data set.

RPDs for all laboratory duplicates for water samples conformed to the DAC.

11.4.2 Laboratory Control Samples

Recoveries for all laboratory control samples for soil and water conformed to the DAC.

11.4.3 Surrogates

Recoveries for all laboratory surrogate samples for soil conformed to the DAC with exception of:

• Dibutylchlorendate, Surrogate Recovery 65% for sample A1-TP01_0.0



- Dibutylchlorendate, Surrogate Recovery 67% for sample A1-TP02_0.0
- 13C-PFHxA, Surrogate Recovery 61% for sample A1-TP05_0.0
- 13C8-PFOS, Surrogate Recovery 69% for sample A1-TP06_0.0
- Dibutylchlorendate, Surrogate Recovery 62% for sample A1-TP07_0.0
- Dibutylchlorendate, Surrogate Recovery 65% for sample A1-TP10_0.0
- Dibutylchlorendate, Surrogate Recovery 59% for sample A1-TP11_0.0
- Dibutylchlorendate, Surrogate Recovery 63% for sample A1-TP12_0.0
- 4-Bromofluorobenzene, Surrogate Recovery 51% for sample A1-TP13_0.4
- Dibutylchlorendate, Surrogate Recovery 66% for sample A1-TP14_0.0
- 4-Bromofluorobenzene, Surrogate Recovery 53% for sample A1-TP16_0.0
- 4-Bromofluorobenzene, Surrogate Recovery 50% for sample A1-TP16_1.0
- Dibutylchlorendate, Surrogate Recovery 144% for sample A1-TP016_0.0
- 4-Bromofluorobenzene, Surrogate Recovery 51% for sample A1-TP19_0.0
- 4-Bromofluorobenzene, Surrogate Recovery 54% for sample A1-TP20_0.0
- 4-Bromofluorobenzene, Surrogate Recovery 58% for sample A1-TP20_2.0
- Tetrachloro-m-xylene, Surrogate Recovery 132% for sample A1-TP20_0.0
- 4-Bromofluorobenzene, Surrogate Recovery 52% for sample A1-QC01
- 4-Bromofluorobenzene, Surrogate Recovery 69% for sample A1-QC03
- 4-Bromofluorobenzene, Surrogate Recovery 67% for sample A1-QC05

The laboratory surrogate sample recoveries for Dibutylchlorendate in eight samples (A1-TP01_0.0, A1-TP02_0.0, A1-TP07_0.0, A1-TP10_0.0, A1-TP11_0.0, A1-TP12_0.0, A1-TP14_0.0 and A1-TP016_0.0), Tetrachloro-m-xylene in one sample (A1-TP20_0.0) and 4-Bromofluorobenzene in nine samples (A1-TP13_0.4, A1-TP16_0.0, A1-TP16_1.0, A1-TP19_0.0, A1-TP20_0.0, A1-TP20_2.0, A1-QC01, A1-QC03 and A1-QC05) while not conforming to the Jacobs DAC of 70 – 130% for general analytes did conform to the laboratories (Eurofins) own laboratory acceptance criteria of 50 – 150% for general analytes. Considering that the laboratory surrogate sample recoveries complied with Eurofins NATA accredited acceptance criteria and were only marginally above or below the Jacobs DAC limits the recoveries outlying the Jacobs DAC are considered unlikely to affect the usability of the data set.

The laboratory surrogate sample recoveries 13C-PFHxA in one sample (A1-TP05 $_$ 0.0) and 13C8-PFOS in one sample (A1-TP06 $_$ 0.0) while not conforming to the Jacobs DAC of 70 - 130% for general analytes did conform



to the laboratories (Eurofins) own laboratory acceptance criteria of 20 - 130% for PFAS. Considering that the laboratory surrogate sample recoveries complied with Eurofins NATA accredited acceptance criteria and were only marginally below the Jacobs DAC limits, the recoveries outlying the Jacobs DAC are considered unlikely to affect the usability of the data set.

Recoveries for all laboratory surrogate samples for water conformed to the DAC with the exception of:

- 13C8-PFOS, Surrogate Recovery 29% for sample A1-GW1
- 13C8-PFOS, Surrogate Recovery 24% for sample A1-GW2
- 13C8-PFOS, Surrogate Recovery 24% for sample A1-GW3
- 13C8-PFOS, Surrogate Recovery 27% for sample A3-QC07.

The laboratory surrogate sample recoveries for 13C8-PFOS in four samples (A1-GW1, A1-GW2, A1-GW3 and A1-QC07) while not conforming to the Jacobs DAC of 70 – 130% for general analytes did conform to the laboratories (Eurofins) own laboratory acceptance criteria of 20 – 130% for PFAS. Considering that the laboratory surrogate sample recoveries complied with Eurofins NATA accredited acceptance criteria, the recoveries outlying the Jacobs DAC are considered unlikely to affect the usability of the data set.

11.4.4 Matrix Spikes

Recoveries for all matrix spike control samples for soil conformed to the DAC with the exception of:

Pyrene, Spike Recovery 142%

The Matrix spike recovery for Pyrene while not conforming to the Jacobs DAC of 70-130% for general analytes did conform to the laboratory's (ALS's) own laboratory acceptance criteria of 52 – 148% for matrix spike samples for Pyrene. Considering that the recovery complied with ALS's NATA accredited acceptance criteria and were only marginally above the Jacobs DAC limits, the recovery outlying the Jacobs DAC is unlikely to affect the usability of the data set.

Matrix spike recoveries could not be determined for Zinc in ALS batch EM1606429 due to background levels greater than or equal to four times the spike level. Considering that all samples analysed for Zinc in the sample batch recorded concentrations either below the LOR or significantly below the adopted site assessment criteria the absence of matrix spike recoveries for Zinc in ALS batch EM1606429 is unlikely to affect the usability of the data set.

Recoveries for all matrix spike control samples for water conformed to the DAC.

11.4.5 Method Blanks

All method blanks for soil and water reported analyte concentrations below the laboratory LOR and therefore conformed to the DAC.

11.4.6 Sample Holding Times

All soil and water samples were extracted and analysed within the specified holding times.



11.4.7 Sample Condition

All samples were received by the analytical laboratories in correctly preserved and chilled containers with no reported breakages. The individual sample receipts are presented with the laboratory reports in **Appendix E**.

11.5 QA/QC Assessment

It is concluded that laboratory data are of acceptable quality and are considered useable in making conclusions and recommendations regarding the site.



12 Site Assessment Criteria

To address potential health and environmental impacts within the site, Jacobs compared the analytical test results against a set of health and ecological based soil investigation levels to be referred to as Site Assessment Criteria (SAC) considered to be appropriate for the proposed land use and main potential receptors of concern (i.e. airport and commercial/industrial guidelines, given the current and proposed land use and that any potential exposure times to possible contaminants during construction activities have been considered as short term).

That is, the SAC have been set at levels that provide confidence that contaminant concentrations below the SAC will not adversely affect human health or terrestrial/aquatic ecosystems.

The SAC developed for the investigation was derived (where applicable) from the following guidelines.

- National Environment Protection (Assessment of Site Contamination) Measure 1999 (as revised 2013) -Schedule B1 Guideline on Investigation levels for Soil and Groundwater (NEPC, 2013)
- Airports (Environment Protection) Regulations 1997 (the Airport Regulations)
- Western Australia Department of Health (May 2009) Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated Sites in Western Australia (WA Guidelines)
- GHD (June 2015) Managing PFC contamination at Airports, Interim Management Strategy and Decision Framework
- National Health and Medical Research Council (2008) Guidelines for Managing Risks in Recreational Waters (NHMRC, 2008)
- enHealth (June 2016) Guidance Statements on Pefluorinated Chemicals Interim Values (enHealth, 2016).

12.1 Aesthetics

Aesthetics on sites relates to the presence of observable odours, discoloration and erroneous wastes materials in soil which could possibly indicate contamination. Such olfactory evidence can point to how receptors can be impacted by vapours on and migrating from the site. Odour threshold for organic substances can be exceeded in off-site settings (through groundwater transmission of hydrocarbons) and whilst may not represent a direct health risk, could possibly prompt civil action. Aesthetics was continually assessed during the investigation and reported on the field logs (where present).

12.2 Ecological Investigation Levels

The site and surrounding areas comprise land used for airport purposes. As such ecological investigation levels (EILs) were considered for a commercial/industrial land use as part of this investigation.

EILs were generated using the NEPC (2013) - Volume 2 - Table 1B (1-7). For the Project, it has been assessed that the EILs will apply to contaminants within the top 2 metres of soil at the surface / ground level which corresponds to the root zone and habitation zone of many species. Additionally, typical background



concentrations were required to be calculated in order to derive selected EILs. To generate the EILs for the investigation, Jacobs have used the methodology as described in **Appendix A** and summarised below.

EILs were generated for heavy metals, DDT and naphthalene. Sample A1_TP02_2.5 was assumed to be representative of the 'background concentration' for the soils within the site due to the sample being taken from natural soils, the depth of the sample (2.4 mbgl), and that the soil at this location was unlikely to be impacted by anthropogenic sources. The EILs were calculated (where appropriate) using the NEPC (2013) equation:

$$EIL = ABC^1 + ACL^2$$

In context of the Airport Regulation for the protection of soil ecosystems, soil analytical results have also been compared against Table 2 – areas of environmental significance.

A summary of the adopted EILs is presented as **Table 12.1**.

Table 12.1: Ecological Investigation Levels (expressed as mg/kg).

Substance	Ecological Investigation Levels	Airport Regulations ⁴
Arsenic	160 ¹	20
Cadmium	3 ²	3
Chromium	670 ³	50
Copper	198.7 ³	60
Lead	1,810 ³	300
Mercury	1 ²	1
Nickel	295 ³	60
Zinc	425 ³	200
DDT	640 ¹	0.97
Naphthalene	370 ¹	-
Total PCB	-	1
Aldrin	-	0.05
Dieldrin	-	0.2

¹Generic EILs for aged arsenic/DDT/Naphthalene from **Table 1B(5)**.

12.3 Ecological Screening Levels

Ecological Screening Levels (ESLs) are focused on petroleum hydrocarbon and total recoverable hydrocarbon (TRH) compounds and are compared against actual site conditions (sub-surface materials and depth) to assess the potential risk to terrestrial ecosystems. For the purposes of calculating the ESLs, the generic soil type (i.e. three broad classes of sands, silts or clays) and land use need to be defined.

For the purposes of this assessment Jacobs considered clays to be most representative for the soil profile at the site.

² EILs from NEPM 1999 (no EILs specified for contaminants in NEPM 2013).

³ EILs derived from NEPM 2013 equation ABC+ACL.

⁴ Levels from the Airport Regulations Table 2 – areas of environmental significance

¹ ABC is ambient background concentration (the soil concentration in a specified locality that is the sum of the naturally occurring background level and the contaminant levels that have been introduced from diffuse or non-point sources by general anthropogenic activity).

² ACL is added contaminant limit (the added concentration (above the ABC) of a contaminant above which further appropriate investigation and valuation of the impact on ecological values is required).



Given the current and ongoing land use of commercial/industrial, the corresponding land use and associated ESL were used to determine the assessment criteria.

In context of the Airport Regulation for the protection of soil ecosystems, soil analytical results for hydrocarbon compounds have also been compared against Table 2 – areas of environmental significance.

Table 12.2 summarises the ESL criteria for soils that have been adopted.

Table 12.2: ESLs for Petroleum Based Fractions (expressed as mg/kg).

Compound / Fraction	Ecological Screening Levels ¹	Airport Regulations ²
F1 (C6 – C10)	215	-
F2 (>C10 – C16)	170	-
F3 (>C16 – C34)	2,500	-
F4 (>C34 – C40)	6,600	-
Benzene	95	0.5
Toluene	135	3
Ethylbenzene	185	5
Xylenes	95	5
Benzo(a)pyrene	0.7	-
TPH (C6 - C9)	-	100
TPH (>C6)	-	1,000
Total PAH	-	5

¹ Table 1B(6) ESLs for TPH fractions F1 – F4, BTEX and Benzo(a)pyrene in soils - NEPM (2013).

12.4 Health Investigation Levels

To address potential health impacts at the site, Jacobs compared the analytical testing results against a set of health based Soil Investigation Levels (SILs) appropriate for commercial/industrial land use in context of the current and future land use as an airport and have taken into consideration the potential for contamination in soil to impact upon groundwater and generate vapours which could impact upon on human receptors. The health based SILs are a combination of Health Investigation Levels (HILs) and Health Screening Levels (HSLs) as detailed in the NEPM (2013) and the Accepted Limit/Trigger Levels detailed in Table 1 – areas of an airport generally of the Airport Regulations (1997). The adopted SILs are summarised in **Table 12.3**.

HILs have been developed for a broad range of metals and organic substances. The HILs are applicable for assessing human health risk via all relevant pathways of exposure. The HILs are generic to all soil types and apply generally to a depth of three metres below the surface for residential use.

HSLs have been developed for selected petroleum compounds and fractions and are applicable to assessing human health risk via the inhalation and direct contact pathways. The HSLs depend on specific soil physicochemical properties, land use scenarios, and the characteristics of building structures. They apply to different soil types, and depths below surface to >4 metres. Further details on their use are provided in Friebel and Nadebaum (2011a, 2011b & 2011c).

The HSLs defined within the NEPC (2013) relate only to the volatile fractions of the petroleum hydrocarbons range i.e. BTEX, naphthalene and TRH C6 - C10, TRH C10 - C16.

² Levels from the Airport Regulations Table 2 – areas of environmental significance



Jacobs has adopted the lower value from the following criteria given that exposure times to contamination (if present) during construction are expected to be short term:

- NEPC (2013) Health Investigation Level recommended from exposure setting 'D' which includes premises such as shops, offices, factories and industrial sites (i.e. sites with minimal exposure opportunities).
- Friebel, E & Nadebaum, P (September 2011) Technical Report No.10, Health screening levels for petroleum hydrocarbons in soil and groundwater. Part 1: Technical development document HSL-D Commercial / Industrial Criteria and Intrusive Maintenance Worker (Table A4).

Table 12.3: Soil Investigation Levels (expressed mg/kg)

Cantaminanta	Soil investigation levels (HILs / HSLs)			
Contaminants	Commercial / Industrial (D)	Airport Regulations		
'	Metals/Metalloids			
Arsenic (total)	3,000 1	500		
Cadmium	900 ¹	100		
Chromium (III)	3,600 ¹	600,000		
Copper	240,000 ¹	5,000		
Lead	1,500 ¹	1,500		
Mercury (inorganic)	730 ¹	75		
Nickel	6,000 ¹	3,000		
Zinc	400,000 ¹	35,000		
	Polycyclic Aromatic Hydrocarbo	ns		
Carcinogenic PAHs (as B(a)P TEQ)	40 ¹	-		
Naphthalene	11,000 ³	-		
B(a)P	-	5		
Total PAHs	4,000 1	100		
	Total Recoverable Hydrocarbon	s		
TRH (C6-C9)	-	800		
TRH (>C6)	-	5,000		
>C16-C34	27,000 ³	-		
>C34-C40	38,000 ³	-		
	Polychlorinated Biphenyls			
PCB	7 1	50		
	Organochlorine Pesticides			
DDT		1,000		
DDD + DDE + DDT	3,600 ¹	-		
Aldrin	-	50		
Aldrin and dieldrin	45 ¹	20		
Dieldrin	-	20		
Chlordane	530 ¹	250		



Contaminants	Soil investigation le			Soil investigation levels (HILs / HSLs)	
Contaminants	Co	ommercial /	Industrial (E	D)	Airport Regulations
Endosulfan		2,0	00 1		-
Endrin		10	00 ¹		-
Heptachlor		5	0 1		50
HCB		8	0 1		-
Methoxychlor		2,5	000 1		-
Mirex		10	00 1		-
Toxaphene		16	60 ¹		-
	'	F1, F2 and E	BTEX (Based	on a CLAY S	oil Type) ^{4, #}
Depth (m)	0 – <1m	1 – <2m	2 – <4m	>4m	-
F1 (C6-C10*)	310	480	NL	NL	-
F2 (>C10-C16*)		20,000 ³			-
Benzene	4				1
Toluene		99,000 ³			130
Ethylbenzene		27,000 ³			50
Xylenes	81,000 ³			25	

¹ NEPC (2013) Table 1 A(1) Health investigations levels for soil contaminants – Commercial / Industrial D.

NL – NL indicates the HSL is not limiting (see Footnote 5, Table 1A(3)).

TEQ - Toxic Equivalent.

12.5 Management Limits

Within NEPC (2013), management limits are applied to petroleum hydrocarbons which are considered in addition to the SAC (HILs, EILs, ESLs etc). These Management Limits reflect the nature and properties of petroleum hydrocarbons and their potential effects such as:

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

The application of the management limits will require site specific factors to be considered in more detail. These factors include, but not limited to, depth of building basements and services (where applicable) and depth to groundwater in order to determine the maximum depth to which the limits should apply. When the management limits are exceeded, further site-specific assessment and management may enable any identified risk to be addressed.

² NEPC (2013) Table 1 A(3) Soil HSLs for vapour intrusion – commercial/industrial, 0 to <1, 1 - <2, 2 - <4, >4 m CLAY.

³ HSL-D Commercial / Industrial Criteria and Intrusive Maintenance Workers detailed within Table A4, Friebel, E & Nadebaum, P 2011, Soil Health screening levels for direct contact, Technical Report 10.

⁴ NEPC (2013) Table 1A(3) Soil HSLs for Vapour Intrusion (mg/kg) HSL D Commercial / Industrial.

[#] Soil Vapour as the primary Exposure Pathway to impact potential receptors.



The presence of site TRH contamination at the levels of the management limits does not imply that there is no need for administrative notification or controls in accordance with jurisdiction requirements. Adopted management limits for petroleum hydrocarbons are detailed in **Table 12.4**.

Table 12.4: Management Limits for TPH fractions F1-F4 in soil (adapted from NEPC 2013 Schedule B1)

TPH fraction	Soil texture	Management Limits ¹ (mg/kg dry soil)
		Commercial and Industrial
F1 ² C ₆ - C ₁₀	Fine	800
F2 ² >C ₁₀ -C ₁₆	Fine	1,000
F3 >C ₁₆ -C ₃₄	Fine	5,000
F4 >C ₃₄ -C ₄₀	Fine	10,000

¹ Management limits are applied after consideration of relevant ESLs and HSLs

12.6 Asbestos

The NEPM (2013) adopts guidelines for asbestos materials in soil as outlined in the WADOH (2009) guidelines. The WADOH (2009) guidelines were designed specifically to improve the characterisation of asbestos soil contamination and to manage human health risks now and into the future and specifically take the following practical positions into account:

- That overall, potential health impacts posed by different asbestos minerals, such as chrysotile and crocidolite, and fibre dimensions can be treated as equivalent
- ACM may pose a future free-fibre risk through its degradation, and therefore potential release of asbestos fibres
- The cancer risk from asbestos should be kept as low as practical and preferably no more than one
 occurrence in one million over a lifetime for the exposed population. Mesothelioma is used here as the
 most sensitive health impact of asbestos exposure.

The WADOH (2009) guideline values are based on extensive research by Swartjes and Tromp in the Netherlands (2008). The study resulted in the Netherlands introducing general regulatory investigation criteria of 0.01% w/w asbestos for fibrous asbestos and 0.1% w/w asbestos for non-friable ACM. The 0.01% criteria has the highest attendant risk (ie. Residential use) and is set at a level that should keep asbestos air levels below 0.001 fibres/millilitre (f/ml) and probably around 0.0001 f/ml. Using WHO (2000) risk figures for mesothelioma, 0.0001 f/ml corresponds to a lifetime risk of 10⁻⁶ to 10⁻⁵ in the exposed human population, which are risks that are considered broadly acceptable to the WADOH.

WADOH has used these Netherland figures and divided by a factor of 10 to derive the investigation criteria outlined in the WA guidelines. The factor of 10 takes into account the greater dryness and dust-generating potential of local soil and the fact that WADOH treats the mineralogical forms of asbestos as equivalent. The fibrous asbestos criterion applies to Friable Asbestos (FA) and Asbestos Fines (AF) due to their ability to generate asbestos fibre. WADOH applies even higher criteria for ACM, depending on the site use. These mirror the NEPM (2013) site uses and associated default exposure ratios.

² Separate management limits for BTEX and naphthalene are not available hence these should not be subtracted from the relevant fractions to obtain F1 and F2.



Soil asbestos investigation criteria are outlined in **Table 12.5**.

Table 12.5: Soil Asbestos Investigation Criteria

Site Asbestos Investigation Criteria	Site Use
0.001% w/w asbestos for FA and AF	All site uses
0.05 % w/w asbestos for ACM	Commercial/Industrial
All forms of asbestos	No visible asbestos in surface soil ¹

¹ Investigation criteria from NEPM (2013)

Taking into account the current and proposed future land use for the site, Jacobs have adopted the soil asbestos investigation criteria for all land uses (for FA and AF), commercial/Industrial land use for ACM and no visible asbestos in surface soils as the SAC.

12.7 Perflourinated Chemicals (PFCs)

The Commonwealth and State regulatory framework for the management of PFC impacts to land is still under development. There are no screening criteria for PFCs for soil included in the NEPC (2013). There are no specific published NSW EPA guidelines or requirements for the assessment of PFC impacts or for the disposal of PFC impacted waste in NSW.

Jacobs has adopted SAC for PFCs and management approaches from the GHD (2015) guidelines relevant to a commercial/industrial land use.

The screening criteria relevant for this investigation are summarised in Table 12.6 below.

Table 12.6: Selected Interim Screening Criteria for PFC

Exposure scenario	PFOS	PFOA	6:2FTS
Soil, human health – industrial	90 mg/kg	240 mg/kg	900 mg/kg
Ecological (terrestrial)	4.71 mg/kg (commercial/industrial – 60% species protection)	3.73 mg/kg	NA

12.8 Groundwater

Groundwater investigation levels (GILs) are the concentrations of a contaminant in groundwater above which further investigation (point of extraction) or a response (point of use) is required. GILs are based on Australian water quality guidelines and drinking water guidelines and are applicable for assessing human health risk and ecological risk from direct contact (including consumption) with groundwater.

The NSW EPA has endorsed the use of the water quality trigger levels given in the Australia and New Zealand Environment and Conservation Council (2000) *Australian and New Zealand guidelines for fresh and marine water quality* (ANZECC 2000) guidelines. These guidelines provide criteria for the protection of aquatic ecosystems (marine and fresh waters), primary industries, recreational water and drinking water.

The most likely environmental receptor of groundwater from the site would be the marine ecosystems of the Georges River located approximately 1 km to the west of the site. Based on information from the NSW Department of Environment, Climate Change and Water NSW Water Quality and River Flow Objectives (NSW DECCW, 2006) the Georges River is an estuarine environment down stream of Liverpool.



The NSW DECCW (2006) defines water quality objectives (WQO) for the Georges River. The areas surrounding the Georges River in the near vicinity of the site are characterised by urban developments. The NSW DECCW (2006) states that the WQO for the Georges River affected by urban development should be selected to protect aquatic ecosystems and recreational contact (both primary and secondary). It is noted in NSW DECCW (2006) that these WQOs may not be achievable in the short term and that the protection of primary recreational users may not be achievable.

From a review of the NSW Department of Primary Industries – Water Real Time Data database, no registered groundwater bores are located within a 0.5 km radius of the site. Based on the information above and the absence of known registered sensitive beneficial users of the groundwater down gradient from the site, the site assessment criteria (SAC) for groundwater should consider protection of environmental receptors. The most appropriate Groundwater Investigation Levels (GIL) are generally the 95% protection levels for marine water given in the ANZECC (2000) guidelines, although these are likely to be conservative in urbanised areas where waterways are degraded. Where the guideline does not provide these criteria or the guideline considers the 95% protection level is inappropriate, GILs have been sourced by using:

- The 99% protection levels for marine water ecosystems given in the ANZECC (2000) guidelines for contaminants considered to be bioaccumulative (e.g. cadmium, mercury, nickel)
- The 99% and 95% protection levels for freshwater ecosystems provided in the ANZECC (2000) guidelines (where applicable/available)
- NEPC (2013) prescribed GILs
- With respect to toluene and ethyl benzene the NSW EPA (1994) threshold concentrations for the protection of aquatic ecosystems.
- Nation Health and Medical Research Council (2011) Australian Drinking Water Guidelines (NHMRC, 2011)
- The Dutch (2000) groundwater intervention levels for Total Petroleum Hydrocarbons fractions. The aromatic solvents criteria of 150µg/L was adopted for TRH (C6-C9) fraction and the mineral oil criteria of 600µg/L was adopted for TPH (C10-C36) fraction.

Depth to groundwater measured during the monitoring was between 2.443 m and 3.303 m bgl. For the purposes of this assessment Jacobs have based the GILs and groundwater health screening levels (HSLs) on a depth of between 2 and 4 m (shallowest groundwater depth range provided in NEPC (2013).

In addition schedule 2 (Water pollution – accepted limits) of the Airports (Environment Protection) Regulations 1997 outline the accepted limit of concentrations of contaminants for freshwater and marine water. The adopted GILs are summarised in **Table 12.7**.



Table 12.7: Groundwater Investigation Levels (expressed as µg/L)

Contaminants	Contaminant	Ecosystem protection levels – Marine	Airport Regulations
Heavy Metals	Arsenic	24 ³	50
	Cadmium	0.7 2	2.0
	Chromium	4.4 1	50
	Copper	1.3 1	5.0
	Lead	4.4 1	5.0
	Mercury	0.1 2	0.1
	Nickel	7 2	15
	Zinc	15 ¹	50
BTEX Compounds	Benzene	500 ²	300
	Ethyl Benzene	140 4	-
	Naphthalene	50 ²	-
	Toluene	300 4	-
	Xylene (o)	350 ³	-
	Xylene Total	380 4	-
Total Petroleum	TRH C ₆ -C ₉	150 ⁵	-
Hydrocarbons (TRH)	TRH C ₁₀ -C ₃₆	600 ⁵	-
Polycyclic Aromatic	Benzo(a)pyrene	0.01 ⁶	-
Hydrocarbons (PAHs)	Naphthalene	50 ²	-

Notes:

HSLs for groundwater apply to exposure to petroleum hydrocarbons through the dominant vapour inhalation exposure pathway only.

The groundwater HSLs are based on three-phase equilibrium theory and vapour is limited by the maximum solubility limit of the chemical in the soil pore water phase or the groundwater. The soil saturation concentration of a particular contaminant is the condition where pore water is at its solubility limit and soil vapour is at the maximum vapour concentration. When a calculated HSL in groundwater exceeds this limit, the vapour in the soil or above groundwater cannot result in an unacceptable vapour risk and is denoted as NL (not limiting) in the HSL tables (Tables 1 A(3) – 1A(5)). HSLs for groundwater have been developed for sand, silt and clay soils based on the US soil texture classification system (Friebel & Nadebaum 2011a). The HSLs assume a uniform soil profile and the soil texture making up the greatest proportion of the soil profile should be used in selecting the appropriate HSLs (Friebel & Nadebaum 2011a and 2011b). Based on observations during the drilling and soil sampling program undertaken at the site, clay has been selected as the major soil type underlying the site.

The heavier end fractions, $>C_{16}-C_{34}$ and $>C_{34}-C_{40}$ are not volatile and as such are not included within the groundwater HSLs for vapour intrusion.

¹ ANZECC (2000) 95% of species protected – marine

² ANZECC (2000) 99% of species protected –marine

³ANZECC (2000) 95% of species protected – fresh water

⁴ NSW EPÀ (1994) Protection of aquatic ecosystems - fresh water

⁵ Dutch (2000) groundwater intervention levels

⁶ NHMRC 2011 Australian Drinking Water Guidelines



The adopted criteria for vapour intrusion relevant for this investigation are summarised in Table 12.8 below.

Table 12.8: Groundwater HSLs for vapour intrusion (mg/L)

	· · · · · · · · · · · · · · · · · · ·	
Contaminants	Groundwater investigation levels (HILs / HSLs)	
	Commercial / Industrial (D)	
F1, F2 and BTEX (Based on a CLAY	Soil Type) ^{1,}	
Depth (m)	2 – <4	
F1 (TRH C ₆ -C ₁₀)	NL	
F2 (TRH >C ₁₀ -C ₁₆)	NL	
Benzene	30,000	
Toluene	NL	
Ethylbenzene	NL	
Xylenes	NL	
Naphthalene	NL	

¹ NEPC (2013) Table 1 A(4) Groundwater HSLs for vapour intrusion -Commercial / Industrial, 2 to <4m, CLAY.

At the request of BAL, the significance of PFC in groundwater have been assessed against the GHD (June 2015) *Managing PFC Contamination at Airports, Interim Contamination Management Strategy and Decision Framework* prepared for Airservices Australia (GHD, 2015).

It should be noted that the guidelines for PFC in groundwater detailed in the GHD (2015) report are for the protection of groundwater as a potable water resource. At the time of preparing this report, there were no licensed potable users of groundwater within and/or immediately surrounding the Bankstown Airport site.

The adopted criteria for PFC compounds in groundwater are summarised in **Table 12.9**.

Table 12.9: Groundwater Investigation Levels (expressed as μg/L)

Contaminants	Drinking Water
8:2 Fluorotelomer sulfonate	0.4
6:2 Fluorotelomer Sulfonate (6:2 FtS)	5.0
PFOS	0.2
PFOA	0.4

[#] Soil Vapour as the primary Exposure Pathway to impact potential receptors

NL - No Limit: No limit exists for these contaminants based on the function of the solubility limit, the soil vapour and groundwater.



13 Results

13.1 Site Stratigraphy

The sub-surface material encountered in the test pits (A1-TP01 to A1-TP20) and boreholes (A1-BH01 to A1-BH10 and A1-GW1 to A1-GW3) generally consisted of fill material comprising predominantly silty clay and minor gravelly clays and silty sands to a maximum depth of 1.2 m bgl overlying alluvial silty clays with occasional ferruginous gravel layers to a maximum depth of 9.95 m bgl. The deepest fill (approximately 0.7 m in thickness) was generally observed within the north western portion of the site.

13.2 Groundwater Flow Gradients

The heights (surveyed to site datum using a laser level) for all newly installed groundwater wells were surveyed to allow for the calculation of groundwater flow gradients. The position and heights (relative to site datum) of the groundwater wells and reduced groundwater levels are contained in **Table 13.2.**

Table 13.2: Groundwater Well Level Information

Well ID	Groundwater Level (m BTOC)	Relative Height (m TOC)	Relative Level of Groundwater (m)
A1_GW1	2.850	2.2197	5.0697
A1-GW2	3.303	1.099	4.402
A1-GW3	2.443	0.910	3.353

Notes:

- m BTOC m below top of casing
- m TOC m top of casing
- Relative level of groundwater reported as metres below site datum
- Groundwater levels as measured 20.06.16

The survey and groundwater level measurement indicated that groundwater flow direction is in a general south easterly direction away from the Georges River. It may be possible that the significant rainfall event experienced at the site and subsequent flooding of the Georges River in the vicinity of the site prior to undertaking the groundwater monitoring influenced localised groundwater levels across the site. The flooding of the Georges River is likely to have created groundwater mounding in the vicinity of the river which would push groundwater away from the river. When river levels have stabilised, groundwater flow direction is likely to return to back towards the Georges River.

13.3 Aesthetics

A number of aesthetic issues (i.e. presence of erroneous wastes) were observed during the fieldwork program as detailed in **Table 13.1**

Table 13.1: Aesthetic Issues

Investigation Location	Depth (mbgl)	Aesthetic Issues
A1-BH08	0.3-0.7	Minor black vitreous material
A1-TP04	0-0.1	Minor lead shot
A1-TP05	0.3	Three fragments of fibre cement sheeting (potential ACM)
A1-TP05	0.4	Three fragments of fibre cement sheeting (potential ACM). Piece of ceramic pipe
A1-TP06	0-0.1	Trace lead shot



A1-TP07	0-0.2	Trace lead shot. Sandstone and aggregate inclusions
A1-TP08	0-0.2	Trace lead shot
A1-TP08	0.2-0.7	Brick, concrete, asphalt, ceramic pipe inclusions
A1-TP08	0.4	Two fragments of fibre cement sheeting (potential ACM)
A1-TP09	0-0.1	Sandstone inclusions
A1-TP09	0.1-0.6	Brick, concrete, sandstone inclusions
A1-TP09	0.2	Two fragments of fibre cement sheeting (potential ACM)
A1-TP09	0.4	Three fragments of fibre cement sheeting (potential ACM)
A1-TP11	0-0.2	Sandstone and aggregate inclusions
A1-TP11	0.2-0.6	Aggregate, asphalt, concrete, sandstone, brick, wood inclusions
A1-TP11	0.3	One fragment of fibre cement sheeting (potential ACM)
A1-TP11	0.4	One fragment of fibre cement sheeting (potential ACM)
A1-TP12	0-0.4	Asphalt, ceramic pipe, sandstone inclusions
A1-TP12	0.4	One fragment of fibre cement sheeting (potential ACM)
A1-TP14	0-0.3	Concrete, brick inclusions
A1-TP14	0.2	Two fragments of fibre cement sheeting (potential ACM)
A1-TP15	0-0.3	Ceramic pipe, sandstone inclusions
A1-TP15	0.2	One fragment of fibre cement sheeting (potential ACM)
A1-TP15	0.3-0.7	Sandstone, asphalt, concrete, steel pipe inclusions
A1-TP16	0-0.8	Sandstone, asphalt, brick, concrete inclusions
A1-TP20	0.3-0.8	Sandstone inclusions

Borehole and test pit logs are presented in **Appendix B**.

Although not observed at the specific sampling locations, isolated areas of lead shot were observed across the surface of the north eastern portion of the site (between the drainage swale and the taxiways).

Lead shot was observed at a number of the sample locations and this material was sampled accordingly. In other areas (as detailed above), the contamination status has been extrapolated based on observations and sample results for lead shot impacted materials.

13.4 Soil Analytical Results

Soil analytical results from samples collected from test pits (A1-TP01 to A1-TP20) and boreholes (A1-BH01 to A1-BH10) are presented below and in **Table A**. Laboratory certificates of analysis are presented in **Appendix E**.

13.4.1 Heavy Metals

Concentrations of all heavy metals in all soil samples analysed were below the SAC with the exception of the following:

- Lead concentrations (1,000 mg/kg) detected in sample A1_TP03_0.0 exceeded the EIL (300 mg/kg)
- Lead concentrations (7,400 mg/kg) detected in sample A1_TP04_0.0 which exceed the both the EIL (1,810/300 mg/kg) and HIL (1,500 mg/kg)
- Lead concentrations (330 mg/kg) detected in sample A1_TP06_0.0 exceeded the EIL (300 mg/kg)



Cadmium concentrations (6.2 mg/kg) detected in sample A1_TP13_0.0 exceeded the EIL (3 mg/kg).

13.4.2 Total Recoverable Hydrocarbons (TRH)

The concentrations of TRH compounds in all soil samples analysed were below the SAC.

13.4.3 BTEX

The concentrations of BTEX compounds in all soil samples analysed were below the LOR and below the SAC.

13.4.4 Polycyclic Aromatic Hydrocarbons (PAHs)

Concentrations of all PAH compounds in all soil samples were below the SAC with the exception of concentrations in sample A1_TP16_0.0 as detailed below:

- Benzo(a)pyrene concentrations (1.2 mg/kg) exceeded the ESL (0.7mg/kg)
- Total PAH concentrations (8.7 mg/kg) exceeded the ESL of (5 mg/kg).

13.4.5 Organochlorine Pesticides (OCPs)

The concentrations of OCP compounds in all soil samples analysed were below the LOR and below the SAC.

13.4.6 Polychlorinated Biphenyls (PCB)

The concentrations of PCB compounds in all soil samples analysed were below the LOR and below the SAC.

4.1.1 Perfluorinated Compounds (PFC)

The concentrations of PFC compounds in all soil samples analysed were below the SAC with the exception of PFOS concentrations (5.7 mg/kg) detected in sample A1_TP07_0.0 which exceeded the EIL for commercial/industrial land use.

Sample locations exceeding the respective SAC are presented in Figure 3-1.

13.5 Asbestos Analytical Results

Soil analytical results from samples collected from 15 test pit locations (A1-TP01, A1-TP02, A1-TP04, A1-TP05, A1-TP06, A1-TP07, A1-TP08, A1-TP09, A1-TP11, A1-TP12, A1-TP13, A1-TP14, A1-TP16, A1-TP18 and A1-TP19) are presented below and in **Table A.** Laboratory certificates of analysis are presented in **Appendix E**.

13.5.1 Asbestos Analysis of Soil Bulk Samples

Asbestos analytical results for the soil bulk samples are presented below and in **Table A**. Laboratory certificates of analysis are presented in **Appendix E**.

Trace analysis of asbestos in all soil bulk samples analysed reported no detectable asbestos. Analysis for AF, FA and ACM for all samples analysed recorded results of no visible asbestos identified. Laboratory calculated concentrations for ACM, AF and FA and total asbestos in soil reported results below the laboratory limits of reporting (LOR).



13.5.2 Asbestos Concentration in Soil

Asbestos (based on visual observations during the fieldwork and laboratory identification) was identified in fragments of fibre cement sheet sampled from A1-TP05 (at 0.3 m and 0.4 m), A1-TP08 (at 0.4 m), A1-TP09 (at 0.2 m and 0.4 m), A1-TP11 (at 0.3 m and 0.4 m), A1-TP12 (at 0.4 m), A1-TP14 (at 0.2 m) and A1-TP15 (0.2 m).

Potential ACM was not observed and sampled from 0.0 – 1.0 m (strata A) in the remaining test pits.

Sample locations exceeding the respective SAC are presented in **Figure 3-1**.

13.5.3 Inspection and Analysis of Surface Soils

A visual inspection of surface soils for potential ACM fragments was undertaken at each of the 20 test pit locations (where possible) prior to the commencement of excavations. Where the surface of the site and surface soils were visible, no potential ACM fragments were observed at or in the near vicinity of the sampling locations.

13.6 Groundwater Analytical Results

Groundwater analytical results from samples collected from groundwater wells A1-GW1, A1-GW2 and A1-GW3 are presented below and in **Table B**. Laboratory certificates of analysis are presented in **Appendix E**.

13.6.1 General Water Quality Parameters

The general water quality parameters measured at the respective groundwater well locations indicated the following:

- pH ranged from 5.15 pH units (A1-GW3) to 6.70 pH units (A1-GW2)
- Electrical conductivity ranged from 16,232 μS/cm (A1-GW1) to 24,118 μS/cm (A1-GW3)
- Temperature ranged from 18.0 °C (A1-GW2) to 19.1 °C (A1-GW1)
- Dissolved oxygen levels ranged from 2.57 mg/L (A1-GW3) to 4.28 mg/L (A1-GW2)
- Redox potential ranged from 171.9 mV in A1-GW1 to 376.8 mV in A1-GW2.

Groundwater field data sheets are provided in **Appendix C**.

Field water quality parameters indicated that groundwater beneath the site was slightly acidic. The EC of the groundwater beneath the site was generally brackish to saline. ORP measurements were generally consistent across the site and indicated a minor oxidizing potential.

13.6.2 Heavy Metals

Concentrations of all dissolved heavy metals in all samples were low or below the LOR and below the SAC with the following exceptions:

• Mercury concentrations exceeded the SAC of 0.1 μ g/L in the groundwater sample analysed from A1-GW2 (0.2 μ g/L)



- Nickel concentrations exceeded the SAC of 7 μg/L and the airport regulations of 15 μg/L in groundwater samples analysed from A1-GW3 (62 μg/L)
- Zinc concentrations exceeded the SAC of 15 μ g/L and the airport regulations of 50 μ g/L in groundwater samples analysed from A1-GW3 (57 μ g/L).

13.6.3 BTEX

Concentrations of all BTEX compounds in all samples analysed were below the LOR and below the SAC.

13.6.4 Total Recoverable Hydrocarbons (TRH)

Concentrations of all TRH compounds in all samples analysed were below the SAC.

13.6.5 Polycyclic Aromatic Hydrocarbons (PAHs)

Concentrations of all PAH compounds in all samples analysed were equal to or below the LOR and below the SAC.

13.6.6 Perfluorinated Compounds (PFCs)

Concentrations of all PFC compounds in all samples analysed were below the SAC.



14 Discussion

14.1 Soil

Samples of soil / fill material collected from the test pits were analysed for contaminants of concern which could be associated with the former and current use of the site for airport purposes.

The following aesthetic issues were identified at the site:

- Lead shot was observed in surface soils at test pits A1-TP04, A1-TP06, A1-TP07 and A1-TP08 located
 in the eastern portion of the site. Isolated areas of lead shot were also observed across the surface of
 the eastern portion of the site (between the drainage swale and the taxiways).
- Potential ACM (later confirmed ACM by laboratory identification) was observed in fill material at depth (i.e. below the surface of the site) in test pits A1-TP05, A1-TP08, A1-TP09, A1-TP11, A1-TP12, A1-TP14 and A1-TP15 located within the central portion of the site.
- Miscellaneous materials (i.e. sandstone and general building wastes) were observed in A1-BH08, A1-TP05, A1-TP07, A1-TP08, A1-TP09, A1-TP11, A1-TP12, A1-TP14, A1-TP15, A1-TP16 and A1-TP20 located across the western and central portions of the site.

No aesthetically unsuitable materials were observed in the natural soils underlying the fill material at the site.

Soil samples from test pits and boreholes were selected for analysis based generally on providing vertical and lateral coverage of potential contaminant extents and on visual observations. The majority of soil samples recorded contaminant concentrations below the adopted SAC. A small number of samples reported concentrations of contaminant compounds above adopted ecological investigation and screening levels. In context of the likely development at the site (comprising commercial/industrial facilities with minimal landscaping opportunities), these exceedances are unlikely to impact upon the development or continued use of the site for airport related activities.

A sample collected from surface soils at test pit location A1-TP04 reported lead concentrations of 7,400 mg/kg. The concentration detected is almost five times the health investigation levels of 1,500 mg/kg. When considering results in context of investigation levels, the NEPC (2013) guidelines state that in context of localised elevated values (hotspots), the results should meet the following criteria:

- The standard deviation of the results should be less than 50% of the relevant investigation or screening level, and
- No single value should exceed 250% of the relevant investigation screening level.

Based on the above, the lead concentrations detected at A1-TP04 exceed the SAC by more than 250%. Isolated hot spots should not be reduced by statistical analysis and require remediation and/or management. In consideration that the lead was detected in surface soils and the close proximity to where lead shot was observed, the elevated lead concentrations in surface soils at location A1-TP04 are likely to associated with lead shot (fragment or whole shot) being present in the sample collected. It is also likely that elevated lead concentrations would also be present in areas where lead shot is present in surface soils (i.e. across the eastern portion of the site) as was evident in the elevated lead concentrations (above ecological investigation levels) detected in surface soils from A1_TP03 and A1_TP06. In context of the likely development at the site



(comprising commercial/industrial facilities with minimal landscaping opportunities), elevated lead concentrations and visible lead shot in surface soils located within the north western portion of the site could impact upon the development or continued use of the site for airport related activities.

ACM was identified within fill material located across the central portion of the site. The ACM sampled comprised fragments of fibre cement sheeting and was in a good bonded condition (i.e. could not be crushed with hand force). Where ACM was observed, the fill material also contained quantities of miscellaneous materials including sandstone and general building wastes. These miscellaneous materials were also observed in the fill profile within the western portion of the site. In context of the likely development at the site (comprising commercial/industrial facilities with minimal landscaping opportunities), the areas of ACM impacted fill (as identified during the investigation) or within other fill material (if ACM present) could impact upon the development or continued use of the site for airport related activities.

14.2 Groundwater

The groundwater monitoring results indicated that the concentrations of compounds detected in groundwater wells subjected to monitoring were below the adopted SAC and airport regulations with the exception of pH, mercury, nickel and zinc.

pH levels in groundwater across the site were generally low with one location (A1-GW1) reporting levels below the lower criteria (pH 6.5) detailed in the Airport Regulations. With the absence of known activities which could affect pH levels present surrounding this groundwater well location, lower pH levels could be attributable to a localised natural occurrence. Additionally, the actual quality of groundwater is likely to have been influenced by heavy rainfall and flooding events which occurred prior to sampling. With generally low pH levels detected in groundwater across the site (i.e. likely to be representative of background levels), the lower pH reported in A1-GW1 is unlikely to represent a risk to groundwater receptors.

Concentrations of nickel and zinc exceeded the SAC in A1-GW3. Based on the reduced level survey and calculated groundwater flow gradients, A1-GW3 is located in an up gradient position. It is acknowledged that the groundwater flow gradients may be affected by rainfall events and localised flooding of the Georges River prior to undertaking the monitoring event. Elevated concentrations nickel and zinc (i.e. concentrations above the SAC) were not reported in A1-GW1 and A1-GW2. It may be possible that the elevated nickel and zinc in groundwater at this location may be associated with run-off from the adjoining bus facility (especially run-off from metal roofs located within the bus facility).

A marginal exceedance of the mercury SAC was reported in groundwater well A1-GW2. Although the source of the mercury is not known (mercury was not detected in any soil sample analysed above the LOR), the concentration marginally above the SAC detected in A1-GW2 was not detected in down gradient location A1-GW1. This marginal exceedance of the SAC for mercury on groundwater is unlikely to require specific remediation and/or management.



15 Conclusions and Recommendations

Jacobs have undertaken the contamination investigation of the Site 1 (Link Road) located on a portion of airside land at Bankstown Airport, NSW.

Based on site observations and the results of the laboratory analysis, some contamination is present at the site which will need to be considered in context of the development of the site and ongoing airport land use as detailed below.

Lead concentrations in surface soils and areas of observable lead shot within the north eastern portion of the site will require remediation and/or management.

Based on the site observations and results of the laboratory analysis of the contamination investigation, Jacobs consider that the area where ACM was identified at the site will require remediation and/or management to facilitate site development and continued airport use.

There were some exceedances of groundwater guideline levels for pH, mercury, nickel and zinc. While the exceedance of the guideline levels is considered unlikely to impact upon the construction of the proposed facilities, should dewatering of excavations be required to facilitate construction, the water may require some treatment or management.

The presence of general building waste observed across the site could indicate potential contamination within this material in areas not tested as part of this investigation. To manage potential contamination, it is recommended that an unexpected finds protocol be developed and implemented during construction to manage potentially contaminated materials, should they be identified.



16 Limitations

The sole purpose of this report and the associated services performed by Jacobs is to assess the condition of the site (with respect to soil and groundwater contamination) in accordance with the scope of services set out in the contract between Jacobs and Bankstown Airport Limited (the Client). That scope of services, as described in this report, was developed with the Client.

In preparing this report, Jacobs has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

Jacobs derived the data in this report from information sourced from the Client (if any), from observations made during the investigations and data from analytical laboratories. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations and conclusions expressed in this report. Jacobs has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by Jacobs for use of any part of this report in any other context.

This report has been prepared on behalf of, and for the exclusive use of, Jacobs' Client, and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the Client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.



Figures



100 200m

Site 1 Location (approx.)

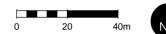
1:5,000 @ A4

Data sources
Jacobs 2015
Ausimage 2014
RMS 2015
LPI 2015
© Land and Property Information 2015



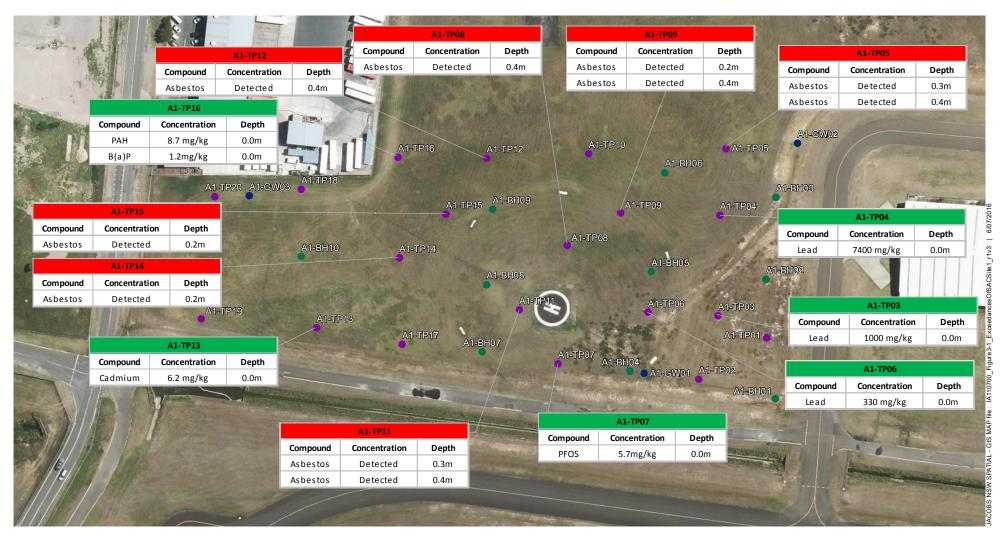


Borehole Groundwater Well Test Pit





1:1,500 @ A4







Test Pit

Figure 3-1 | Exceedances of SAC - Site 1





1:1,500 @ A4

Data sources

Jacobs 2015, Ausimage 2014, RMS 2015, LPI 2015 © Land and Property Information 2015



Tables

Table A: Soil Analytical Results

Table B: Groundwater Analytical Results

Table C: Soil QA/QC

Table D: Groundwater QA/QC



Table A - Soil Analytical Results																																
		Reference Sample Date	NEPM 2013 Table 1A(1) HILs	NEPM Table 1B(6) ESLs Commercial			502324 24/05/2016	502324 25/05/2016	26/05/2016	24/05/2016	25/05/2016	502324 26/05/2016	25/05/2016	25/05/2016	502324 26/05/2016	26/05/2016	25/05/2016	25/05/2016	27/05/2016	502324 27/05/2016	502324 27/05/2016	502324 25/05/2016	502324 25/05/2016	502324 26/05/2016	502324 26/05/2016	502324 26/05/2016	502324 26/05/2016	502324 26/05/2016	502324 26/05/2016	502324 27/05/2016	502324 27/05/2016	502324 27/05/2016
		Matrix Sample ID	Comm/Ind D Soil	and Industrial	Limits for TPH fractions in soil	Airport Regulations	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil A1_TP03_0.5	Soil A1_TP04_0.0	Soil A1_TP05_0.0	Soil A1_TP05_0.3	Soil A1_TP05_0.7 A	Soil 1_TP05_ASB_0.3	Soil A1_TP05_ASB_0.4	Soil A1_TP06_0.0	Soil A1_TP06_0.3	Soil A1_TP07_0.0
ChemName	Units	EQL																														
Metals Arsenic	mg/kg	2	3000 ¹	160 ⁴		500 ⁶ / 20 ¹²	4.3	11	-	5	16	-	5.2	7.4	-	-	4.1	8.7	2.8	-	5.9	2.6	7.4	16	10	-	11	-	-	5.9	5.5	8.3
Cadmium	mg/kg	0.4	900 1	3 8		100 6 / 3 12	<0.4	<0.4	-	<0.4	<0.4	-	<0.4	<0.4	-	-	<0.4	<0.4	0.6	-	<0.4	<0.4	<0.4	<0.4	<0.4	-	<0.4	-	-	0.5	<0.4	<0.4
Chromium (III+VI)	mg/kg mg/kg	5	3600 ¹ 240,000 ¹	670 ⁹		600,000 ⁶ / 50 ¹² 5000 ⁶ / 60 ¹²	7.9 <5	15 <5	-	12 8.3	35 10	-	11	15 18	-	-	7.6	23 12	7.3 5.6	-	10 8.7	6.5 5.4	7.3	8.4 10	30 9.8	-	12 8.2	-	-	9.5	9.1	19 20
Lead	mg/kg	5	1500 ¹	1810 ⁹		1500 ° / 300 12	13	140	-	7.5	24	-	10	21	-	-	100	17	17	-	10	1000	12	7400	58	-	120	-	-	330	10	280
Mercury	mg/kg	0.05	730 ¹	18		75 6 / 1 12	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	<0.05	-	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	0.05	-	<0.05	-	-	<0.05	<0.05	<0.05
Nickel	mg/kg mg/kg	5	6000 ¹ 400,000 ¹	295 ⁹ 425 ⁹		3000 ⁶ / 60 ¹² 35,000 ⁶ / 200 ¹²	<5	<5 6	-	<5 5.5	<5 9.5	-	<5 7.4	13 24	-	-	<5 14	<5 16	<5 9.2	-	<5 <5	<5 29	<5 <5	<5 24	9 47	-	<5 33	-	-	7.6 32	<5 <5	9.5 52
Organochlorine Pesticides (OCPs)	16/6		400,000	423		33,000 / 200	-							-							-										-	
4,4-DDE a-BHC	mg/kg mg/kg	0.05					-	-	-	-	-	-	-	-	-	-	<0.05 <0.05	-	<0.05 <0.05	-	-	<0.05 <0.05	-	-	<0.05 <0.05	-	-	-	-	<0.05 <0.05	-	<0.05 <0.05
Aldrin	mg/kg	0.05				50 ⁶ / 0.05 ¹²	-	-	-	-	-	-	-	-	-	-	< 0.05	-	<0.05	-	-	<0.05	-	-	<0.05	-	-	-	-	<0.05	-	< 0.05
Aldrin + Dieldrin b-BHC	mg/kg	0.05	45 ¹			20 6	-	-	-	-	-	-	-	-	-	-	<0.1 <0.05	-	<0.1 <0.05	-	-	<0.1 <0.05	-	-	<0.1 <0.05	-	-	-	-	<0.1 <0.05	-	<0.1 <0.05
chlordane	mg/kg mg/kg	0.1	530 ¹			250 ⁶	-	-	-	-	-	-	-	-	-	-	<0.1	-	<0.1	-	-	<0.1	-	-	<0.1	-	-	-	-	<0.1	-	<0.1
d-BHC DDD	mg/kg	0.05 0.05					-	-	-	-	-	-	-	-	-	-	<0.05 <0.05	-	<0.05 <0.05	-	-	<0.05 <0.05	-	-	<0.05 <0.05	-	-	-	-	<0.05 <0.05	-	<0.05 <0.05
DDT	mg/kg mg/kg	0.05		640 ⁴		1000 ⁶ / 0.97 ¹²	-	-	-	-	-	-	-	-	-	-	<0.05	-	<0.05	-	-	<0.05	-	-	<0.05	-	-	-	-	<0.05	-	<0.05
DDT+DDE+DDD	mg/kg		3600 ¹			6 12	-	-	-		-	-	-	-	-	-	<0.15	-	<0.15	-	-	<0.15	-	-	<0.15	-	-	-	-	<0.15	-	<0.15
Dieldrin Endosulfan I	mg/kg mg/kg	0.05	2000 ¹			20 6 / 0.2 12	-	-	-	-	-	-	-	-	-	-	<0.05 <0.05	-	<0.05 <0.05	-	-	<0.05 <0.05	-	-	<0.05 <0.05	-	-	-	-	<0.05 <0.05	-	<0.05 <0.05
Endosulfan II	mg/kg	0.05	2000 ¹				-	-	-	-	-	-	-	-	-	-	<0.05	-	<0.05	-	-	<0.05	-	-	<0.05	-	-	-	-	<0.05	-	<0.05
Endosulfan sulphate Endrin	mg/kg mg/kg	0.05 0.05	100 1				-	-	-		-	-	-		-	-	<0.05 <0.05	-	<0.05 <0.05		-	<0.05 <0.05		-	<0.05 <0.05	-			-	<0.05 <0.05		<0.05 <0.05
Endrin aldehyde	mg/kg	0.05	100 1							-	-						<0.05	-	<0.05		-	<0.05	-		<0.05	-	-	-	-	<0.05	-	<0.05
Endrin ketone g-BHC (Lindane)	mg/kg	0.05 0.05					<u> </u>	-			-	-	-	-		-	<0.05 <0.05	-	<0.05 <0.05		-	<0.05 <0.05		-	<0.05 <0.05	-			-	<0.05 <0.05		<0.05 <0.05
Heptachlor	mg/kg mg/kg	0.05	50 ¹			50 ⁶		-	-	-	-			-	-	-	<0.05	-	<0.05	-	-	<0.05	-	-	<0.05	-	-	-	-	<0.05		<0.05
Heptachlor epoxide Hexachlorobenzene	mg/kg mg/kg	0.05 0.05	80 ¹				-	-	-		-	-	-	-	-	-	<0.05 <0.05	-	<0.05 <0.05	-	-	<0.05 <0.05		-	<0.05 <0.05	-	-	-	-	<0.05 <0.05	-	<0.05 <0.05
Methoxychlor	mg/kg	0.05	2500 ¹				-	-	-	-	-	-	1 -	-	-	-	<0.03	-	<0.03	-	-	<0.03	-	-	<0.03	-	-	-	-	<0.2	-	<0.03
Toxaphene	mg/kg	1	160 ¹				-	-	-	-	-	-	-	-	-	-	<1	-	<1	-	-	<1	-	-	<1	-	-	-	-	<1	-	<1
Polycyclic Aromatic Hydrocarbons (PAHs Acenaphthene	mg/kg	0.5					<0.5	<0.5	-	<0.5	<0.5		<0.5	<0.5			<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	<0.5	<0.5	<0.5
Acenaphthylene	mg/kg	0.5					<0.5	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	<0.5	<0.5	<0.5
Anthracene Benz(a)anthracene	mg/kg mg/kg	0.5 0.5					<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5	-	-	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5		-	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5
Benzo(a) pyrene	mg/kg	0.5		0.7 5		5 6	<0.5	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ (lower bound) * Benzo(a)pyrene TEQ (medium bound) *	mg/kg mg/kg	0.5 0.5					<0.5 0.6	<0.5 0.6	-	<0.5 0.6	<0.5 0.6	-	<0.5 0.6	<0.5 0.6	-	-	<0.5 0.6	<0.5 0.6	<0.5 0.6	-	<0.5 0.6	<0.5 0.6	<0.5 0.6	<0.5 0.6	<0.5 0.6	-	<0.5 0.6	-	-	<0.5 0.6	<0.5 0.6	<0.5 0.6
Benzo(a)pyrene TEQ (upper bound) *	mg/kg	0.5	40 ¹				1.2	1.2	-	1.2	1.2	-	1.2	1.2	-	-	1.2	1.2	1.2	-	1.2	1.2	1.2	1.2	1.2	-	1.2	-	-	1.2	1.2	1.2
Benzo[b+j]fluoranthene Benzo(g,h,i)perylene	mg/kg mg/kg	0.5 0.5					<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5	-	-	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	-	-	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5
Benzo(k)fluoranthene	mg/kg	0.5 0.5					<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5	-	-	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	-	-	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5
Chrysene Dibenz(a,h)anthracene	mg/kg mg/kg	0.5					<0.5	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	<0.5	<0.5	<0.5
Fluoranthene	mg/kg mg/kg	0.5 0.5					<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5	-	-	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	-	-	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5					<0.5	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	<0.5	<0.5	<0.5
Naphthalene PAHs (Sum of total)	mg/kg mg/kg	0.5	11,000 ³	370 ⁴		100 ⁶ / F ¹²	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5	-	-	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	-	-	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5
Phenanthrene	mg/kg	0.5	4000			100 6 / 5 12	<0.5	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	<0.5	<0.5	<0.5
Pyrene Polychlorinated Biphenyls (PCBs)	mg/kg	0.5					<0.5	<0.5	-	<0.5	<0.5	-	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	-	<0.5	<0.5	<0.5
Arochlor 1016	mg/kg	0.1					-	-	-	-	-	-	-	-	-	-	<0.5	-	<0.5	-	-	<0.5	-	-	<0.5	-	-		-	<0.5	-	<0.5
Arochlor 1221 Arochlor 1232	mg/kg mg/kg	0.1					-	-	-	-	-	-	-	-	-	-	<0.5	-	<0.5	-	-	<0.5	-	-	<0.5	-	-	-	-	<0.5	-	<0.5
Arochlor 1242 Arochlor 1248	mg/kg	0.1 0.1					-	-	-	-	-	-	-	-	-	-	<0.5	-	<0.5	-	-	<0.5 <0.5	-	-	<0.5 <0.5	-	-	-	-	<0.5	-	<0.5
Arochlor 1254	mg/kg mg/kg	0.1						-	-	- :	-	-	-	-	-	-	<0.5 <0.5	-	<0.5 <0.5	-	-	<0.5		-	<0.5	-	-	-	-	<0.5 <0.5	-	<0.5 <0.5
Arochlor 1260 PCBs (Sum of total)	mg/kg	0.1 0.1				1 12	-	-	-	-	-	-	-	-	-	-	<0.5 <0.5	-	<0.5 <0.5	-	-	<0.5 <0.5	-	-	<0.5 <0.5	-	-	-	-	<0.5 <0.5	-	<0.5 <0.5
TRH - Semivolatile Fraction	mg/kg	0.1				1	-	-	-	-	-	-	-	-	-	-	40.5	- 1	40.3	-	-	40.5	-	-	40.5	-			-	40.5		- 40.5
C10-C16 C16-C34	mg/kg mg/kg	50 100	27.000 ³	2500 ⁵	5000 ⁷	_	<50 <100	<50 <100	-	<50 <100	<50 <100	-	<50 <100	<50 <100	-	-	<50 <100	<50 <100	<50 <100		<50 <100	<50 400	<50 <100	<50 130	<50 <100	-	<50 <100	-	-	<50 210	<50 <100	<50 <100
C34-C40	mg/kg	100	38,000 ³	6600 ⁵	10,000 7		<100	<100	-	<100	<100	-	<100	<100	-	-	<100	<100	<100	-	<100	<100	<100	<100	<100	-	<100	-	-	<100	<100	<100
F2-NAPHTHALENE	mg/kg	50	20,000 3	170 ⁵	1000 7		<50	<50	-	<50	<50	-	<50	<50	-	-	<50	<50	<50	-	<50	<50	<50	<50	<50	-	<50	-	-	<50	<50	<50
C10 - C14 C15 - C28	mg/kg mg/kg	50					<20 <50	<20 <50	-	<20 <50	<20 <50	-	<20 <50	<20 <50	-	-	<20 <50	<20 <50	<20 <50		<20 <50	36 190	<20 <50	<20 55	<20 <50	-	<20 <50	<u> </u>	-	<20 74	<20 <50	<20 <50
C29-C36	mg/kg	50				4.0 12	<50 <50	<50 <50	-	<50 <50	<50 <50	-	<50 <50	69	-	-	<50 <50	<50	<50	-	<50 <50	240	<50 <50	96	<50 <50		<50		-	150	<50	80 80
+C10 - C36 (Sum of total) TRH / BTEX	mg/kg	Uc				1,000 12	130	<50	-	<50	<50		<50	ра	-		<50	<50	<50	-	<50	466	<50	151	\ 30	-	<50	-	-	224	<50	- OU
Benzene	mg/kg	0.1	4 ²	95 ⁵		1 6 / 0.5 12	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	<0.1	<0.1	<0.1
Ethylbenzene Naphthalene	mg/kg mg/kg	0.1	27,000 ³ 11,000 ³	185 ⁵		50 ⁶ / 5 ¹²	<0.1 <0.5	<0.1 <0.5	<0.1	<0.1 <0.5	<0.1 <0.5	<0.1	<0.1 <0.5	<0.1 <0.5	<0.1	<0.1	<0.1 <0.5	<0.1 <0.5	<0.1 <0.5	-	<0.1 <0.5	<0.1 <0.5	<0.1 <0.5	<0.1 <0.5	<0.1 <0.5	-	<0.1	-	-	<0.1 <0.5	<0.1 <0.5	<0.1 <0.5
Toluene	mg/kg mg/kg	0.5	99,000 ³	370 ⁴		130 6 / 3 12	<0.5	<0.5	<0.1	<0.5	<0.5	<0.1	<0.5	<0.5	<0.1	<0.1	<0.5	<0.5	<0.5	-	<0.1	<0.5	<0.5	<0.5	<0.1	-	<0.5	-	-	<0.5	<0.5	<0.5
Xylene (m & p)	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	-	-	<0.2	<0.2	<0.2
Xylene (o) Xylene Total	mg/kg mg/kg	0.1	81,000 ³	95 ⁵		25 ⁶ /5 ¹²	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	-	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	-	<0.1	-	-	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3
C6 - C9	mg/kg	20				800 ⁶ / 100 ¹²	<20	<20	-	<20	<20	-	<20	<20	-	-	<20	<20	<20	-	<20	<20	<20	<20	<20	-	<20	-	-	<20	<20	<20
C6-C10 less BTEX (F1) C6-C10	mg/kg mg/kg	20	310 ²	215 5	800 ⁷		<20 <20	<20 <20	-	<20 <20	<20 <20	-	<20 <20	<20 <20	-	-	<20 <20	<20 <20	<20 <20	-	<20 <20	<20 <20	<20 <20	<20 <20	<20 <20	-	<20 <20	-	-	<20 <20	<20 <20	<20 <20
Perfluorinated Compounds (PFCs)	mg/kg						`~20	120		\20	1 120		\~2U	\~2U				\ \ZU			\20		\20	~20					-		-20	
6:2 Fluorotelomer Sulfonate (6:2 FtS) Perfluorooctanesulfonic acid (PFOS)	mg/kg mg/kg	0.01 0.005	900 10	4 74 10			-	-	-	-	-	-	-	-	-	-	<0.01 0.22	-	<0.01	-	-	0.04	-	-	<0.01 0.012	-	-	-	-	<0.01 3.4	-	<0.01 5.7
Perfluorooctanoate	mg/kg mg/kg	0.005	90 ¹⁰ 240 ¹⁰	4.71 ¹⁰			-	-	-	-	-	-	1 -	-	-	-	0.006	-	0.024	-	-	0.046	-	-	<0.005	-	-	-	-	0.006	-	0.006
Asbestos																																
Asbestos from ACM in Soil Asbestos from FA & AF in Soil	%w/w %w/w	0.001	0.05 ¹¹ 0.001 ¹¹				-	-	-	-	-	-	-	-	-	-	<0.001	-	-	<0.001	-	-	-	0 <0.001	-	0 <0.001	-	-	-	0 <0.001	-	<0.001
Asbestos Sample Dimensions	Comment		0.001				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80x60x5	140x50x5	-	-	-
Mass ACM Mass AF	g					_	-	-	-		-	-	-	-	-	-	0	-	-	0	-	-		0	-	0	-	28 0	42 0	0		0
Mass FA	g						-	-	-	-	-	-	-	-	-	-	0	-	-	0	-	-	-	0	-	0	-	0	0	0	-	0
Asbestos Fibres	Comment										-		<u> </u>				ND		-	ND	-	-		ND	<u> </u>	ND	-	ND	ND	ND	-	ND
% Clay	%	1					- 61	- 73	-	-	- 10	-	- 45	- 11	- 10		- 61	- 22	- 4.2	-	48	- 12	- 22	7.7	- 12	-	- 96	-	-	-	- 15	- 01
Moisture Content (dried @ 103°C) pH (Lab)	pH_Units	0.1					6.1	7.2	9	20	19	6.8	15	- 11	19	6.6	6.1	- 23	4.2	-	16 5.3	- 12	- 23	- 1.1	- 13	-	8.6			5.9	- 15	8.1

- Notes:

 Notes:

 NEPC (2013) Table 1 A(1) Neath investigations levels for soil contaminants Commercial / Industrial D.

 NEPC (2013) Table 1 A(1) Sal His. 1st virgour intrusion commercial whost and Circuit and Industrial D.

 NEPC (2013) Table 1 A(1) Sal His. 1st virgour intrusion commercial whost and Circuit and Insulate Manifestance Webers detailed within Table A I, Friebel, E & Nadebaum, P.2011, Soil Health screening levels for direct contact. Technical Report 10.

 NEPC (2013) Table 1 B(I) SELS for TPH Inactions F1-F4, BTEX and benzo(a)pyrene in soil Commercial and Industrial

 Approximation of Procession Republishment (Insulate Technical Selection Se

24/06/2016 IA110700



The section of the se	Table A - Soil Analytical Results																													
Fig. Property Pr			Sample Date	INEPINI 2015 Table											26/05/2016	26/05/2016														502324 26/05/2016
Service Servic			Matrix Sample ID	Comm/Ind D Soil	and Industrial	LIMITS FOR IPH																								Soil A1 TP15 0.
THE	ChemName	Units								1		1.1.2.11.00.2010			111211111111				1 11211213122010				1	1 11511 1151 1151	1.12.1.20.010	1	1			
The section of the se	Metals Arsenic	mg/kg	2	3000 ¹	160 ⁴	500 ⁶ / 20 ¹²	5.6	-	15	-	-	15	-	-	8.9	7.2	9.9	-			9.1	3.7	15	-	4	<2	8.7	6.3		9.1
Section 1.	Cadmium	mg/kg	0.4	900 ¹	38	100 6 / 3 12	<0.4	-	<0.4	-	-	<0.4			<0.4	<0.4	<0.4	-			<0.4	0.9	<0.4	-	6.2	0.6	<0.4	<0.4		<0.4
THE	Chromium (III+VI)		5					-		-	-		-	-				-						-					-	17
See Browner week week week week week week week we	Copper		5					-		-	-		-	-				-						-					-	9.3 65
STATE OF THE PROPERTY OF THE P	Mercury		0.05		1810			-		-	-		-	-				-						-						<0.05
THE COLOR OF THE C	Nickel		5		295 ⁹		<5	-	6.9	-	-	6.9	-	-	8.2		9.5	-				40	26	-	8.6	<5	5		-	<5
	Zinc	mg/kg	5	400,000 ¹	425 ⁹	35,000 ⁶ / 200 ¹²	<5	-	33	-	-	21	-	-	30	<5	38	-			55	55	100	-	57	<5	19	<5	-	30
See		mg/kg	0.05										-		<0.05	. 1	<0.05				- 1	<0.05	T -	_	<0.05		<0.05	- 1		
The control of the co	a-BHC	mg/kg	0.05				-	-	-	-	-	-	-	-	<0.05	-	< 0.05	-			-	< 0.05	-	-	<0.05	-	< 0.05	-	-	-
The control of the co	Aldrin + Dioldrin		0.05	45.1			-	-	-	-	-	-	-			-		-			-	<0.05	-	-		-		-	-	
See	b-BHC		0.05	45		20	-			-	-	-	-	-		-		-			-		-	-		-		-		
See 19 19 19 19 19 19 19 19 19 19 19 19 19	chlordane	mg/kg	0.1	530 ¹		250 ⁶		-	-	-	-	-	-	-	<0.1	-	<0.1	-			-	<0.1	-	-		-	<0.1	-	-	-
STATE WAS NOT THE	d-BHC DDD						-	-		-	-	-	-	-		-		-			-		-	-		-		-		
March 196 197 198 198 198 199 199 199 199 199 199 199	DDT	mg/kg			640 ⁴	1000 6 / 0.97 12		-		-	-	-	-	-		-					-		-	-		-		-	-	
Section 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	DDT+DDE+DDD			3600 ¹				-	-	-	-	-	-	-		-		-			-		-	-		-		-	-	-
THE THE THE PARTY OF THE PARTY	Dieldrin Endosulfan I	mg/kg		2000 1		20 6 / 0.2 12	-	-	-	-	-	-	-	-		-		-			-		-	-		-		-		-
TABLE STATE OF THE PARTY OF THE	Endosulfan II						-	-	-	-	-	-	-	-		-		-			-		-	-		-		-		
See	Endosulfan sulphate	mg/kg	0.05					-	-	-	-	-	-	-	<0.05	-	<0.05	-			-	< 0.05	-	-	<0.05	-	< 0.05	-		
A CAMPAN AND A CAM	Endrin Endrin aldebude	mg/kg		100 ¹			-	-	-	-	-	-	-	-		-		-			-		-	-		-		-	-	
THE COLOR OF THE C	Endrin aldehyde Endrin ketone						-	-	-	-	-	-	-	-		-		-			-		-	-		-		-	-	
Service Servic	g-BHC (Lindane)	mg/kg	0.05				-	-	-	-	-	-	-	-	<0.05	-	< 0.05	-			-	<0.05	-	-	<0.05	-	< 0.05	-		-
The section of the control of the co	·			50 ¹		50 6	-	-	-	-	-	-	-	-		-		-			-		-	-		-		-		
Service Servic	Hexachlorobenzene	mg/kg		80 ¹			-	-	-	-	-	-	-	-		-		-			-		-	-		-		-	-	-
THE PROPERTY OF THE PROPERTY O	Methoxychlor	mg/kg		2500 ¹			-	-	-	-	-	-	-	-	<0.2	-	<0.2	-			-	<0.2	-	-	<0.05	-	<0.2	-	-	
THE COLOR OF THE C	Toxaphene		1	160 ¹			-	-	-	-	-	-	-	-	<1	-	<1	-			-	<1	-	-	<1	-	<1	-		
THE COLOR OF THE C			0.5				<0.5	-	<0.5	-	-	<0.5	-	-	<0.5	<0.5	<0.5				<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5		<0.5
The services of the part of th	Acenaphthylene	mg/kg					<0.5	-	<0.5	-	-	<0.5	-	-	<0.5	<0.5	<0.5	-			<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	< 0.5
TATION OF THE PARTY OF THE PART								-	<0.5	-	-	<0.5	-	-	<0.5	<0.5					<0.5	<0.5	<0.5	-		<0.5	<0.5			<0.5 <0.5
The service of the se					0.7 5	5 6		-		-	-		-	-				-						-					-	<0.5
THE PROPERTY OF STATE AND STATE AS A STATE AND STATE AND STATE AS A STATE AND STATE AS A STATE AND S	Benzo(a)pyrene TEQ (lower bound) *							-		-	-		-	-				-						-					-	<0.5
STATE OF STA	Benzo(a)pyrene TEQ (medium bound) * Benzo(a)pyrene TEQ (upper bound) *			40.1			1.2	-		-	-	0.6	-	-	1.2			-						-					-	0.6 1.2
THE PARTY NAME OF THE PARTY NA	Benzo[b+j]fluoranthene			40				-		-	-		-	-				-						-					-	<0.5
TATION 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Benzo(g,h,i)perylene	mg/kg						-		-	-		-	-				-						-					-	<0.5
Semigrane 15th 15th 15th 15th 15th 15th 15th 15th								-		-	-		-	-				-						-		<0.5			-	<0.5 <0.5
Control Cont	Dibenz(a,h)anthracene	mg/kg	0.5				<0.5	-	<0.5	-	-	<0.5	-	-	<0.5	<0.5	<0.5	-			<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5
STANDAM NO	Fluorene	mg/kg						-		-	-		-	-				-						-						<0.5 <0.5
Network Page 11 1 1886 25 25 25 25 25 25 25 25 25 25 25 25 25	Indeno(1,2,3-c,d)pyrene							-	<0.5	-	-		-	-	<0.5	<0.5		-				<0.5		-	<0.5	<0.5				<0.5
Transfer 10 10 10 10 10 10 10 1		mg/kg			370 ⁴			-		-	-		-	-				-						-					-	<0.5
See				4000 ¹		100 6 /5 12		-		-	-		-	-				-						-					-	<0.5 <0.5
Telephone Teleph	Pyrene	mg/kg						-		-	-		-					-						-						<0.5
Part	Polychlorinated Biphenyls (PCBs)		0.1							1					<0.5		<0.5		I			<0.5		T	<0.1		×0.5			
Seedle Se	Arochlor 1221						-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	<0.1	-	-	-	-	-
Seed 18	Arochlor 1232	mg/kg					-	-	-	-	-	-	-	-		-		-			-		-	-		-		-	-	
Part	Arochlor 1248							-		-	-	-	-	-		-		-			-		-	-		-		-	-	
Control Cont	Arochlor 1254	mg/kg	0.1				•	-		-	-	-	-	-	<0.5	-	<0.5	-			-		-	-	<0.1	-	<0.5	-	-	-
The state of the s						1 12	-	-	-	-	-	-	-	-		-		-			-		-	-		-		-	-	
1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	TRH - Semivolatile Fraction					1 1																								
Second March 1989	C10-C16 C16-C34		50 100	27 nnn 3	2500.5	5000 7	<50 <100	-		-	-	<50 <100	-	-	<50 360			-			<50 140			-			<50 <100			<50 <100
Part	C34-C40			,				-		-	-		-	-				-						-						<100
13 C 2	F2-NAPHTHALENE		50			.,		-		-	-		-	-			<50	-			<50			-		<50	<50			<50
Carlo May Carlo May Carlo May Carlo Ca	C10 - C14		20					-		-	-		-	-	<20							<20		-						<20 <50
Call Call Series Fig. Series Se	C15 - C28 C29-C36		50					-		-	-		-	-	220			-						-					-	<50
Services mg/kg 0.1	+C10 - C36 (Sum of total)		50			1,000 12		-		-	-		-	-				-					75	-					-	<50
The section of the property of		lmg/kg	0.1	A 2	0F 5	16/0512	<0.1	_	<0.1	-		<0.1			<0.1	<0.1	<0.1		I	ı	<0.1	<0.1	<0.1	_	<0.1	<0.1	<0.1	<0.1		<0.1
Superhalmore with partial superhalmore with	Ethylbenzene			27,000 ³				-		-	-		-											+ -						<0.1
Figure 1. Sept. 1. Se	Naphthalene					30 / 3		-	<0.5	-	-		-	-	<0.5			-			<0.5	<0.5	<0.5	-			<0.5		-	<0.5
Special Control Special Co	Toluene	mg/kg	-			130 6 / 3 12		-		-	-		-	-				-						-					-	<0.1
Sylen From myRe 0.3 \$1,000 \$5 \$ \$2 \$5 \$ \$0.3	Xylene (m & p)	mg/kg						-		-	-		-					-						-						<0.2 <0.1
Facility	Xylene Total	mg/kg		81,000 ³	95 ⁵	25 ⁶ /5 ¹²		-		-	-		-	-				-						-					-	<0.3
Feed See Feed See Feed See S	C6 - C9	mg/kg					<20	-		-	-		-	-		<20	<20	-			<20	<20		-		<20	<20	<20	-	<20
Perfusion and	C6-C10 less BTEX (F1)			310 ²	215 5			-		-	-		-	-				-						-					-	<20
22 Fluorotelamer Sulfroate (62 PS) mg/kg 0.01 990 0.05 90 0.05	C6-C10 Perfluorinated Compounds (PFCs)	mg/kg	20				<20	-	<20	-	-	<20	-	-	<20	<20	<20	-	<u> </u>		<20	<20	<20	-	<20	<20	<20	<20	-	<20
Ferfunctorate (IPCS) mp/g 0.05 90 9 41 9 0.05 90 9 37 9 0 0.05 90 9 37 9 0 0.05 90 9 37 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg		900 10				-		-	-	-	-	-		-					-		-	-		-		-	-	-
Nebestos from FA B. AF in Soil Norly 0.005 0.001	Perfluorooctanesulfonic acid (PFOS)	mg/kg		90 ¹⁰			-	-	-	-	-	-	-	-		-		-			-		-	-		-		-		-
Askets from FAM in Soil 50 0 0 0 0 0 0 0 0		mg/kg	0.005	240 ***	3.73 10		-	-	-	-	-	-	-	-	<0.005	-	<0.005	-	<u> </u>		-	<0.005	-	-	<0.005	-	<0.005	-	-	-
Abbetts from FA & A F in Soil Now/w 0.001	Asbestos Asbestos from ACM in Soil	%w/w		0.05 11			-	0	-	0	0	-	0	0	-	-	0	0	0	0	-	0	-	0	0	-	0	-	0	-
Mass ACM g g	Asbestos from FA & AF in Soil	%w/w	0.001				-	<0.001	-	-	<0.001	-	-	-	-	-	<0.001	<0.001	-	-	-	<0.001	-	-	<0.001	-	<0.001	-	-	
Mass AF g	Asbestos Sample Dimensions	Comment						-	-		-	-			-	-	-				-	-	-		-	-	-	-		
Mass FA g g G G G G G G G G G G G G G G G G G	Mass AF	g					-		-			-	0		-	-	0			0	-		-	0		-		-	0	
Kiday % 1	Mass FA	g					-	0	-		0	-		0	-	-	0	0			-	0	-		0	-	0	-		-
Moisture Content (dried @ 103°C) % 1 1 18 - 16 22 14 23 8.4 - 8.2 5.8 10 - 6 1.2 15 20 - 7.	Asbestos Fibres	Comment					-	ND	-	ND ND	ND	-	ND	ND	-	-	ND	ND	ND	ND	-	ND	-	ND	ND	-	ND	-	ND	-
Moisture Content (dried @ 103°C)	% Clay	%	1				-	-	-	-	-	-	-	-	-	-	-	-			-	-	-	-	-	-	-	-	-	_
pri vinta v.a.	Moisture Content (dried @ 103*C)	% pH H=====	1 0.1				18	-	16	-	-	22	-		14	23	8.4				8.2	5.8	10	-	6	1.2	15	20		7.9
	h /eng)	įpri_onits	0.1				-	-		-		-	-	-	- 1	- 1	-		1		- 1	-	-	-					-	

- Notes:

 Note:

 NEPC (2013) Table 1 A(1) Health investigations levels for soil contaminants Commercial / Industrial D.

 NEPC (2013) Table 1 A(1) Sel Hista for vapour intraction commercial industrial to 1.0.1, 1.2.2, 2.4.3.4 m CLAY.

 NEPC (2013) Table 1 A(3) Sel Hista for vapour intraction commercial industrial to 1.0.1, 1.2.2, 2.4.3.4 m CLAY.

 NEPC (2013) Table 1 A(3) Sel Hista for vapour intraction of 18(3) Commercial and Industrial.

 NEPC (2013) Table 1 B(6) ESLs for TPM fractions F1-F4, BTX and benzo(a)pyrene in soil Commercial and Industrial

 Approximation of the Commercial Industrial Commercial and Industrial

 NEPC (2013) Table 1 B(6) ESLs for TPM fractions F1-F4, BTX and benzo(a)pyrene in soil Commercial and Industrial

 NEPM 1989 generated ELIs for ELI provided in NEPC 2013)

 ELIS defined from NEPM 2013 equation ABC-PCL.

 GHD (2015) Table 1 Interior Science (aves) (SLS), Managing PFC contamination at Alipiots, Interim Management Strategy and Decision Framework.

 NO DN (2009) Sel asbettes investigation criteria

 Approximation (average in the Commercial Interior Commercial Significance

 NL NL indicates the HSL is not limiting (see Footnote 5, Table 1A(3)).

 TEQ Tools Equivalent.

24/06/2016 IA110700



Table A - Soil Analytical Results		Deference			NEPM 2013 Table	F02224	503800	F03800	F02224	502224	502224	502224	503800	F03800	E03800	F03800
		Reference Sample Date	NEPM 2013 Table 1A(1) HILs	NEPM Table 1B(6) ESLs Commercial	1B(7) Management	502324 26/05/2016	502800 30/05/2016	502800 30/05/2016	502324 27/05/2016	502324 27/05/2016	502324 27/05/2016	502324 27/05/2016	502800 30/05/2016	502800 30/05/2016	502800 30/05/2016	502800 30/05/2016
		Matrix Sample ID	Comm/Ind D Soil	and Industrial	Limits for TPH fractions in soil	Soil A1_TP15_ASB_0.	Soil	Soil	Soil	Soil A1_TP17_1.0	Soil A1_TP18_0.0	Soil A1_TP18_0.5	Soil	Soil A1_TP19_0.3	Soil	Soil A1 TP20 2.0
ChemName	Units	EQL			indicatoris in son	[A1_1F15_A56_0.	2 A1_IF10_0.0	A1_1F10_1.0	A1_1F17_0.0	A1_IF17_1.0	A1_1F18_0.0	A1_1F10_0.5	A1_1F13_0.0	A1_1F19_0.3	A1_1F20_0.0	X1_1F20_2.0
Metals Arsenic	mg/kg	2	3000 ¹	4504	500 ⁶ / 20 ¹²		4.4	8.7	4.1	2.8	7.5	8.3	5.1	-	4.1	3.9
Cadmium	mg/kg	0.4	900 ¹	160 ⁴	100 6 / 3 12		<0.4	<0.4	1.2	<0.4	<0.4	<0.4	<0.4	-	<0.4	<0.4
Chromium (III+VI)	mg/kg	5	3600 ¹	670 ⁹	600,000 6 / 50 12	-	19	28	13	6	13	22	9.9	-	9.4	13
Copper	mg/kg	5	240,000 ¹	198.7 ⁹	5000 ⁶ / 60 ¹²	-	24	14	10	<5	9.9	15	9.7	-	11	10
Lead	mg/kg	5	1500 ¹	1810 9	1500 ⁶ / 300 ¹²	-	30	10	52	6.7	20	16	48	-	15	8.2
Mercury	mg/kg	0.05	730 ¹	18	75 ⁶ /1 ¹²	-	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.1	-	<0.1	<0.1
Nickel Zinc	mg/kg mg/kg	5	6000 1	295 9	3000 6 / 60 12	-	22 45	6.4	5.5 26	<5 <5	5.3 14	7.7	6.3	-	6.6 17	<5 7.3
Organochlorine Pesticides (OCPs)	IIIB/ NB	,	400,000 1	425 ⁹	35,000 ⁶ / 200 ¹²	-	45	0.7	20		14	13	21		17	7.3
4,4-DDE	mg/kg	0.05				-	<0.05	-	<0.05	-	<0.05	-	-	-	<0.05	-
a-BHC	mg/kg	0.05			6 13	-	<0.05	-	<0.05	-	<0.05	-	-	-	<0.05	-
Aldrin + Dieldrin	mg/kg mg/kg	0.05	45 ¹		50 ⁶ / 0.05 ¹² 20 ⁶	-	<0.05 <0.1	-	<0.05 <0.1	-	<0.05 <0.1	-	-	-	<0.05 <0.1	-
b-BHC	mg/kg	0.05	45		20	-	<0.05		<0.05	-	<0.05		-	-	<0.05	-
chlordane	mg/kg	0.1	530 ¹		250 ⁶	-	< 0.1	-	<0.1	-	<0.1	-	-	-	<0.1	-
d-BHC	mg/kg	0.05				-	<0.05	-	<0.05	-	<0.05	-	-	-	<0.05	-
DDT	mg/kg mg/kg	0.05		640 ⁴	1000 ⁶ / 0.97 ¹²	-	<0.05 <0.05	-	<0.05 <0.05	-	<0.05 <0.05	-	-	-	<0.05 <0.05	-
DDT+DDE+DDD	mg/kg	0.05	3600 ¹	640	1000 7 0.97	-	<0.15		<0.15	-	<0.15	-	-	-	<0.15	-
Dieldrin	mg/kg	0.05	3000		20 6 / 0.2 12	-	<0.05	-	<0.05	-	<0.05	-	-	-	<0.05	-
Endosulfan I	mg/kg	0.05	2000 ¹			-	<0.05	-	<0.05	-	<0.05	-	-	-	<0.05	-
Endosulfan II	mg/kg	0.05	2000 ¹			-	<0.05	-	<0.05	-	<0.05	-	-	-	<0.05	-
Endosulfan sulphate Endrin	mg/kg mg/kg	0.05	100 ¹			-	<0.05 <0.05	-	<0.05 <0.05	-	<0.05 <0.05	-	-	-	<0.05 <0.05	-
Endrin aldehyde	mg/kg mg/kg	0.05	100			-	<0.05	-	<0.05	1 -	<0.05	-	-	1 -	<0.05	-
Endrin ketone	mg/kg	0.05				-	< 0.05	-	<0.05	-	< 0.05	-	-	-	< 0.05	-
g-BHC (Lindane)	mg/kg	0.05	- 1			-	<0.05	-	<0.05	-	<0.05	-	-	-	<0.05	-
Heptachlor Heptachlor epoxide	mg/kg mg/kg	0.05	50 ¹		50 ⁶	-	<0.05 <0.05	-	<0.05 <0.05	-	<0.05 <0.05	-	-	-	<0.05 <0.05	-
Hexachlorobenzene	mg/kg mg/kg	0.05	80 ¹			1	<0.05	-	<0.05	-	<0.05	-	-	-	<0.05	+ -
Methoxychlor	mg/kg	0.05	2500 ¹			-	<0.05	-	<0.2	-	<0.2	-	-	-	<0.05	-
Toxaphene	mg/kg	1	160 ¹			-	<1	-	<1	-	<1	-	-	-	<1	-
Polycyclic Aromatic Hydrocarbons (PAHs)																
Acenaphthene Acenaphthylene	mg/kg mg/kg	0.5				-	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5						
Anthracene	mg/kg	0.5				1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Benz(a)anthracene	mg/kg	0.5				-	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Benzo(a) pyrene	mg/kg	0.5		0.7 5	5 6	-	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Benzo(a)pyrene TEQ (lower bound) * Benzo(a)pyrene TEQ (medium bound) *	mg/kg	0.5				-	1.6	<0.5	<0.5	<0.5	<0.5 0.6	<0.5 0.6	<0.5 0.6	-	<0.5 0.6	<0.5
Benzo(a)pyrene TEQ (inediam bound) *	mg/kg mg/kg	0.5	40 ¹			-	2.1	1.2	1.2	1.2	1.2	1.2	1.2	-	1.2	1.2
Benzo[b+j]fluoranthene	mg/kg	0.5				-	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Benzo(g,h,i)perylene	mg/kg	0.5				-	1.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Benzo(k)fluoranthene Chrysene	mg/kg mg/kg	0.5				-	0.9	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5
Dibenz(a,h)anthracene	mg/kg	0.5				-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Fluoranthene	mg/kg	0.5				-	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Fluorene Indeno(1,2,3-c,d)pyrene	mg/kg	0.5				-	<0.5 0.9	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5
Naphthalene	mg/kg mg/kg	0.5	11,000 ³	370 ⁴		-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
PAHs (Sum of total)	mg/kg	0.5	4000 ¹	3.0	100 6 /5 12	-	8.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Phenanthrene	mg/kg	0.5				-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Pyrene	mg/kg	0.5				-	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5
Polychlorinated Biphenyls (PCBs) Arochlor 1016	mg/kg	0.1				-	<0.1	-	<0.5	-	<0.5	-	-	-	<0.1	-
Arochlor 1221	mg/kg	0.1				-	<0.1	-	-	-	-	-	-	-	<0.1	-
Arochlor 1232 Arochlor 1242	mg/kg	0.1				-	<0.1 <0.1	-	<0.5 <0.5	-	<0.5	-	-	-	<0.1 <0.1	-
Arochlor 1242 Arochlor 1248	mg/kg mg/kg	0.1				-	<0.1	-	<0.5	-	<0.5 <0.5		-	-	<0.1	-
Arochlor 1254	mg/kg	0.1				-	<0.1	-	<0.5	-	<0.5	-	-	-	<0.1	-
Arochlor 1260	mg/kg	0.1				-	<0.1	-	<0.5	-	<0.5	-	-	-	<0.1	-
PCBs (Sum of total) TRH - Semivolatile Fraction	mg/kg	0.1			1 12	-	<0.1	-	<0.5	-	<0.5	-	-	-	<0.1	-
C10-C16	mg/kg	50				-	<50	<50	<50	<50	<50	<50	<50	-	<50	<50
C16-C34	mg/kg	100	27,000 ³	2500 ⁵	5000 ⁷	-	180	<100	<100	<100	<100	<100	<100	-	<100	<100
C34-C40	mg/kg	100	38,000 ³	6600 ⁵	10,000 7	-	<100	<100	<100	<100	<100	<100	<100	-	<100	<100
F2-NAPHTHALENE C10 - C14	mg/kg	50 20	20,000 3	170 5	1000 7	-	<50 <20	-	<50 <20	<50 <20						
C10 - C14 C15 - C28	mg/kg mg/kg	50				1 :	<20 77	<20 <50	<20 <50	<20 <50	<20 <50	<20 <50	<20 <50	-	<20 <50	<50
C29-C36	mg/kg	50				-	170	<50	<50	<50	<50	<50	<50	-	<50	<50
+C10 - C36 (Sum of total)	mg/kg	50			1,000 12	-	247	<50	<50	<50	<50	<50	<50	-	<50	<50
TRH / BTEX Benzene	Ima/ka	0.1	4 ²	er 5	4 6 40 5 12	T -	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	_	<0.1	<0.1
Ethylbenzene Ethylbenzene	mg/kg mg/kg	0.1	4 ² 27,000 ³	95 ⁵	1 ⁶ /0.5 ¹² 50 ⁶ /5 ¹²	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1
Naphthalene	mg/kg	0.5	27,000 °	185 °	50 / 5	<u> </u>	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5	<0.5
Toluene	mg/kg	0.1	99,000 ³	135 ⁵	130 ⁶ /3 ¹²	<u> </u>	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1
Xylene (m & p)	mg/kg	0.2				-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2
Xylene (o)	mg/kg	0.1			6.42	-	<0.1	<0.1	<0.1	<0.1 <0.3	<0.1	<0.1	<0.1	-	<0.1 <0.3	<0.1
Xylene Total C6 - C9	mg/kg mg/kg	0.3	81,000 ³	95 ⁵	25 ⁶ /5 ¹² 800 ⁶ /100 ¹²	-	<0.3	<0.3 <20	<0.3 <20	<0.3	<0.3 <20	<0.3	<0.3	-	<0.3	<0.3
C6-C10 less BTEX (F1)	mg/kg mg/kg	20	310 ²	215 5	800 ° / 100 ° ·	-	<20	<20	<20	<20	<20	<20	<20	1 -	<20	<20
C6-C10	mg/kg	20	310	215	800	-	<20	<20	<20	<20	<20	<20	<20	-	<20	<20
Perfluorinated Compounds (PFCs)																
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.01	900 10	- 10		-	<0.01	-	<0.01	-	<0.01	-	-	-	<0.01	-
Perfluorooctanesulfonic acid (PFOS) Perfluorooctanoate	mg/kg	0.005	90 10	4.71 ¹⁰		-	0.012	-	0.011	-	0.006	-	-	-	<0.005	-
Perfluorooctanoate Asbestos	mg/kg	0.005	240 10	3.73 ¹⁰		<u> </u>	<0.005	· ·	<0.005	-	<0.005	-	<u> </u>	-	<0.005	<u> </u>
Asbestos Asbestos from ACM in Soil	%w/w		0.05 11			0	0	-	-	-	0	-	-	0	-	-
Asbestos from FA & AF in Soil	%w/w	0.001	0.001 11			-	<0.001	-	-	-	<0.001	-	-	<0.001	-	-
Asbestos Sample Dimensions	Comment					50x34x8	-	-	-	-	-	-	-	-	-	-
Mass ACM	g					18	0	-	-	-	0	-	-	0	-	-
Mass AF Mass FA	g g					0	0	-	-	-	0	-	-	0	-	-
Asbestos Fibres	Comment					ND	ND	-	<u>-</u> -	-	ND	-	-	ND ND	-	-
N. Cl	lar.															
% Clay Moisture Content (dried @ 103°C)	%	1 1				1	5.7	23	24	14	22	15	6.9	-	8.3	17
pH (Lab)	pH_Units	0.1				<u> </u>	-	-		-		-	-	<u> </u>	-	

- Notes:

 Note:
 Note:
 NEPC (2013) Table 1 A(1) Health investigations levels for soil contaminants Commercial / Industrial D.
 NEPC (2013) Table 1 A(3) Said NSL for vigour instance. Commercial/Industrial D.
 NEPC (2013) Table 1 A(3) Said NSL for vigour instance. Commercial/Industrial D.
 NEPC (2013) Table 1 A(3) Said NSL for vigour instance. Vivorate Stated with Table A.F. Friedd. E. & Nadebaum, P. 2011, Soil Health screening levels for direct
 NEPC (2013) Table 1 B(8) ESLs of Phil Racious FI-F. A Eff and betroat(spinere in soil Commercial and Industrial
 NEPC (2013) Table 1 B(8) ESLs of Fifth Accisor FI-F. A Eff and betroat(spinere in soil Commercial and Industrial
 NEPC (2013) Table 1 B(6) ESLs of Phil Racious FI-F. A Eff and betroat(spinere in soil Commercial and Industrial
 NEPC (2013) Table 1 B(7) Hanagement Liefs for FIH fractions FI-F. A Eff and betroat(spinere in soil Commercial and Industrial
 ESL desired from RFM 2013 capacity and RSC (2013)
 ESL desired from RFM 2013 capacity and RSC (2013)
 ESL desired from RFM 2013 capacity and RSC (2013)
 UN DOT (2010) Table 1 Interior Screening Levels (SSL), Managing PFC contemination at Airports, Interin Management Strategy and Decision Framework
 UN DOT (2016) oil absets to interior AGE (ACL)
 UN DOT (2016) oil absets to interior Screening Levels (SSL), Managing PFC contemination at Airports, Interin Management Strategy and Decision Framework
 UN DOT (2016) oil absets to interior Screening Levels (SSL), Managing PFC contemination at Airports, Interin Management Strategy and Decision Framework
 UN DOT (2016) oil absets to interior and RSC (2013)
 TEO Toxic Equivalent.

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Table B - Groundwater Analytical Results

Table B - Groundwater Analytical Resu	ilts							
	Reference					505193	505193	505193
	Matrix		GIL	HSLs	Airport	Water	Water	Water
	Date Sample	d	GIL	пэсэ	Regulations	20/06/2016	20/06/2016	20/06/2016
	Borehole ID					A1 - GW1	A1 - GW2	A1 - GW3
ChemName	Units	EQL						
Dissolved Metals								
Arsenic (Filtered)	μg/L	1	24 ¹		50 ⁷	<1	<1	3
Cadmium (Filtered)	μg/L	0.1	0.7 12		2.0 7	0.1	<1	<1
Chromium (III+VI) (Filtered)	μg/L	1	4.4 ¹³		50 ⁷	<1	<1	<1
Copper (Filtered)	μg/L	1	1.3 13		5.0 7	<1	<1	1
Lead (Filtered)	μg/L	1	4.4 ¹³		5.0 7	<1	<1	3
Mercury (Filtered)	μg/L	0.1	0.1 12		0.1 7	<0.1	0.2	<0.1
Nickel (Filtered)		1	7 ¹²		15 7	3	3	62
Zinc (Filtered)	μg/L		15 ¹³		50 7	8	13	57
, ,	μg/L	5	15		50	8	13	37
Perfluorinated Compounds (PFCs)			9			-0.05	-0.05	-0.05
6:2 Fluorotelomer Sulfonate (6:2 FtS)	μg/L	0.05	5 9			<0.05	<0.05	<0.05
Perfluorooctanoate	μg/L	0.01	0.4 9			<0.01	<0.01	<0.01
PFOS	μg/L	0.01	0.2 9			<0.01	0.02	0.01
Polycyclic Aromatic Hydrocarbons (PA	Hs)							
Acenaphthene	μg/L	0.01				<0.01	<0.01	<0.01
Acenaphthylene	μg/L	0.01				<0.01	<0.01	<0.01
Anthracene	μg/L	0.01				<0.01	<0.01	<0.01
Benz(a)anthracene	μg/L	0.01				<0.01	<0.01	<0.01
Benzo(a) pyrene	μg/L	0.01	0.01 5			<0.01	<0.01	<0.01
Benzo[b+j]fluoranthene	mg/L	0.00001				<0.00001	<0.00001	<0.00001
Benzo(g,h,i)perylene	μg/L	0.01				<0.01	<0.01	<0.01
Benzo(k)fluoranthene	μg/L	0.01				<0.01	<0.01	<0.01
Chrysene	μg/L	0.01				<0.01	<0.01	<0.01
Dibenz(a,h)anthracene	μg/L	0.01				<0.01	<0.01	<0.01
Fluoranthene	μg/L	0.01				<0.01	<0.01	<0.01
Fluorene	μg/L	0.01				<0.01	<0.01	<0.01
Indeno(1,2,3-c,d)pyrene	μg/L	0.01	12			<0.01	<0.01	<0.01
Naphthalene	μg/L	0.01	50 ¹²	NL ⁶		<0.01	0.1	<0.01
PAHs (Sum of total)	μg/L	0.01				<0.05	0.1	<0.05
Phenanthrene	μg/L	0.01				<0.01	<0.01	<0.01
Pyrene	μg/L	0.01				<0.01	<0.01	<0.01
TRH - Semivolatile Fraction								
C10-C16	mg/L	0.05				<0.05	<0.05	<0.05
C16-C34	mg/L	0.1				<0.1	<0.1	<0.1
C34-C40 F2-NAPHTHALENE	mg/L	0.1		6		<0.1 <0.05	<0.1 <0.05	<0.1 <0.05
	mg/L	0.05		NL ⁶				
C10 - C14	μg/L	50				<50	100	<50
C15 - C28	μg/L	100				<100	<100	<100
C29-C36	μg/L	100	500 4			<100	<100	<100
+C10 - C36 (Sum of total)	μg/L	100	600 4			<100	100	<100
TRH Volatiles/BTEX			12		7			
Benzene	μg/L	1	500 ¹²	30,000 ⁶	300 7	<1	<1	<1
Ethylbenzene	μg/L	1	140 ³	NL ⁶		<1	<1	<1
Naphthalene	μg/L	10	50 ¹²	NL ⁶		<10	<10	<10
Toluene	μg/L	1	300 ³	NL ⁶		<1	<1	<1
Xylene (m & p)	μg/L	2				<2	<2	<2
Xylene (o)	μg/L	1	350 ¹			<1	<1	<1
Xylene Total	μg/L	3	380 ³	NL ⁶		<3	<3	<3
C6 - C9	μg/L	20	150 ⁴			<20	<20	<20
C6-C10 less BTEX (F1)	mg/L	0.02	130	NL ⁶	+	<0.02	<0.02	<0.02
CO C10 C00 D LA (1/	∥ IIIg/∟	1 0.02		INL	1	10.02	1 -0.02	-0.02

- ¹ ANZECC (2000) 95% of species protected fresh water
- ² ANZECC (2000) 99% of species protected –fresh water
- 3 NSW EPA (1994) Protection of aquatic ecosystems fresh water ⁴ Dutch (2000) groundwater intervention levels
- ⁵ NHMRC 2011 Australian Drinking Water Guidelines
- $^{\rm 6}$ NEPC (2013) Table 1 A(4) Groundwater HSLs for vapour intrusion –Commercial / Industrial, 2 to <4m, CLAY.
- ⁷ Airports (Environment Protection) Regulations 1997 Marine water
- Provisional USEPA Region 4 2009 Guideline (PFOS/PFOA) for drinking water
- 9 Managing PFC Contamination at Airports, Interim Contamination Management Strategy and Decision Framework (GHD, June 2015)
- Aquatic predicted no-effect contentration (PNEC) for Perfluorooctane sulfonic acid, Qi et al 2011
- 11 Ecological toxicity criterion for PFOA, Giesy et al 2010
 12 ANZECC (2000) 99% of species protected marine
 13 ANZECC (2000) 95% of species protected marine

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Table C - Soil QA/QC

	Lab Reference	502800	502800		502800	EM1606429		502800	502800		502800	EM1606429		502800	502800		502800	EM1606429	-
	Sample ID		A1-QC01	RPD	A1 TP19 0.0	A1-QC02	RPD	A1 TP16 0.0	A1-QC03	RPD	A1 TP16 0.0	A1-QC04	RPD	A1 TP13 0.4	A1-QC05	RPD	A1 TP13 0.4	A1-QC06	RPD
	Date Sampled		30/05/2016	I I I	30/05/2016	30/05/2016		30/05/2016	30/05/2016	I I I	30/05/2016	30/05/2016	I I I	30/05/2016	30/05/2016	11.10	30/05/2016	30/05/2016	I I
	Units EQL	30/03/2010	30/03/2010		30/03/2010	30/03/2010		30/03/2010	30/03/2010		30/03/2010	30/03/2010		30/03/2010	30/03/2010		30/03/2010	30/03/2010	
Heavy Metals	Units EQL																		
Arsenic	mg/kg 2 (Primary); 5 (Interlab)	5.1	6.2	19	5.1	6.0	16	4.4	7.3	50	4.4	9.0	69	<2.0	<2.0	0	<2.0	<5.0	0
Cadmium	mg/kg 0.4 (Primary): 5 (Interlab)	<0.4	0.5	22	5.1 <0.4	<1.0	0	<0.4	<0.4	0	<0.4	9.0 <1.0	0	<2.0 0.6	<0.4	40	<2.0 0.6	<5.0 <1.0	0
Chromium (III+VI)	mg/kg 5 (Primary): 1 (Interlab)	9.9	12.0	19	9.9	<1.0 13.0	27	19.0	20.4	5	<0.4 19.0	32.0	51	<5.0	<0.4	0	<5.0	<1.0	0
	mg/kg 5 (Filmary), 2 (interiab)	9.7	9.1		9.7	11.0	13	24.0	25.0		24.0	22.0	9	<5.0 <5.0	<5.0 <5.0		<5.0	<5.0	-
Copper	mg/kg 5	48.0		6	9.7 48.0	29.0	49	30.0		4 18	30.0	56.0				0	<5.0 <5.0	<5.0 <5.0	0
Lead Mercury	mg/kg 5	48.0 <0.1	51.0 <0.1	0	48.0 <0.1	<0.1	0	<0.1	25.0 <0.1	0	<0.1	<0.1	60	<5.0 <0.1	<5.0 <0.1	0	<0.1	<0.1	0
Nickel	mg/kg 5 (Primary); 2 (Interlab)	6.3	6.0	5	6.3	6.0	5	22.0	21.0	5	22.0	26.0	17	<5.0	<5.0	0	<0.1 <5.0	<0.1	0
Zinc	mg/kg 5 (Primary): 2 (Interiab)	21.0	20.0	5	21.0	20.0	5	45.0	34.0	28	45.0	48.0	6	<5.0 <5.0	<5.0 <5.0	0	<5.0 <5.0	<2.0 <5.0	0
	mg/kg 5	21.0	20.0	3	21.0	20.0	3	45.0	34.0	20	45.0	40.0	Ü	₹5.0	<5.0	U	<5.0	<5.0	
Polycyclic Aromatic Hydrocarbons (PAHs)	I maller los	0.5	0.5		0.5	0.5	_	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Acenaphthene	mg/kg 0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Acenaphthylene	mg/kg 0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Anthracene	mg/kg 0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Benz(a)anthracene	mg/kg 0.5	<0.5	<0.5	0	<0.5	<0.5	0	0.6	<0.5	18	0.6	<0.5	18	<0.5	<0.5	0	<0.5	<0.5	0
Benzo(a) pyrene	mg/kg 0.5	< 0.5	< 0.5	0	<0.5	<0.5	0	1.2	< 0.5	82	1.2	<0.5	82	<0.5	< 0.5	0	<0.5	<0.5	0
Benzo(a)pyrene TEQ (lower bound) *	mg/kg 0.5	<0.5	<0.5	0	<0.5	<0.5	0	1.6	<0.5 0.6	105	1.6	<0.5	105 100	<0.5	<0.5	0	<0.5	<0.5	0
Benzo(a)pyrene TEQ (medium bound) *	mg/kg 0.5	0.6	0.0		0.6	0.6	0	1.8	0.0	100	1.8	0.6		0.6	0.0	0	0.6	0.6	0
Benzo(a)pyrene TEQ (upper bound) *	mg/kg 0.5	1.2	1.2	0	1.2	1.2	0	2.1	1.2	55	2.1	1.2	55	1.2	1.2	0	1.2	1.2	0
Benzo[b+j]fluoranthene	mg/kg 0.5	<0.5	<0.5	0	<0.5 <0.5	<0.5	0	1.2	<0.5 <0.5	82	1.2	<0.5 <0.5	82	<0.5 <0.5	<0.5 <0.5	0	<0.5 <0.5	<0.5 <0.5	0
Benzo(g,h,i)perylene	mg/kg 0.5	<0.5	<0.5	0		<0.5	0	1.1 0.9		75	0.9		75	<0.5 <0.5		0			0
Benzo(k)fluoranthene	mg/kg 0.5	<0.5	<0.5	0	<0.5	<0.5	0		<0.5	57		<0.5	57		<0.5	0	<0.5	<0.5	0
Chrysene	mg/ng 0.0	<0.5 <0.5	<0.5	0	<0.5 <0.5	<0.5	0	0.8 <0.5	<0.5 <0.5	46 0	0.8 <0.5	<0.5	46 0	<0.5 <0.5	<0.5 <0.5	0	<0.5	<0.5 <0.5	0
Dibenz(a,h)anthracene		<0.5	<0.5			<0.5	-					<0.5					<0.5		_
Fluoranthene	mg/kg 0.5		<0.5	0	<0.5	<0.5	0	1.0	<0.5	67	1.0	<0.5	67	<0.5	<0.5	0	<0.5	<0.5	0
Fluorene	mg/kg 0.5 mg/kg 0.5	<0.5 <0.5	<0.5	0	<0.5	<0.5	0	<0.5 0.9	<0.5	57	<0.5	<0.5	57	<0.5 <0.5	<0.5	0	<0.5	<0.5	0
Indeno(1,2,3-c,d)pyrene		<0.5	<0.5	0	<0.5	<0.5	0		<0.5 <0.5	0	0.9	<0.5	0	<0.5	<0.5		<0.5	<0.5	0
Naphthalene	mg/kg 0.5 (Primary): 1 (Interlab) mg/kg 0.5	<0.5	<0.5		<0.5 <0.5	<0.5	-	<0.5 8.7	<0.5		<0.5 8.7	<0.5		<0.5	<0.5 <0.5	0	<0.5	<0.5	
PAHs (Sum of total) Phenanthrene	mg/kg 0.5	<0.5	<0.5 <0.5	0	<0.5 <0.5	<0.5	0	<0.5	<0.5	178	8.7 <0.5	<0.5	- 0	<0.5	<0.5	0	<0.5 <0.5	<0.5	0
	2 2	<0.5	<0.5	0	<0.5	<0.5	0	<0.5 1.0	<0.5	67	1.0	<0.5	67	<0.5	<0.5	0	<0.5	<0.5	0
Pyrene	mg/kg 0.5	<0.5	<0.5	U	<0.5	<0.5	U	1.0	<0.5	67	1.0	<0.5	6/	<0.5	<0.5	U	<0.5	<0.5	
TRH / BTEX	I # [04/D: \ \ 0.0 ([4.11])					0.0	_		0.4		0.4						0.4	0.0	_
Benzene	mg/kg 0.1 (Primary): 0.2 (Interlab)	<0.1	<0.1	0	<0.1	<0.2	0	<0.1	<0.1	0	<0.1	<0.2	0	<0.1	<0.1	0	<0.1	<0.2	0
Ethylbenzene	mg/kg 0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.1	0	<0.1	<0.5	0
Naphthalene	mg/kg 0.5 (Primary): 1 (Interlab)	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Toluene	mg/kg 0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.1	0	<0.1	<0.5	0
Xylene (m & p)	mg/kg 0.2 (Primary): 0.5 (Interlab)	<0.2	<0.2	0	<0.2	<0.5	0	<0.2	<0.2	0	<0.2	<0.5	0	<0.2	<0.2	0	<0.2	<0.5	0
Xylene (o)	mg/kg 0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.1	0	<0.1	<0.5	0	<0.1	<0.1	0	<0.1	<0.5	0
Xylene Total C6 - C9	mg/kg 0.3 (Primary): 0.5 (Interlab)	<0.3	<0.3	0	<0.3	<0.5 <10.0	0	<0.3 <20.0	<0.3		<0.3 <20.0	<0.5 <10.0	0	<0.3 <20.0	<0.3	0	<0.3	<0.5 <10.0	0
	mg/kg 20 (Primary): 10 (Interlab)	<20.0				<10.0	0	<20.0 <20.0	.=0.0	0	<20.0 <20.0	<10.0				0	<20.0 <20.0	<10.0 <10.0	0
C6-C10 less BTEX (F1)	mg/kg 20 (Primary): 10 (Interlab)		<20.0	0	<20.0		0		<20.0	0			0	<20.0	<20.0	0			0
C6-C10	mg/kg 20 (Primary): 10 (Interlab)	<20.0	<20.0	0	<20.0	<10.0	0	<20.0	<20.0	0	<20.0	<10.0	0	<20.0	<20.0	0	<20.0	<10.0	0
TRH - Semivolatile Fraction		50.0	50.0		50.0	500		50.0	50.0		50.0	50.0		50.0	50.0		50.0	50.0	
C10-C16	mg/kg 50	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0
C16-C34	mg/kg 100	<100.0	<100.0	0	<100.0	<100.0	0	180.0	<100.0	57	180.0	<100.0	57	<100.0	<100.0	0	<100.0	<100.0	0
C34-C40	mg/kg 100	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0
F2-NAPHTHALENE	mg/kg 50	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0
C10 - C14	mg/kg 20 (Primary): 50 (Interlab)	<20.0	<20.0	0	<20.0	<50.0	0	<20.0	<20.0	0	<20.0	<50.0	0	<20.0	<20.0	0	<20.0	<50.0	0
C15 - C28	mg/kg 50 (Primary): 100 (Interlab)	<50.0	<50.0	0	<50.0	<100.0	0	77.0	<50.0	43	77.0	<100.0	0	<50.0	<50.0	0	<50.0	<100.0	0
C29-C36	mg/kg 50 (Primary): 100 (Interlab)	<50.0	<50.0	0	<50.0	<100.0	0	170.0	52.0	106	170.0	<100.0	52	<50.0	<50.0	0	<50.0	<100.0	0
+C10 - C36 (Sum of total)	mg/kg 50	<50.0	<50.0	0	<50.0	<50.0	0	247.0	52.0	130	247.0	<50.0	133	<50.0	<50.0	0	<50.0	<50.0	0

Notes: 0 – 100% RPD (When the average concentration is < 5 times the LOR) 0 – 75% RPD (When the average concentration is 5 to 10 times the LOR) 0 – 50% RPD (When the average concentration is > 10 times the LOR)



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Table D - Groundwater QA/QC

	Lab	Reference	505193	505193	
		Sample ID	A1 - GW1	A1 - QC07	RPD
	Dat	e Sampled	20/06/2016		
	Units	EQL			
Dissolved Metals					
Arsenic (Filtered)	mg/l	0.001	< 0.001	< 0.001	0
Cadmium (Filtered)	mg/l	0.0001	0.0001	0.0001	0
Chromium (III+VI) (Filtered)	mg/l	0.001	<0.001	<0.001	0
Copper (Filtered)	mg/l	0.001	<0.001	<0.001	0
Lead (Filtered)	mg/l	0.001	<0.001	<0.001	0
Mercury (Filtered)	mg/l	0.0001	<0.0001	<0.0001	0
Nickel (Filtered)	mg/l	0.001	0.003	0.003	0
Zinc (Filtered)	mg/l	0.005	0.008	0.008	0
Perfluorinated Compounds (PFCs)					
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/l	0.00005	< 0.00005	< 0.00005	0
Perfluorooctanoate	mg/l	0.00001	<0.00001	<0.00001	0
PFOS	mg/l	0.00001	<0.00001	<0.00001	0
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	mg/l	0.00001	<0.00001	< 0.00001	0
Acenaphthylene	mg/l	0.00001	<0.00001	<0.00001	0
Anthracene	mg/l	0.00001	<0.00001	<0.00001	0
Benz(a)anthracene	mg/l	0.00001	<0.00001	<0.00001	0
Benzo(a) pyrene	mg/l	0.00001	<0.00001	<0.00001	0
Benzo[b+j]fluoranthene	mg/l	0.00001	<0.00001	<0.00001	0
Benzo(g,h,i)perylene	mg/l	0.00001	<0.00001	<0.00001	0
Benzo(k)fluoranthene	mg/l	0.00001	<0.00001	<0.00001	0
Chrysene	mg/l	0.00001	<0.00001	<0.00001	0
Dibenz(a,h)anthracene	mg/l	0.00001	<0.00001	<0.00001	0
Fluoranthene	mg/l	0.00001	<0.00001	<0.00001	0
Fluorene	mg/l	0.00001	<0.00001	<0.00001	0
Indeno(1,2,3-c,d)pyrene	mg/l	0.00001	<0.00001	<0.00001	0
Naphthalene	mg/l	0.00001	<0.00001	<0.00001	0
PAHs (Sum of total)	mg/l	0.00005	<0.00005	<0.00005	0
Phenanthrene	mg/l	0.00001	<0.00001	<0.00001	0
Pyrene	mg/l	0.00001	<0.00001	<0.00001	0
TRH / BTEX				-	
Benzene	μg/l	1	<1.0	<1.0	0
Ethylbenzene	μg/l	1	<1.0	<1.0	0
Naphthalene	μg/l	10	<10.0	<10.0	0
Toluene	μg/l	1	<1.0	<1.0	0
Xylene (m & p)	μg/l	2	<2.0	<2.0	0
Xylene (o)	μg/l	1	<1.0	<1.0	0
Xylene Total	μg/l	3	<3.0	<3.0	0
C6 - C9	μg/l	20	<20.0	<20.0	0
C6-C10 less BTEX (F1)	mg/l	0.02	<0.02	< 0.02	0
C6-C10	mg/l	0.02	<0.02	<0.02	0
TRH - Semivolatile Fraction		-			
C10-C16	mg/l	0.05	< 0.05	< 0.05	0
C16-C34	mg/l	0.1	<0.1	<0.1	0
C34-C40	mg/l	0.1	<0.1	<0.1	0
F2-NAPHTHALENE	mg/l	0.05	<0.05	<0.05	0
C10 - C14	μg/l	50	<50.0	<50.0	0
C15 - C28	μg/l	100	<100.0	<100.0	0
C29-C36	μg/l	100	<100.0	<100.0	0
+C10 - C36 (Sum of total)	μg/l	100	<100.0	<100.0	0

Notes:

The acceptable range depends upon the levels detected:

 $0-100\%\ \text{RPD}$ (When the average concentration is < 5 times the LOR)

0-75% RPD (When the average concentration is 5 to 10 times the LOR)

 $0-50\%\ \text{RPD}$ (When the average concentration is > 10 times the LOR)



012/07/2016 IA110700



Appendix A – NEPM 2013 Ecological Investigation Limits Methodology

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NEPM 2013 Ecological Investigation Limits Methodology

Ecological investigation levels (EILs) for the protection of terrestrial ecosystems have been derived for common contaminants in soil based on a species sensitivity distribution (SSD) model developed for Australian conditions. EILs have been derived for As, Cu, CrIII, DDT, naphthalene, Ni, Pb and Zn.

EILs apply principally to contaminants in the top 2 metres of soil at the finished surface/ground level which corresponds to the root zone and habitation zone of many species. In arid regions, where the predominant species may have greater root penetration, specific considerations may result in their application to 3 metres depth.

The methodology assumes that the ecosystem is adapted to the ambient background concentration (ABC) for the locality and that it is only adding contaminants over and above this background concentration which has an adverse effect on the environment.

The ABC of a contaminant is the soil concentration in a specified locality that is the sum of the naturally occurring background level and the contaminant levels that have been introduced from diffuse or non-point sources by general anthropogenic activity not attributed to industrial, commercial, or agricultural activities, for example, motor vehicle emissions.

The preferred method to determine the ABC is to measure the ABC at an appropriate reference site. This approach is essential in areas where there is a high naturally occurring background level such as will occur in mineralised areas.

An added contaminant limit (ACL) is the added concentration (above the ABC) of a contaminant above which further appropriate investigation and evaluation of the impact on ecological values is required. **The EIL is derived by summing the ACL and the ABC.**

ACLs are based on the soil characteristics of pH, CEC and clay content. Empirical relationships that can model the effect of these soil properties on toxicity are used to develop soil-specific values. These soil-specific values take into account the biological availability of the element in various soils. In this approach different soils will have different contaminant EILs rather than a single generic EIL for each contaminant.

The adopted soil characteristics (pH, clay content and cation exchange capacity) have been selected from sample A1_TP02_2.5 as the sample was considered to be representative of the primary soil type (silty clay) at the site and that the soils are unlikely to be impacted by anthropogenic sources due to the sample depth (2.4 m bgl).

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Table 5.2: Calculating the ACL

ACLs				mg	/kg				
ACLS	A1_TP02_2.5	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
рН	5.3								
CEC	12				190			290	420
% clay	48			660					
Generic	-					1800			

Information derived from **Table 1B(1)** Soil-specific added contaminant limits for aged zinc in soils, **Table 1B(2)** Soil-specific added contaminant limits for aged copper in soils, **Table 1B(3)** Soil-specific added contaminant limits for aged chromium III and nickel in soils, and **Table 1B(4)** Generic added contaminant limits for lead in soils (commercial/industrial) irrespective of their physicochemical properties (NEPM 2013).

Table 5.3: Calculating the ABC

ADC				mg/	'kg			
ABC	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
A1_TP02_2.5	n/a	n/a	10	8.7	10	n/a	5	5

Sample A1_TP02_2.5 (silty clay) was assumed to be representative of the 'background concentration' of the site due to the depth 2.4 m bgl, and that the clays at that depth are unlikely to be impacted by anthropogenic sources.

The EIL is derived by summing the ACL and the ABC.

Table 5.4: Calculating the EIL

EILs					mg/kg					
LILS	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	DDT	Naphth.
ABC + ACL			670 ³	198.7 ³	1810 ³		295 ³	425 ³		
NEPM 2013	160 ¹								640 ¹	370 ¹
NEPM 1999		3 ²				12				

Generic EILs for aged arsenic, DDT and Naphthalene from **Table 1B(5)** for commercial/industrial land use.

² EILs from NEPM 1999 (no EILs specified for contaminants in NEPM 2013).

³ EILs derived from NEPM 2013 equation ABC+ACL.



Appendix B – Borehole Logs



Project: Contamination Investigation Location: Bankstown Aiport - Site 1 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 25/05/16 - 25/05/16 Rig: Backhoe

Driller: Ken Coles

Northings: mN Eastings:

Logged: BC

Checked:

Bore dia: 450 mm

Surface Conditions: Grass & Fill RL:

SOIL **SOIL DESCRIPTION** COMMENTS **FIELD DATA** CONDITION visual ranking sample type field tests ground water odour ranking consistency/ density soil type, unified classification, colour, structure, drilling method, well construction, water field test XRF (ppm) log sample ID depth (m) particle characteristics, minor components moisture condition graphic le and additional PID (ppm) observations FILL: Silty CLAY: (CL) brown, dry, very stiff, trace fine gravel, minor fine grained sands, minor rootlets, no odour. 0 \bigcirc A1-TP01_0.0 Α Silty CLAY: (CL) VSt D orange/brown mottled red/brown, dry, very stiff, minor rootlets, no odour. 0 Α A1-TP01_0.5 As above but red/brown mottled grey/brown, stiff, St SI. M slightly moist and trace rootlets 0 A1-TP01_1.0 Test Pit terminated at 1.0 m bgl Limit of Investigation. FIELD DATA ABBREVIATIONS
Suv = Uncorrected vane shear (kPa)
Sup = Pocket penetrometer (kPa)
N = SPT blows per 300mm
FPM = Field permeability
PID = Photoionisation detector CONSISTENCY (Su) VISUAL RANKING FIELD DATA SYMBOLS DENSITY (N-value) No visible evidence of contamination Slight visible contamination < 12 kPa × = Shear vane test VL (very loose) <10 VS (very soft) 1 2 3 = Pocket Penetrometer test (loose) 10 - 20 S (soft) 12 - 25 Visible contamination
Significant visible contamination = Standard Penetration Test (SPT top = start of N blowcount) D MD (medium dense) 20 - 30 (firm) 25 - 50 (dense) 30 - 50 St (stiff) 50 - 100 ODOUR RANKING reading (ppm, V/V) = SPT Spoon Sample (Pushed) (very stiff) VD (very dense) >50 VSt 100 - 200 A B = Undisturbed Tube Sample CO (compact) >50/150mm Н (hard) > 200 kPa

.GPJ SKM_ENVL1.GDT 14/7/16 SKM ENV 1 BANKSTOWN SITE 1.

No Non-Natural odours Slight Non-Natural odours Moderate Non-Natural odours Strong Non-Natural odours CD

GROUNDWATER SYMBOLS = Water level (static) = Water level (during drilling) = Outflow / Inflow

= Disturbed Sample

= Bulk Sample

MOISTURE CONDITION

D = Dry M = Moist W = Wet



RI ·

Project: Contamination Investigation Location: Bankstown Aiport - Site 1 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 27/05/16 - 27/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass Northings: mN Eastings:

Logged: BC Checked:

SOIL **COMMENTS** FIELD DATA SOIL DESCRIPTION CONDITION visual ranking sample type field tests ground water odour ranking soil type, unified classification, colour, structure, consistency drilling method, well construction, water field test XRF (ppm) log \Box particle characteristics, minor components moisture condition depth (m) graphic le sample and additional PID (mdd) observations FILL: Silty CLAY: (CL) 0 Α A1-TP02_0.0 brown and light grey, dry, very stiff, trace fine gravel, trace fine grained sands, minor rootlets, no odour. D VD FILL: Silty SAND: (SM) very light brown and brown, dry, very dense, fine grained sands, some clay, no odour. A1-TP02_0.2 0 Α Silty CLAY: (CL) SI. M brown and orange/brown, slightly moist, stiff to very stiff, trace fine grained sands, trace rootlets, no pp (410, 430, 420) A1-TP02_0.3 - 0.8 A1-TP02_0.5 0 Α Silty CLAY: (CL) SI. M grey mottled orange/brown and red/brown, slightly moist, firm, no odour. pp (320, 290, 340) 0 A1-TP02_1.0 Α SI. M As above. pp (290, 310, 320) 0 A1-TP02_2.0 0 Α As above but soft to firm and trace fine grained S-F SI. M pp (290, 280, 290) 0 Α A1-TP02_2.5 Test Pit terminated at 2.5 m bgl. Limit of Investigation. FIELD DATA ABBREVIATIONS
Suv = Uncorrected vane shear (kPa)
Sup = Pocket penetrometer (kPa)
N = SPT blows per 300mm VISUAL RANKING FIELD DATA SYMBOLS CONSISTENCY (Su) DENSITY (N-value) No visible evidence of contamination Slight visible contamination = Shear vane test (very loose) <10 VS (very soft) < 12 kPa = Pocket Penetrometer test (loose) 10 - 20 S (soft) 12 - 25 2 Visible contamination
Significant visible contamination FPM = Field permeability
PID = Photoionisation detector = Standard Penetration Test (SPT top = start of N blowcount) MD (medium dense) 20 - 30 (firm) 25 - 50 D (dense) 30 - 50 St (stiff) 50 - 100 ODOUR RANKING reading (ppm, V/V) = SPT Spoon Sample (Pushed) (very stiff) VD (very dense) >50 VSt 100 - 200 No Non-Natural odours Slight Non-Natural odours GROUNDWATER SYMBOLS = Water level (static) A B = Undisturbed Tube Sample CO (compact) >50/150mn Н (hard) > 200 kPa

= Disturbed Sample

= Bulk Sample

MOISTURE CONDITION D = Dry M = Moist W = Wet

= Water level (during drilling)

= Outflow / Inflow

.GPJ SKM_ENVL1.GDT 14/7/16

SKM ENV 1 BANKSTOWN SITE 1

CD

Moderate Non-Natural odours Strong Non-Natural odours



RL:

Project: Contamination Investigation Location:Bankstown Aiport - Site 1 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 25/05/16 - 25/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass Northings: mN Eastings:

Logged: BC Checked:

			FIELI	D DATA				SOIL DESCRIPTION	S(CONI	OIL DITION	COMMENTS
PID (ppm)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, we construction, wate and additional observations
	0	A		A1-TP03_0.0	0	-		FILL: Silty CLAY: (CL) light brown and brown, dry, very stiff, trace fine gravel, trace fine grained sands, minor rootlets and small to medium roots, no odour.	VSt	D	
	0	A		A1-TP03_0.5	0	-		Silty CLAY: (CL) brown mottled orange/brown, dry, very stiff, minor rootlets, no odour.	VSt	D	
						-		Silty CLAY: (CL) grey mottled red/brown and orange/brown, slightly moist, stiff, no odour.	- St	SI. M	
	0	Α		A1-TP03_1.0	0	1_		Test Pit terminated at 1.0 m bgl. Limit of Investigation.			
						-					
						-					
						-					
0 N 1 S 2 N 3 S	No visil Slight v Visible Signific ODOL No Nor	isible co contami ant visib JR RAN n-Natura	ence of contamination ontamination ination ole contamination IKING al odours	Suv = Uncorrect Sup = Pocket pe N = SPT blow FPM = Field pem PID = Photoionis reading (p	enetro s per neab sation pm, ATEI	ometer (kP - 300mm ility n detector V/V) R SYMBOI	a) X	7 = Pocket Penetrometer test CSPT top = start of N blowcount) D (dense) 20 (dense) SPT Spoon Sample (Pushed) VD (very dense) >	10 [°] 0 - 20	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 200 kF
C N	Modera	te Non-	ural odours -Natural odours atural odours	= Water leve	el (du	ıring drilling	g)	- · · · · · · · · · · · · · · · · · · ·	ITION		



RI ·

Project: Contamination Investigation Location: Bankstown Aiport - Site 1 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 26/05/16 - 26/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass Northings: mN Eastings:

Logged: BC Checked:

SOIL **COMMENTS** FIELD DATA SOIL DESCRIPTION CONDITION visual ranking sample type field tests ground water odour ranking consistency/ density soil type, unified classification, colour, structure, drilling method, well construction, water field test XRF (ppm) log ₽ particle characteristics, minor components moisture condition depth (m) graphic le sample and additional PID (mdd) observations FILL: Silty CLAY: (CL) brown, dry, stiff, minor fine gravel, minor lead shot, trace fine grained sands, minor rootlets, no odour. A1-TP04_0.0 1 Α D VSt FILL: sandy Silty CLAY: (CL) light orange/brown, dry, very stiff, fine grained sands, As above but light brown and brown. VSt D 0 A1-TP04_0.4 \cap Α Silty CLAY: (CL) brown mottled orange/brown and dark brown, slightly SI. M St pp (420, 440, 430) moist, stiff, some fine grained sands, minor rootlets, A1-TP04_0.6 0 Α \bigcirc no odour. Silty CLAY: (CL) F SI. M grey mottled red/brown and orange/brown, slightly moist, firm, no odour. pp (280, 300, 290) 0 A1-TP04_1.0 Α Sandy CLAY: (CL) grey mottled orange/brown, slightly moist, soft, fine grained sands, no odour. s SI. M pp (200, 230, 220) 0 A1-TP04_2.0 Α As above but moist s Μ pp (210, 230, 240) 0 Α A1-TP04_2.5 Test Pit terminated at 2.5 m bgl. Limit of Investigation. 14/7/16 FIELD DATA ABBREVIATIONS
Suv = Uncorrected vane shear (kPa)
Sup = Pocket penetrometer (kPa)
N = SPT blows per 300mm VISUAL RANKING FIELD DATA SYMBOLS DENSITY (N-value) CONSISTENCY (Su) No visible evidence of contamination Slight visible contamination = Shear vane test (very loose) <10 VS (very soft) < 12 kPa = Pocket Penetrometer test (loose) 10 - 20 S (soft) 12 - 25 2 Visible contamination
Significant visible contamination FPM = Field permeability
PID = Photoionisation detector = Standard Penetration Test (SPT top = start of N blowcount) MD (medium dense) 20 - 30 (firm) 25 - 50 D (dense) 30 - 50 St (stiff) 50 - 100 ODOUR RANKING reading (ppm, V/V) = SPT Spoon Sample (Pushed) (very stiff) VD (very dense) >50 VSt 100 - 200 No Non-Natural odours Slight Non-Natural odours A B GROUNDWATER SYMBOLS = Undisturbed Tube Sample CO (compact) >50/150mn Н (hard) > 200 kPa = Water level (static)

= Disturbed Sample

= Bulk Sample

MOISTURE CONDITION

D = Dry M = Moist W = Wet

= Water level (during drilling)

= Outflow / Inflow

.GPJ SKM_ENVL1.GDT

SKM ENV 1 BANKSTOWN SITE 1

CD

Moderate Non-Natural odours Strong Non-Natural odours



Project: Contamination Investigation Location:Bankstown Aiport - Site 1 Job No: IA110700 Client: Bankstown Airport Limited Driller: Ken C Start - Finish Date: 26/05/16 - 26/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Rig: Backhoe Surface Conditions: Grass Northings: mN

Eastings: mE RL: Logged: BC Checked:

			FIEL	D DATA				SOIL DESCRIPTION		DIL	COMMENTS
PID (ppm)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, we construction, water and additional observations
	1 2 2	A A A	44	A1-TP05_0.0 A1-TP05_0.3, A1-TP05_ASB_0.3 A1-TP05_ASB_0.4 A1-TP05_0.5	0	- - - - -		FILL: Sitty CLAY: (CL) dark brown, dry, very stiff, some fine to medium gravel, trace fine grained sands, no odour. Three fragments of asbestos observed and sampled. Three fragments of abestos observed and sampled, a large piece of cermanic pipe observed. FILL: sitty Clayey SAND: (SC) light brown and brown, dry, very dense, trace fine	VSt	D	
	0 0	A A		A1-TP05_0.7 A1-TP05_0.8 - 1.1 A1-TP05_1.0		- - 1_ - -		gravel, fine grained sands, no odour. Sitty CLAY: (CL) grey/brown mottled red/brown and brown, slightly moist, firm, minor rootlets, no odour.	F	SI. M	pp (310, 344 360)
	0	А		A1-TP05_2.0	0	- - - 2_ -		As above but grey mottled orange/brown and red/brown, no rootlets.	F	SI. M	pp (280, 30 300)
	0	Α		A1-TP05_2.5	0	3_		Sity CLAY: (CL) grey mottled orange/brown and red/brown, slightly moist, soft to firm, some fine grained sands, no odour. Test Pit terminated at 2.5 m bgl. Limit of Investigation,	S-F	SI. M	pp (280, 30 300)
1 2 3 A B C	No visi Slight v Visible Signific ODOL No No Slight Modera	visible contami contami cant visib JR RAN n-Natura Non-Nat ate Non-	ence of contamination ontamination ination ole contamination	FIELD DATA Suv = Uncorrect Sup = Pocket pe N = SPT blow FPM = Field pern PID = Photoionis reading (p GROUNDW W = Water leve Water leve W = Outfile	enetrones per neabi sation opm, ' 'ATEF el (sta el (du	ometer (kPa : 300mm ility n detector V/V) R SYMBOL atic) ıring drilling	s S	Pocket Penetrometer test Column C	10) - 20) - 30) - 50 50 50/150mn	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kP (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 20 (hard) > 200 ki



Project: Contamination Investigation Location:Bankstown Aiport - Site 1 Job No: IA110700 Client: Bankstown Airport Limited Driller: Ken C Start - Finish Date: 27/05/16 - 27/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Rig: Backhoe Surface Conditions: Grass Northings: mN Eastings: mE

RL:

Logged: BC Checked:

			FIEL	D DATA				SOIL DESCRIPTION		DIL DITION	COMMENTS
PID (mdd)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, we construction, water and additional observations
	1	А		A1-TP06_0.0	0			FILL: Silty CLAY: (CL) grey/brown, dry, very stiff, minor fine gravel, trace fine grained sands, trace lead shot, minor rootlets, no odour. FILL: silty Sandy CLAY: (CL) very light brown, grey and brown, dry, hard, fine grained sands, no odour.	VSt H	D	
	0	A		A1-TP06_0.3	0	_		Silty CLAY: (CL) brown, dry, stiff, trace rootlets, no odour.	St	D	
	0	A		A1-TP06_0.5	0						
	0	A		A1-TP06_1.0	0	1		As above but grey mottled orange/brown and red/brown, slightly moist and firm.	F	SI. M	
							-	Test Pit terminated at 1.0 m bgl. Limit of Investigation.			
							-				
							-				
							-				
1 2 3	No visi Slight v Visible Signific ODOL No No	visible o contam cant visil UR RAN n-Natura	lence of contamination ontamination ination ble contamination JKING al odours	FIELD DATA Suv = Uncorrect Sup = Pocket pe N = SPT blow FPM = Field perr PID = Photoionis reading (r GROUNDW	ed v netro s pe neab satio pm,	ane shea ometer (k r 300mm bility n detecto V/V)	ONS r (kPa) Pa)	= Standard Penetration Test (SPT top = start of N blowcount) D (dense) 30 = SPT Spoon Sample (Pushed) VD (very dense) >5	0 - 20 - 30 - 50	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPt (soft) 12 - 25 (firm) 25 - 50 (stiff) 500 - 100 (very stiff) 100 - 200 kf
B C	Slight I Modera	Non-Natate Non	tural odours -Natural odours atural odours	■ = Water level □ = Water level □ = Outfl	el (st el (di	atic) uring drilli		= Undisturbed Tube Sample = Disturbed Sample = Bulk Sample	TION	пП	(Haiu <i>) ></i> 200 Ki



RL:

Project: Contamination Investigation Location:Bankstown Aiport - Site 1 Job No: IA110700 Client: Bankstown Airport Limited Driller: Ken C Start - Finish Date: 27/05/16 - 27/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Rig: Backhoe Surface Conditions:Grass Northings: mN Eastings: mE

Logged: BC Checked:

			FIEL	D DATA			\perp		SOIL DESCRIPTION		OIL DITION	COMMENTS
PID (ppm)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water	depth (m)	grapnic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, we construction, wate and additional observations
	1	Α		A1-TP07_0.0	С)			FILL: Silty CLAY: (CL) grey/brown, dry, very stiff, minor small to medium aggregate and fragments of sandstone, some fine to medium gravel, trace lead shot, minor rootlets, no odour.	VSt	D	
	0	А		A1-TP07_0.3	C)			FILL: silty Sandy CLAY: (CL) light brown and brown, dry, hard, fine grained sands, no odour. Silty CLAY: (CL)	H VSt	D	
	0	А		A1-TP07_0.5	C)	-/		brown mottled orange/brown, dry, very stiff, minor rootlets, no odour.	VSI		
									As above but grey mottled red/brown and orange/brown, slightly moist and stiff.	St	SI. M	
	0	A		A1-TP07_1.0		1	1_/					
	Ü			A1-11 07_1.0								
									Silty CLAY: (CL) grey mottled red/brown, slightly moist, frim, no odour.	F	SI. M	
									grof mease reasonny organ, meet min, no occur.			
	0	А		A1-TP07_2.0	C)	2					
									As above but grey mottled red/brown and orange/brown.	F	SI. M	
	0	А		A1-TP07_2.5	С)			Test Pit terminated at 2.5 m bgl.			
							-		Limit of Investigation.			
							-					
							3_					
							-					
		AL RAN		FIELD DATA Suv = Uncorrect	ABI	BREVIAT	FIONS ar (kPa	a)	FIELD DATA SYMBOLS DENSITY (N-valu			CONSISTENCY (Su)
0 1 2 3	Slight Visible Signific	visible o contam cant visi	ble contamination	Sup = Pocket pe N = SPT blow FPM = Field perr PID = Photoioni	netr s pe neal satio	rometer (er 300mn bility on detect	(kPa) n	$\left \begin{array}{c} \triangle \\ \top \\ \end{array}\right $	= Standard Penetration Test (SPT top = start of N blowcount) D (dense) 20	- 20	VS S F St	(very soft) < 12 kP (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100
A B C D	No No Slight Moder	Non-Natate Non	al odours tural odours -Natural odours	reading (p GROUNDW W = Water leve W = Water leve W = Outfl	ATE el (s el (d	R SYME tatic) luring dri		V •	= SPT Spoon Sample (Pushed) VD (very dense) >5 = Undisturbed Tube Sample CO (compact) >5 = Disturbed Sample MOISTURE CONDI	0 0/150mr ΓΙΟΝ	VSt	(very stiff) 100 - 20 (hard) > 200 kl
υ	strong	NON-Na	atural odours	- - Outfl	ow /	Inflow			= Bulk Sample D = Dry M = Moist W	/ = Wet		



Project: Contamination Investigation Location:Bankstown Aiport - Site 1 Job No: IA110700 Client: Bankstown Airport Limited Driller: Ken C Start - Finish Date: 27/05/16 - 27/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles 8 Rig: Backhoe Surface Conditions:Grass Northings: mN

Eastings: RL: Logged: BC Checked:

			FIE	LD DATA					SOIL DESCRIPTION		OIL DITION	COMMENTS
PID (ppm)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water	depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, we construction, wate and additional observations
	1 1 2 2	A A A		A1-TP08_0.0 A1-TP08_0.3 A1-TP08_ASB_0.4 A1-TP08_0.5	0 00 0		-		FILL: Sitty CLAY: (CL) grey/brown, dry, very stiff, some fine to medium gravel, trace lead shot, trace fine grained sands, minor rootlets, no odour. FILL: Sitty CLAY: (CL) brown, dry, hard to very stiff, some fine to medium gravel, minor small to medium fragments of brick, concrete and asphalt, trace large pieces of ceramic pipe, no odour. Two fragments of asbestos observed and sampled.	VSt H - VSt	D	
	0	A		A1-TP08_0.8 A1-TP08_1.0	0		1_		FILL: Sitty SAND: (SM) very light brown, grey and brown, dry, dense, fine grained sands, some clay, no odour. Sitty CLAY: (CL) grey/brown mottled orange/brown and red/brown, slightly moist, stiff, trace rootlets, no odour.	D St	D SI. M	pp (410, 440 410)
							-		As above but grey mottled red/brown and orange/brown and firm.	F	SI. M	
	0	A		A1-TP08_2.0	0		2		As above.	F	SI. M	pp (340, 36 350)
	0	A		A1-TP08_2.5	0		-		Test Pit terminated at 2.5 m bgl. Limit of Investigation.	_		pp (320, 31 310)
							3					
0 1 2 3 A B C D	No visi Slight v Visible Signific ODO No No Slight i Modera	visible on contame cant visit UR RAN n-Natura Non-Nat ate Non-	ence of contamination ontamination ination ble contamination	FIELD DATA. Suv = Uncorrecte Sup = Pocket pei N = SPT blows FPM = Field perm PID = Photoionis reading (p GROUNDW/ = Water leve = Water leve	ed v netro s pe leatio pm, ATE el (st	ane shometer 300m oility on detect V/V) R SYM (atic) uring di	ear ((kPa m ctor	(kPa)	7 = Standard Penetration Test (SPT top = start of N blowcount) V = SPT Spoon Sample (Pushed) Security = SPT Spoon Sample (Pushed) University = SPT Spoon Sample (Pushed) VD (very dense) CO (compact)	0 - 20 - 30 - 50 60 50/150mr	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPr (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 20 (hard) > 200 kf



Project: Contamination Investigation Location:Bankstown Aiport - Site 1

Client: Bankstown Airport Limited Start - Finish Date: 26/05/16 - 26/05/16 Rig: Backhoe

Driller: Ken Coles

Northings: mN Eastings:

Logged: BC Checked:

Job No: IA110700

Bore dia: 450 mm Surface Conditions: Grass RL:

			FIEL	_D DATA				SOIL DESCRIPTION	S(CONE	DIL DITION	COMMENTS
PID (mdd)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, well construction, water and additional observations
	0	A		A1-TP09_0.0	0			FILL: Silty CLAY: (CL) dark brown, dry, stiff, minor fine gravel, trace small to medium fragments of sandstone, trace fine grained sands, minor rootlets, no odour. FILL: Silty CLAY: (CL) grey/brown and red/brown, dry, very stiff, minor fine to medium ironstone gravel, minor small fragments of concrete, sandstone and brick, no odour.	St VSt	D D	
	2 2	A		A1-TP09_ASB_0.2 A1-TP09_0.2	8			Two fragments of asbestos observed and sampled.			
	2	A		A1-TP09_ASB_0.4 A1-TP09_0.5	0	_		Three fragments of asbestos observed and sampled.			
	0	А		A1-TP09_0.7	0			FILL: silty Sandy CLAY: (CL) brown and grey, dry, soft to firm, fine grained sands, no odour.	S-F	D	
	0	A		A1-TP09_1.0	0	1		Silty CLAY: (CL) brown mottled orange/brown, slightly moist, firm, minor rootlets. Medium tree root observed.	F	SI. M	
							-	Test Pit terminated at 1.0 m bgl. Limit of Investigation.			
							-				
						_					
							-				
						2	-				
0 1 2 3	No visi Slight v Visible Signific ODO	visible co contami cant visib UR RAN	ence of contamination ontamination ination le contamination KING	FIELD DATA A Suv = Uncorrecte Sup = Pocket per N = SPT blows FPM = Field perm PID = Photoionis reading (p)	ed vanetro per peab ation pm,	REVIATIOn shear of the shear of	(kPa) Pa) -	7 = Standard Penetration Test (SPT top = start of N blowcount) 8 = SPT Spoon Sample (Pushed) 9 Undense 30 Overy dense 30 Ove	0 - 20 - 30 - 50	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 200
A B C D	Slight I Moder	Non-Nat ate Non-	al odours ural odours Natural odours utural odours	GROUNDWA = Water leve = Water leve = Outfloo	l (st l (du	atic) ıring drillin		= Undisturbed Tube Sample CO (compact) >5 = Disturbed Sample MOISTURE CONDITION D = Dry M = Moist W		n H	(hard) > 200 kPa



Project: Contamination Investigation Location: Bankstown Aiport - Site 1 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 26/05/16 - 26/05/16 Rig: Backhoe

Driller: Ken Coles

Northings: mN Eastings:

Logged: BC Checked:

Bore dia: 450 mm Surface Conditions: Grass RI · SOIL **COMMENTS** FIELD DATA SOIL DESCRIPTION CONDITION visual ranking sample type field tests ground water odour ranking consistency/ density soil type, unified classification, colour, structure, drilling method, well construction, water field test XRF (ppm) log ₽ depth (m) particle characteristics, minor components moisture condition graphic le sample and additional PID (mdd) observations FILL: Silty CLAY: (CL) brown/grey, dry, stiff, minor fine to medium gravel, minor fine to medium grained sands, minor rootlets, A1-TP10_0.0 0 Α no odour. FILL: Silty CLAY: (CL) D brown, grey/brown and orange/brown, dry, very stiff, minor fine gravel, trace fine ironstone gravel, minor fine grained sands, no odour. 0 Α A1-TP10_0.5 FILL: silty Sandy CLAY: (CL) light brown and brown, dry, stiff, fine grained sands, D 0 A1-TP10_0.9 Silty CLAY: (CL) brown, slightly moist, very stiff, minor rootlets, no VSt SI. M odour. pp (480, 470, 510) 0 Α A1-TP10_1.1 As above but grey/brown mottled red/brown and SI. M F orange/brown, firm, no rootlets pp (300, 300, 280) 0 A1-TP10_2.0 Α Silty CLAY: (CL) SI. M grey mottled red/brown and orange/brown, slightly moist, firm, no odour. pp (320, 330, 290) 0 Α A1-TP10_2.5 Test Pit terminated at 2.5 m bgl. Limit of Investigation. 14/7/16 .GPJ SKM_ENVL1.GDT FIELD DATA ABBREVIATIONS
Suv = Uncorrected vane shear (kPa)
Sup = Pocket penetrometer (kPa)
N = SPT blows per 300mm VISUAL RANKING FIELD DATA SYMBOLS DENSITY (N-value) CONSISTENCY (Su) SKM ENV 1 BANKSTOWN SITE 1 No visible evidence of contamination Slight visible contamination = Shear vane test (very loose) <10 VS (very soft) < 12 kPa = Pocket Penetrometer test (loose) 10 - 20 S (soft) 12 - 25 2 Visible contamination
Significant visible contamination FPM = Field permeability
PID = Photoionisation detector = Standard Penetration Test (SPT top = start of N blowcount) MD (medium dense) 20 - 30 (firm) 25 - 50 D (dense) 30 - 50 St (stiff) 50 - 100 ODOUR RANKING reading (ppm, V/V) = SPT Spoon Sample (Pushed) (very stiff) VD (very dense) >50 VSt 100 - 200 No Non-Natural odours Slight Non-Natural odours A B GROUNDWATER SYMBOLS

= Undisturbed Tube Sample

= Disturbed Sample

= Bulk Sample

= Water level (static)

= Water level (during drilling)

= Outflow / Inflow

Moderate Non-Natural odours Strong Non-Natural odours

CD

CO (compact)

MOISTURE CONDITION

D = Dry M = Moist W = Wet

>50/150mn

Н

(hard)

> 200 kPa



Project: Contamination Investigation Location:Bankstown Aiport - Site 1 Job No: IA110700 Client: Bankstown Airport Limited Driller: Ken C Start - Finish Date: 27/05/16 - 27/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Rig: Backhoe Surface Conditions: Grass Northings: mN

Eastings: RL: Logged: BC Checked:

	FIELD DATA			SOIL DESCRIPTION		DIL DITION	COMMENTS			
PID (ppm) visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, we construction, wate and additional observations
1 2 2 2 2 2 2 0 0 0 0 0	A A A A A A A	fie XF	A1-TP11_0.0 A1-TP11_0.3	0 00	1	a de la companya de l	FILL: gravelly Silty CLAY: (CL) brown, dry, very stiff, fine to medium gravel, trace small fragments of sandstone and small aggregate, trace fine grained sands, minor rootlets, no odour. FILL: silty Clayey GRAVEL: (GC) grey, dry, very dense, fine to medium gravel, aggegrate and fragments of asphalt, minor small to medium fragments of concrete and sandstone, no odour. One fragment of asbestos observed and sampled. Large pieces of brick, wood and concrete observed. One fragment of asbestos observed and sampled. FILL: clayey Silty SAND: (SM) grey, dry, dense, fine grained sands, no odour. Silty CLAY: (CL) grey/brown mottled orange/brown, slightly moist, very stiff, minor rootlets, no odour. As above but grey mottled orange/brown and red/brown.	VSt VD VSt VSt	D D SI. M SI. M	pp (540, 530 520) PP (510, 490, 490) PP (330, 320, 360) PP (380, 420, 410)
0 No vis 1 Slight 2 Visible 3 Signifi ODO A No No B Slight C Moder	visible on contame cant visit UR RAN n-Natura Non-Nat ate Non-	ence of contamination ontamination ination ole contamination	FIELD DATA Suv = Uncorrecte Sup = Pocket per N = SPT blows FPM = Field perm PID = Photoionis reading (pr GROUNDWA = Water leve = Water leve	ed vanetro s per neabi satior pm, ATEF	ane shear ometer (kP 300mm ility n detector V/V) R SYMBOI atic)	(kPa) a) >	7 = Standard Penetration Test (SPT top = start of N blowcount) 7 = SPT Spoon Sample (Pushed) 8 = Undisturbed Tube Sample	0 - 20 - 30 - 50 0 0/150mm	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 20 (hard) > 200 kF



Project: Contamination Investigation Location:Bankstown Aiport - Site 1 Job No: IA110700

Client: Bankstown Airport Limited

Driller: Ken Coles

Northings: mN

Eastings: Logged: BC Start - Finish Date: 26/05/16 - 26/05/16 Rig: Backhoe Bore dia: 450 mm Surface Conditions: Grass RL: Checked:

		FIEL	_D DATA				SOIL DESCRIPTION		DIL DITION	COMMENTS
PID (ppm) visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, we construction, water and additional observations
2 2	A A		A1-TP12_0.0 A1-TP12_ASB_0.4 A1-TP12_0.5	0			FILL: gravelly Silty CLAY: (CL) grey/brown, dry, stiff, fine to medium gravel, trace large pieces of asphalt and ceramic pipe, minor small to medium pieces of sandstone, some fine grained sands, minor rootlets, no odour. FILL: Silty CLAY: (CL) grey, brown and red/brown, dry, very stiff, some fine to medium gravel, minor small to medium fragments of sandstone and ironstone, trace medium to large pieces of ceramic tile, minor rootlets, no odour. One fragment of asbestos observed and sampled.	St	D	
0	A		A1-TP12_0.8 A1-TP12_1.0	0	1 <u>.</u>		FILL: Sitty SAND: (SM) very light brown and brown, dry, dense, trace fine gravel, fine grained sands, some clay, no odour. Sitty CLAY: (CL) brown mottled orange/brown, dry, very stiff, minor rootlets, no odour.	D VSt	D D	pp (480, 49 490)
0	А		A1-TP12_2.0	0	- - 2		As above but grey mottled red/brown and orange/brown, slightly moist, stiff, no rootlets.	St	SI. M	pp (380, 40 410)
0	A		A1-TP12_2.5	0			As above. Test Pit terminated at 2.5 m bgl. Limit of Investigation.	St	SI. M	pp (370, 40 380)
					3_					
0 No visi 1 Slight 2 Visible 3 Signific ODO	visible on e contam cant visil UR RAN on-Natura	ence of contamination ontamination ination ble contamination	FIELD DATA Suv = Uncorrect Sup = Pocket pe N = SPT blows FPM = Field perm PID = Photoionis reading (p GROUNDW, = Water leve = Water leve	ed vonetrons per	ane shear ometer (kF r 300mm oility n detector V/V) R SYMBO	(kPa) Pa) >	7 = Standard Penetration Test (SPT top = start of N blowcount) 7 = SPT Spoon Sample (Pushed) 8 = Undisturbed Tube Sample CO (compact) >5	0 - 20 - 30 - 50	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kP (soft) 12 -25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 20 (hard) > 200 ki



Project: Contamination Investigation Location:Bankstown Aiport - Site 1

Client: Bankstown Airport Limited

Driller: Ken Coles

Northings: mN

Logged: BC Start - Finish Date: 30/05/16 - 30/05/16 Rig: Backhoe Eastings: Job No: IA110700 Bore dia: 450 mm Surface Conditions: Grass RL: Checked:

		FIEL	D DATA				SOIL DESCRIPTION		OIL DITION	COMMENTS
visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, well construction, water and additional observations
0	Α		A1-TP13_0.0	0	-		FILL: Sitty CLAY: (CL) dark brown, dry, very stiff, minor fine gravel, minor fine grained sands, minor rootlets, no odour.	VSt	D	
0	А		A1-TP13_0.4, A1-QC05, A1-QC06	0	- -		FILL: clayey Silty SAND: (SM) very light brown and brown, dry, compact, fine grained sands, no odour.	со	D	
			AI-QC00		-		Sandy CLAY: (CL) grey mottled red/brown and orange/brown, slightly moist, very stiff, fine to medium grained sands, no odour.	VSt	SI. M	
0	A		A1-TP13_1.0	0	- 1_ - -					pp (550, 520, 530)
					- - - -		Silty CLAY: (CL) grey mottled red/brown, slightly moist, stiff, trace fine grained sands, no odour.	St	SI. M	
0	Α		A1-TP13_2.0	0	2_ - -		As above but grey mottled orange/brown and red/brown.	St	SI. M	pp (420, 450 430)
0	A		A1-TP13_2.5	0	- - -		Test Pit terminated at 2.5 m bgl. Limit of Investigation.	-		pp (430, 450 450)
					3_					
Slight vis Visible co Significar ODOUF No Non-I Slight No	e evide sible co ontamin nt visib R RANI Natural on-Natu	ence of contamination intamination nation ele contamination KING I odours ural odours	Suv = Uncorrect Sup = Pocket pe N = SPT blows FPM = Field perm PID = Photoionis reading (p GROUNDW)	ed v netr s pe neat satio pm, ATE	vane shear cometer (kP er 300mm bility on detector V/V) ER SYMBOI tatic)	(kPa) a) > LS	 Shear vane test Pocket Penetrometer test Standard Penetration Test (SPT top = start of N blowcount) SPT Spoon Sample (Pushed) Ukery loose) (loose) (mb) (medium dense) (dense) (very dense) (very dense) (compact) 	0 - 20 - 30 - 50 0 0/150mr	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 200 kP
No visible Slight vis Visible co Significar ODOUF No Non-I Slight No Moderate	e evide sible co ontamir nt visib R RANI Natural on-Natue Non-I	en nale K	nce of contamination tamination ation e contamination ING odours	coe of contamination tamination ation e contamination of contamination liNG odours al odours atural odours Suy = Uncorrect Sup = Pocket pe N = SPT blow. FPM = Field pern PID = Photoionis reading (p GROUNDW. Water leve	coe of contamination tamination ation ation e contamination of contamination ling products at ordours at ordours set of the contamination ling contamination ling products at ordours set	ce of contamination tamination ation 2 contamination ation 3 contamination 3 c	Sup = Uncorrected vane shear (kPa)	ce of contamination tamination tamination N = SPT blows per 300mm FPM = Field permeability PID = Photoionisation detector reading (ppm, V/V) GROUNDWATER SYMBOLS at ordours Sup = Pocket penetrometer (kPa) N = SPT blows per 300mm FPM = Field permeability PID = Photoionisation detector reading (ppm, V/V) GROUNDWATER SYMBOLS = Undisturbed Tube Sample	Compact Comp	Sup = Decket penetrometer (kPa) Sup = Pocket penetrometer (kPa) N = SPT blows per 300mm FPM = Field permeability PID = Photoionisation detector reading (ppm, V/V) Security Sup = Vocket penetrometer (kPa) N = SPT blows per 300mm FPM = Field permeability PID = Photoionisation detector reading (ppm, V/V) Security Sup = Vocket penetrometer test Sup = Pocket penetrometer t



Project: Contamination Investigation Location:Bankstown Aiport - Site 1

Client: Bankstown Airport Limited

Driller: Ken Coles

Northings: mN

Logged: BC Start - Finish Date: 26/05/16 - 26/05/16 Rig: Backhoe Eastings: Job No: IA110700 Bore dia: 450 mm Surface Conditions: Grass RL: Checked:

			FIEL	_D DATA				SOIL DESCRIPTION		DIL DITION	COMMENTS
PID (ppm)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, we construction, water and additional observations
	2	A		A1-TP14_0.0 A1-TP14_ASB_0.2	0	-		FILL: Sitty CLAY: (CL) grey/brown, dry, very stiff, some fine to medium gravel, minor rootlets, no odour. Two fragments of asbestos observed and sampled.	VSt	D	
								Trace whole brick and large fragments of concrete observed. FILL: gravelly Silty CLAY: (CL) brown, dry, hard, fine to medium gravel, minor fine ironstone gravel, minor smal to medium fragments of ironstone and asphalt, no odour.	Н	D	
	1	Α		A1-TP14_0.5	0	-		FILL: Silty SAND: (SM) very light brown and brown, dry, dense, fine grained sands, some clay, no odour.	D	D	
						1_		Silty CLAY: (CL) brown mottled orange/brown, slightly moist, stiff, minor rootlets, no odour.	St	SI. M	pp (330, 300
	0	Α		A1-TP14_1.0	0						рр (330, 300 330)
								As above but grey mottled red/brown, firm to stiff, no rootlets.	F - St	SI. M	
	0	Α		A1-TP14_2.0	0	2_					pp (280, 300 270)
						-		As above.	F - St	SI. M	
	0	А		A1-TP14_2.5	0	- -		Test Pit terminated at 2.5 m bgl. Limit of Investigation.			pp (340, 330 320)
						-					
						3_	-				
0 1 2 3	No visi Slight v Visible	isible o contam	lence of contamination ontamination intamination	FIELD DATA. Suv = Uncorrects Sup = Pocket per N = SPT blows FPM = Field perm	ed v netr s pe neat	vane shear rometer (kP er 300mm pility	(kPa) (a) >	= Standard Penetration Test MD (medium dense) 20	0 - 20	VS S F	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50
A B C D	ODOI No Noi Slight I Modera	JR RAN n-Natura Non-Nat ate Non	ble contamination IKING al odours tural odours -Natural odours atural odours	PID = Photoionis reading (p GROUNDW/ W = Water leve W = Water leve W = Outflot	atic pm, ATE I (si	on detector V/V) R SYMBO tatic) uring drillin	LS	SPT top = start of N blowcount) D (dense) 30 = SPT Spoon Sample (Pushed) VD (very dense) >5) - 50 50 50/150mr TION	St VSt	(stiff) 50 - 100 (very stiff) 100 - 20 (hard) > 200 kF



Project: Contamination Investigation Location:Bankstown Aiport - Site 1 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 26/05/16 - 26/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass Northings: mN Eastings:

Logged: BC RL: Checked:

		FIE	LD DATA	,				SOIL DESCRIPTION		DIL	COMMENTS
(ppm) visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water	depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, we construction, wate and additional observations
1 2 2 0 0	A A		A1-TP15_0.0 A1-TP15_ASB_0.2 A1-TP15_0.5 A1-TP15_0.8 A1-TP15_1.0		y_ Oi		5	FILL: Silty CLAY: (CL) grey/brown, dry, very stiff, some fine to medium gravel, trace large pieces of ceramic pipe, minor small to medium fragments of sandstone, trace fine grained sands, minor rootlets, no odour. One fragment of asbestos observed and sampled. FILL: Silty CLAY: (CL) brown, dry, hard, some fine to medium gravel, minor small to medium fragments of sandstone, asphalt and concrete, trace fine ironstone gravel, minor fine grained sands, no odour. Large pieces of steel pipe observed. FILL: Silty SAND: (SM) very light brown and brown, dry, dense, fine grained sands, some clay, no odour. Silty CLAY: (CL) orange/brown mottled brown, slightly moist, very stiff to stiff, minor rootlets, no odour. Test Pit terminated at 1.2 m bgl. Limit of Investigation.	VSt - H	D D Si. M	
0 No v 1 Sligl 2 Visit 3 Sigr OE A No i B Sligl	visible e pht visible ible cont nificant v DOUR R Non-Na pht Non-I	ANKING vidence of contamination e contamination amination visible contamination ANKING tural odours Natural odours on-Natural odours	FIELD DATA Suv = Uncorrecte Sup = Pocket per N = SPT blows FPM = Field perm PID = Photoionis reading (p) GROUNDW/ W = Water leve U = Water leve U = Cutflo	netro s per neabi sation pm, ATEF el (sta	ometer 300m ility n deter V/V) R SYM atic)	r (kPa nm ctor //BOL	a) X	7 = Standard Penetration Test (SPT top = start of N blowcount) V = SPT Spoon Sample (Pushed) Selection = SPT Spoon Sample (Pushed) Selection = SPT Spoon Sample (Pushed) Selection = SPT Spoon Sample (Pushed) VD (very dense) >5 CO (compact) >5	0 - 20 - 30 - 50 0 0/150mm	VS S F St VSt N	CONSISTENCY (Su) (very soft) < 12 kP (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 20 (hard) > 200 kl



Project: Contamination Investigation Location:Bankstown Aiport - Site 1 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 30/05/16 - 30/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass

Northings: mN Eastings:

Logged: BC RL: Checked:

			FIEL	D DATA				SOIL DESCRIPTION		OIL DITION	COMMENTS
PID (ppm)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water	deptin (m) graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, w construction, wate and additional observations
	1	A		A1-TP16_0.0, A1-QC03, A1-QC04	0		-	FILL: gravelly Silty CLAY: (CL) dark grey/brown, dry, very stiff, fine to medium gravel, minor smal to medium fragments of sandstone, asphalt, brick and concrete, minor fine to medium grained sands, minor rootlets, no odour. As above but grey/brown and brown, trace large pieces of brick, sandstone and concrete	VSt	D	
	0	A		A1-TP16_0.8 A1-TP16_1.0	0		1	FILL: clayey Silty SAND: (SM) very light brown and brown, dry, compact, fine grained sands, no odour. Silty CLAY: (CL) brown and dark brown, slightly moist, very stiff, minor rootlets, trace medium to large roots, no odour.	CO	D SI. M	pp (510, 50 500)
								Silty CLAY: (CL) grey mottled red/brown and orange/brown, slightly moist, stiff, no odour.	- St	SI. M	
	0	A		A1-TP16 2.0		:	2	As above but grey mottled red/brown.	St	SI. M	pp (460, 42
	Č							As above.	St	SI. M	430) pp (480, 46
	0	A		A1-TP16_2.5	0	;	- - - - - 3	Test Pit terminated at 2.5 m bgl. Limit of Investigation.	-		pp (480, 46 460)
0 1 2 3	No visi Slight Visible Signific	visible co contam	ence of contamination ontamination ination ole contamination	FIELD DATA Suv = Uncorrect Sup = Pocket pe N = SPT blow FPM = Field pern PID = Photoionis reading (p	ed v netro s pe neab satio	ane shea ometer (r 300mm oility n detecto	ar (kPa) kPa)	Standard Penetration Test (SPT top = start of N blowcount) D (dense) 30	0 - 20 - 30 - 50	VS S F St	CONSISTENCY (Su) (very soft) < 12 kP (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100
A B C D	No No Slight I Moder	n-Natura Non-Nat ate Non-	al odours rural odours -Natural odours atural odours	GROUNDW. Water leve Water leve Water leve Output	ATE el (st el (di	R SYMB atic) uring dril		<u> </u>	0/150mr TION	VSt n H	(very stiff) 100 - 20 (hard) > 200 kl



Project: Contamination Investigation Location:Bankstown Aiport - Site 1 Job No: IA110700 Client: Bankstown Airport Limited Driller: Ken C Start - Finish Date: 27/05/16 - 27/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Rig: Backhoe Surface Conditions: Grass Northings: mN

Eastings: mE RL: Logged: BC Checked:

			FIEL	D DATA				SOIL DESCRIPTION	S(CONI	OIL DITION	COMMENTS
PID (ppm)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, we construction, wate and additional observations
	0	Α		A1-TP17_0.0	С	-		FILL: Silty CLAY: (CL) dark brown, dry, very stiff, minor fine gravel, minor fine to medium grained sands, minor rootlets, no odour.	VSt	D	
						-		Sitty CLAY: (CL) brown, dry, stiff, some fine grained sands, trace rootlets, no odour.	St	D	
	0	А		A1-TP17_0.5	C	-		Silty CLAY: (CL) grey mottled orange/brown and red/brown, slightly moist, firm to stiff, some fine to medium grained sands, no odour.	F - St	SI. M	
	0	A		A1-TP17_1.0	C	_ 1_ -		Test Pit terminated at 1.0 m bgl. Limit of Investigation.			
						-					
						-					
						-					
0 1 2 3 A B	No visi Slight v Visible Signific ODOL No No	visible of contam cant visil UR RAN n-Natura	ence of contamination ontamination ination ble contamination	FIELD DATA Suv = Uncorrect Sup = Pocket pe N = SPT blow FPM = Field pern PID = Photoionis reading (p GROUNDW = Water leve	eneti s pe neal satio pm, ATE	rometer (kP er 300mm bility on detector (V/V) ER SYMBOL	a) ? - - -S [= Pocket Penetrometer test	10 0 - 20	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kP (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 20 (hard) > 200 ki
C D	Modera	ate Non	-Natural odours atural odours	= Water leve	el (d	uring drilling	g) [= Disturbed Sample MOISTURE CONE = Bulk Sample D = Dry M = Moist			



RL:

Project: Contamination Investigation Location:Bankstown Aiport - Site 1 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 27/05/16 - 27/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass

Northings: mN Eastings:

Logged: BC Checked:

			FIEL	D DATA				SOIL DESCRIPTION		OIL DITION	COMMENTS
PID (ppm)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, wel construction, water and additional observations
	0	А		A1-TP18_0.0	С	- -		FILL: Silty CLAY: (CL) grey/brown, dry, stiff, some fine gravel, minor rootlets, no odour.	St	D	
	0	A		A1-TP18_0.5	C	- -)		FILL: Silty CLAY: (CL) brown, dry, very stiff, minor fine gravel, trace fine ironstone gravel, no odour.	VSt	D	
						-		FILL: clayey Silty SAND: (SM) very light brown and brown, dry, dense, fine grained sands, no odour.	D	D	
	0	A		A1-TP18_0.8 A1-TP18_1.0	C	- 1_		Silty CLAY: (CL) brown mottled orange/brown and dark brown, slightly moist, firm, trace rootlets, no odour.	F	SI. M	
						-		Test Pit terminated at 1.2 m bgl. Limit of Investigation.			
						-					
						-					
						2_					
						-					
0		AL RAN		FIELD DATA	ed v	ane shear	(kPa)	FIELD DATA SYMBOLS DENSITY (N-val			CONSISTENCY (Su)
0 1 2 3 A B	Slight v Visible Signific ODOL No Not Slight N	visible o contam cant visi UR RAN n-Natura Non-Nat	ble contamination NKING al odours tural odours	Sup = Pocket pe N = SPT blow FPM = Field perr PID = Photoioni reading (p	eneti s pe neal satio pm ATE	rometer (kP er 300mm bility on detector , V/V) ER SYMBOI	LS	= Pocket Penetrometer test 7 = Standard Penetration Test (SPT top = start of N blowcount) 1 = SPT Spoon Sample (Pushed) 2 = Undisturbed Tube Sample L (loose) 11 MD (medium dense) 22 D (dense) 33 VD (very dense) > CO (compact) >	10 0 - 20 0 - 30 0 - 50 50 50/150mr	VS S F St VSt H	(very soft) < 12 kPa
C D	Modera	ate Non	-Natural odours atural odours	= Water lev	el (d	luring drilling	g) [= Disturbed Sample MOISTURE COND = Bulk Sample D = Dry M = Moist			_



Project: Contamination Investigation Location:Bankstown Aiport - Site 1 Job No: IA110700

Client: Bankstown Airport Limited Driller: Ken Co Start - Finish Date: 30/05/16 - 30/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass Northings: mN

Eastings:

Logged: BC RL: Checked:

			FIEI	LD DATA				SOIL DESCRIPTION		OIL DITION	COMMENTS
(mdd)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, we construction, wate and additional observations
	0	A		A1-TP19_0.0, A1-QC01, A1-QC02 A1-TP19_0.3	0			FILL: Silty CLAY: (CL) dark brown, dry, stiff, minor fine gravel, minor fine grained sands, some rootlets, no odour. FILL: clayey Silty SAND: (SM) very light brown and brown, dry, compact, fine grained sands, no odour.	St	D D	
	0	A		A1-TP19_0.5	0	-		Sandy CLAY: (CL) grey mottled orange/brown and red/brown, slightly	VSt	SI. M	
	0	0 A		A1-TP19_0.7 - 1.1		1_		moist, very stiff, fine grained sands, no odour.			pp (490, 520 510)
						-		Silty CLAY: (CL) grey mottled red/brown, slightly moist, stiff, no odour.	_ St	SI. M	
	0	А		A1-TP19_2.0	0	2_		As above but grey mottled red/brown and orange/brown.	St	SI. M	pp (420, 44 440)
	0	A		A1-TP19_2.5	0	-		Test Pit terminated at 2.5 m bgl. Limit of Investigation.			pp (370, 37 360)
						3_					
0 1 2 3 A B C	No visi Slight v Visible Signific ODOI No No Slight I Modera	visible of contame cant visil UR RAN n-Natura Non-Nat ate Non-	ence of contamination ontamination ination ole contamination	FIELD DATA Suv = Uncorrect Sup = Pocket pe N = SPT blows FPM = Field perm PID = Photoionis reading (p GROUNDW W = Water leve W = Outfle	netr s pe neat satio pm, ATE	rometer (kF r 300mm bility on detector V/V) ER SYMBO	Pa)	= Pocket Penetrometer test = Standard Penetration Test (SPT top = start of N blowcount) = SPT Spoon Sample (Pushed) = Undisturbed Tube Sample L (loose) MD (medium dense) 20 D (dense) VD (very dense) CO (compact)	10) - 20) - 30) - 50 50 50/150mr	VS S F St VSt H	CONSISTENCY (Su) (very soft) < 12 kPr (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 20 (hard) > 200 kF



Project: Contamination Investigation Location:Bankstown Aiport - Site 1 Job No: IA110700 Client: Bankstown Airport Limited Driller: Ken C Start - Finish Date: 30/05/16 - 30/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles 6 Rig: Backhoe Surface Conditions: Grass Northings: mN

Eastings: r

Logged: BC Checked:

			FIEL	.D DATA			SOIL DESCRIPTION	SC COND	DIL DITION	COMMENTS
Old)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, well construction, water and additional observations
	0	A		A1-TP20_0.0	-		FILL: Silty CLAY: (CL) dark brown, dry, stiff, minor fine gravel, minor fine grained sands, minor rootlets, no odour.	St	D	
	1	Α		A1-TP20_0.5	- - - -		FILL: Silty CLAY: (CL) grey/brown and grey, dry, hard to very stiff, some fine to medium gravel, minor small fragments of sandstone, trace large pieces of sandstone, minor fine grained sands, no odour.	H - VSt	D	
	0	Α		A1-TP20_0.8			FILL: clayey Silty SAND: (SM) very light brown and brown, dry, compact, fine grained sands, no odour.	со	D	
	0	Α		A1-TP20_1.1			Silty CLAY: (CL) grey mottled orange/brown and red/brown, slightly moist, very stiff, trace fine grained sands, minor rootlets, no odour.	VSt	SI. M	pp (530, 520, 510)
					-		As above but stiff.	St	SI. M	
					- 2		As above but firm to soft.	F-S	SI. M	
	0	Α		A1-TP20_2.0	-		As above but trace fine ironstone gravel and small	F-S	SI. M	pp (260, 260, 280)
	0	Α		A1-TP20_2.5	-		fragments of highly weathered ironstone.			pp (320, 300, 300)
					-		Test Pit terminated at 2.5 m bgl. Limit of Investigation.			
14/7/16					3_					
J SKM_ENVL1.GDT					-					
KM ENV 1 BANKSTOWN SITE 1,GPJ SKM_ENVL1,GDT 14/7/16 G O G B C C C C C C C C C C C C C C C C C C	No visi Slight v Visible Signific ODO No No Slight I Moder	visible on contame cant visit JR RAN n-Natura Non-Nat ate Non-	ence of contamination ontamination ination ole contamination	FPM = Field perm PID = Photoionis reading (p GROUNDW) W = Water leve	netrometer (kP. s per 300mm neability sation detector pm, V/V) ATER SYMBOL	ra) 2	= Standard Penetration Test (SPT top = start of N blowcount) SPT Spoon Sample (Pushed) UD (very dense) Spt Spoon Sample (Pushed) UD (very dense) Spt Spoon Sample CO (compact) Spt Spoon Sample CO (compact) Spt Spoon Sample Spt Spoon Sample CO (compact) Spt Spoon Sample Spt	0 - 20 - 30 - 50 0 0/150mm	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 200 (hard) > 200 kPa

NON-CORE DRILL HOLE - GEOLOGICAL LOG

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

ANGLE FROM HORIZONTAL: 90°

HOLE NO : A1-BH1

FILE / JOB NO : IA110700 SHEET : 1 OF 2

POSITION : SURFACE ELEVATION:

RIG TYPE: Geoprobe 7822DT MOUNTING: Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 24/5/16 DATE COMPLETED: 24/5/16 DATE LOGGED : 24/5/16 LOGGED BY: MG CHECKED BY: JK

			ILLIN		1		-	MATERIAL		l.	
& CASING OG	WATER SS	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	, DЕРТН (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
					0.0 -			Silty SAND: pale grey, fine to medium grained sand, trace of clay, fine to medium gravel and rootlets 0.30m	D		FILL
				0.50m		× ×		Silty CLAY: red-brown, grey, medium to high plasticity, trace of rootlets			ALLUVIUM
				SPT 3,5,4 N=9		× ×	CI-CH		D - M		
				0.95m	-	× _		0.90m			
					1.0 -	<u>*</u> _ <u>*</u>		Silty CLAY: grey, brown, high plasticity			
						<u> </u>					
				1.50m SPT	-	<u> </u> *					
				4,5,6 N=11		×					
				1.95m	2.0 -	×					
					.	× ×					
						<u>x</u>	1				
						<u> </u>					
						<u> </u>					
				3.00m SPT 3,5,5	3.0 -	<u>× </u>					
				N=10							
		VE		3.45m	-	<u> </u>					
					-					St	
					4.0 -	<u>x</u>	СН				
					4.0	<u> </u>		At 4.0m, as above but trace of ironstone gravel			
— AD/T						<u> </u>			M		
				4.50m SPT 3,5,6 N=11	1.				IVI		
						<u></u>					
				4.95m	5.0 -	× -					
							1				
					-	×	-				
				6.00m	6.0						
				SPT 4,5,7 N=12	0.0						
				6.45m		x					
] .	x	-				
						x					
					7.0 —	<u> </u>		7.00m Clayey SAND: red-brown, grey, medium to coarse grained sand, with	-		
							sc	ironstone gravel			
		E		7.50m SPT				7.50m	-	MD	
				5,12,14 N=26	-		sc	Clayey SAND: grey, medium to coarse grained sand			
				7.95m		1 = [30				

NON-CORE DRILL HOLE - GEOLOGICAL LOG

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

FILE / JOB NO : IA110700 SHEET : 2 OF 2

HOLE NO : A1-BH1

POSITION : SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

RIG TYPE: Geoprobe 7822DT MOUNTING: Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 24/5/16 DATE COMPLETED: 24/5/16 DATE LOGGED : 24/5/16 LOGGED BY: MG CHECKED BY: JK

<u> </u>		DF	RILLIN					MATERIAL			
BRILLING & CASING	WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DЕРТН (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
		E			- 8.0 -		sc	Clayey SAND: grey, medium to coarse grained sand (continued)		MD	ALLUVIUM -
AD/T					9.0 —			Silty CLAY: red-brown, grey, high plasticity, trace of ironstone gravel	М		- - -
		VE		9.50m SPT 4,6,10 N=16	- -		СН			St	-
<u> </u>	-			9.95m	10.0 —	× × 		9.95m End of borehole at 9.95m, target depth			-
					-						-
					11.0 —						- -
					-						- - -
					12.0 — -						_ -
					13.0 —						- - -
					-						
					14.0 —						_
3					-						-
					15.0 — -						- -
See					-						- -
See detai & ba	Expla ils of a sis of	natory abbrev descr	Note: riation: iptions	s for s	16.0						

POSITION :

NON-CORE DRILL HOLE - GEOLOGICAL LOG

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

SURFACE ELEVATION:

ANGLE FROM HORIZONTAL: 90°

HOLE NO : A1-BH2

FILE / JOB NO : IA110700 SHEET : 1 OF 2

RIG TYPE: Geoprobe 7822DT MOUNTING: Track CONTRACTOR: Epoca Environmental DRILLER: BD

DATE STARTED: 25/5/16 DATE COMPLETED: 25/5/16 DATE LOGGED : 25/5/16 LOGGED BY: MG CHECKED BY: JK

			ILLIN		1		7	MATERIAL	1		
& CASING O	WATER SS	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	0.0 DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
¥ E					- 0.0			Silty CLAY: pale grey, low plasticity, with fine grained sand, trace of fine to medium gravel and rootlets	D		FILL
				0.50m SPT 3,4,4 N=8	-			Silty CLAY: brown, medium to high plasticity, trace of fine to medium gravel and rootlets	D - M		
				0.95m	1.0 —	× _		Silty CLAY: grey, brown, high plasticity, trace of ironstone gravel			ALLUVIUM
				1.50m SPT		x					
				3,6,9 N=15 1.95m 2.00m		X					
				U 2.40m	2.0 -						
						×					
				3.00m SPT 3,6,7 N=13	3.0 -	x					
		VE		3.45m		x					
			Not Observed		4.0 -	x					
—— AD/T —			z	4.50m		- x - x - x	СН		М	St	
				SPT 3,5,8 N=13	.	x x x		From 4.5-5.0m, as above but trace of fine grained sand			
				4.5011	5.0 -	X					
					-	× _ ×					
				6.00m SPT 3,6,8 N=14	6.0	× ×					
				6.45m							
					7.0	x					
					-	x					
		Е		7.50m SPT 4,6,10 N=16	┪.	 					
				7.95m		× ×					

NON-CORE DRILL HOLE - GEOLOGICAL LOG

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

SHEET: 2 OF 2

HOLE NO : A1-BH2

FILE / JOB NO: IA110700

POSITION : SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

RIG TYPE: Geoprobe 7822DT MOUNTING: Track CONTRACTOR: Epoca Environmental DRILLER: BD

DATE STARTED: 25/5/16 DATE COMPLETED: 25/5/16 DATE LOGGED : 25/5/16 LOGGED BY: MG CHECKED BY: JK

	DF	RILLIN	IG				MATERIAL			
PROGRESS				Ê	٥	NOIL .		₩ X	, π ^C C	
DRILLING & CASING WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTUR	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
- АБЛ	VE	Not Observed	9.50m SPT 4.5.7 N=12	9.0 —	x - x - x - x - x - x - x - x - x - x -	СН	Silty CLAY: grey, brown, high plasticity, trace of ironstone gravel (continued)	М	St	ALLUVIUM
 			9.95m	10.0 —	×		9.95m End of borehole at 9.95m, target depth			-
				- - - 11.0 —						- - -
				-						-
				12.0 —						- - -
				13.0 —						- -
				- 14.0 —						- - -
See Expla				- - 15.0 —						- - -
See Expladetails of	anatory	Note	s for	16.0 —						-

POSITION :

NON-CORE DRILL HOLE - GEOLOGICAL LOG

SURFACE ELEVATION:

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

ANGLE FROM HORIZONTAL: 90°

HOLE NO : A1-BH3

FILE / JOB NO: IA110700 SHEET: 1 OF 2

RIG TYPE: Geoprobe 7822DT MOUNTING: Track CONTRACTOR: Epoca Environmental DRILLER: BD

DATE STARTED: 26/5/16 DATE COMPLETED: 26/5/16 DATE LOGGED : 26/5/16 LOGGED BY: MG CHECKED BY: JK

D00	DE00		ILLIN		1	<u> </u>							
& CASING	WATER SSE	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	O DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations		
•					0.0 -			Gravelly CLAY: brown, low plasticity, fine to medium gravel, with fine grained sand and rootlets	D		FILL		
¥ 				0.50m	0.50m				0.30m Silty CLAY: brown, medium plasticity, trace of organics				
1				SPT 3,3,4 N=7	1 .				D - M				
					-			0.90m					
				0.95m	1.0 —	×		Silty CLAY: grey, brown, high plasticity			ALLUVIUM		
							-					F	
				1.50m SPT	-								
				3,7,10 N=17		×							
				1.95m	2.0 —								
						×							
					-	× ×							
					-	× ×							
					-	×							
				3.00m SPT 4,6,11 N=17	3.0 —	×							
					-	× _ ×							
				3.45m	1 .	<u>×</u> _ ×							
		VE	erved			<u>×</u> _ ×							
			Not Observed		4.0 —	× _ ×							
AD/T —			_		-								
Ì				4.50m SPT			СН		М	St - VSt			
				3,6,9 N=15	-	<u> </u>				VSI			
				4.95m 5.0 —	X								
					3.0	<u> </u>							
						<u> </u>							
						<u>×</u>							
					-	<u>×</u> _							
				6.00m SPT	6.0	×	_ <u></u>						
				3,5,9 N=14	-	×							
				6.45m	-	X							
					-								
						X							
					7.0 —								
				7.50m SPT 5,10,11	-			At 7.5m, as above but trace of ironstone gravel					
		Е		5,10,11 N=21						VSt			
		natory		7.95m	8.0-	LX X							

POSITION :

NON-CORE DRILL HOLE - GEOLOGICAL LOG

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

HOLE NO : A1-BH3

FILE / JOB NO : IA110700 SHEET : 2 OF 2

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: BD

DATE STARTED: 26/5/16 DATE COMPLETED: 26/5/16 DATE LOGGED : 26/5/16 LOGGED BY: MG CHECKED BY: JK

		RILLIN		ı		- I	MATERIAL		l.	I
& CASING WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
				8.0 —	<u>× _</u>		Silty CLAY: grey, brown, high plasticity (continued)			ALLUVIUM
	E			-	<u></u>					
		_		-	<u> </u>					
		Not Observed		-	×					
- AD/T		Not		9.0 —	× ×	СН		М	VSt	
	VE			-	× _ ×					
			9.50m SPT 3,7,10 N=17							
			N=17	-						
<u>*</u>			9.95m	10.0 —			9.95m End of borehole at 9.95m, target depth			
				-	-					
				-						
				11.0 —	-					
				-						
				-	-					
				-						
				12.0 —						
				-						
				-						
				-	-					
				13.0 —						
				- 13.0						
				-						
				-						
				-	1					
				14.0 —						
				-	-					
				-						
				-	-					
				15.0 —	-					
				-						
				-						
	<u> </u>	L	s for s	16.0 —						

NON-CORE DRILL HOLE - GEOLOGICAL LOG

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

HOLE NO : A1-BH4 FILE / JOB NO : IA110700 SHEET : 1 OF 2

POSITION : SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 24/5/16 DATE COMPLETED: 24/5/16 DATE LOGGED : 24/5/16 LOGGED BY: MG CHECKED BY: JK

			ILLIN		1		-	MATERIAL	1	I.	T									
& CASING DO	WATER SS	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	5 DEРТН (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations									
1					0.0 —			Silty CLAY: pale grey, low plasticity, with medium gravel, fine grained sand, trace of rootlets	D		FILL									
						× ×		Silty CLAY: brown, grey, medium plasticity, trace of rootlets			ALLUVIUM									
\vdash				0.50m SPT 2,3,3	-	×			D - M											
			2,3,3 N=6	-	<u></u>															
				0.95m	-		CI-CH			F										
					1.0 —			At 1.0m, as above but clay is high plasticity												
					-	<u>*</u>														
				1.50m	.50m	x		1.50m												
				SPT 4,6,7 N=13	-	×		Silty CLAY: grey, red-brown, high plasticity, trace of fine grained sand												
			3.00m SPT 3.4,6 N=10 3.45m	3.00m SPT 3.4.6			-	×												
						1.95m	2.0 —	×												
							-	<u> </u>	СН											
											-	<u> </u>								
						-	<u> </u> *×													
							3.00m	3.0 -	<u>×</u> _		3.00m									
															3,4,6 N=10	.			Silty CLAY: grey, brown, high plasticity	
					×															
		VE		0.40111	1 .	×														
						×														
						×														
					4.0 —	<u>×</u>														
- AD/T			4.50m SPT 3,5.9 N=14 4.95m		-					St										
						× ×	× 		М											
				3,5,9		×														
				4.95m	-															
				5.0 —	5.0 —	5.0 —	5.0 —	5.0 —	5.0 —	5.0 —	5.0 —	5.0 —	5.0 —	5.0 —	т сн	CH				
						× ×														
						<u>×</u> _														
					-	 														
					-	<u>×</u>														
				6.00m SPT	6.0 —	× ×														
				4,6,8 N=14	-	× -														
				6.45m	_	 														
					-	<u> </u>														
					.	<u>×</u> _														
					7.0 —	<u> </u>		7.00m	1											
					.			Clayey SAND: grey, brown, medium to coarse grained sand, trace of ironstone gravel												
					.	[
		E		7.50m SPT 6,9,21	┨ .	 	sc			MD - D	7.50: SPT bouncing									
				N=30																
				7.95m]															

NON-CORE DRILL HOLE - GEOLOGICAL LOG

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

FILE / JOB NO : IA110700 SHEET : 2 OF 2

HOLE NO : A1-BH4

POSITION : SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 24/5/16 DATE COMPLETED: 24/5/16 DATE LOGGED : 24/5/16 LOGGED BY: MG CHECKED BY: JK

		DRIL						MATERIAL			
BRILLING & CASING DRILLING	WATER SS SOUTH	PENETRATION	LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
8		E			8.0 -		sc	Clayey SAND: grey, brown, medium to coarse grained sand, trace of ironstone gravel (continued)		MD - D	ALLUVIUM -
——АД/Т	V	/E			9.0 —	X	СН	Silty CLAY: grey, red-brown, high plasticity, trace of ironstone gravel	М	VSt	- -
V			\$ 4 N	9.50m SPT I,7,11 N=18	- - 10.0 —	× × ×		9.95m End of borehole at 9.95m, target depth			- - -
					- - -						
					11.0 — - -						<u>-</u>
					12.0 — -						- -
					13.0 — -						- - -
See Ex					- 14.0 — -						- - -
					- 15.0 —						- -
See Fy	xnlana	tory N	lotes	for	- - - 16.0 —						- - -
See Ex details & basis	xplanat of abb s of de	tory Noreviates script	otes tions ions.	tor							

POSITION :

NON-CORE DRILL HOLE - GEOLOGICAL LOG

SURFACE ELEVATION:

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

SHEET: 1 OF 2 ANGLE FROM HORIZONTAL: 90°

HOLE NO : A1-BH5

FILE / JOB NO: IA110700

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: BD

DATE STARTED: 25/5/16 DATE COMPLETED: 25/5/16 DATE LOGGED : 25/5/16 LOGGED BY: MG CHECKED BY: JK

	DRILLING MATERIAL BRESS Z E S C S S S S S S S S S S S S S S S S S									I.	I					
& CASING O	WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations					
1		н			0.0			Silty CLAY: brown, low plasticity, with fine to coarse gravel and rootlets			FILL					
— HA		E		0.50m				0.45m	D							
1				SPT 5,8,9 N=17	1 .			Silty SAND: pale grey, fine grained sand, trace of clay and rootlets								
				0.95m				0.80m Silty CLAY: brown, red-brown, medium plasticity, trace of fine gravel	D - M		ALLUVIUM					
				0.00111	1.0 -	× ×	1.00r	Silty CLAY: grey, red-brown, high plasticity, trace of ironstone gravel								
						×										
				1.50m SPT 2.4.7	┨ .	× ×										
				2,4,7 N=11		× ×										
				1.95m	1.95m	1.95m	1.95m	1.95m	1.95m	2.0 -	<u></u>	СН				
								<u></u>								
					-	×										
						×				St						
				3.00m SPT	3.0 -	× _		3.00m								
				3,6,8 N=14		× -		Silty CLAY: grey, high plasticity								
				3.45m		×										
			,eq		-	<u></u>										
			Not Observed		4.0 -	×										
— т		\/E	Š		1.0	×										
—— AD/T		VE		4.50m		× _ ×										
				SPT 3,6,11 N=17] .	X			M							
				4.95m	95m 5.0 —	<u></u>										
						× -										
							 				VSt					
						<u>x</u>	СН									
						× _ ×										
				6.00m SPT 3,6,8 N=14	6.0 -	 - x- x-										
				6.45m	1 .	<u> </u>		From 6.5-7.5m, as above but with ironstone gravel								
						×										
					7.0 —	×				St						
					.	<u>x</u>										
				7.50m SPT	-	X										
				4,5,9 N=14		X X										
				7.95m	8.0-	× ×										

NON-CORE DRILL HOLE - GEOLOGICAL LOG

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

HOLE NO : A1-BH5 FILE / JOB NO : IA110700 SHEET : 2 OF 2

POSITION : SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: BD

DATE STARTED: 25/5/16 DATE COMPLETED: 25/5/16 DATE LOGGED : 25/5/16 LOGGED BY: MG CHECKED BY: JK

		RILLIN		1		z	MATERIAL		l.	<u> </u>
& CASING WATER	― 일 j	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	, DEРТН (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
				8.0 —	×		Silty CLAY: grey, high plasticity (continued)			ALLUVIUM
				-	×					
		٦		-	×					
		Not Observed		-	<u> </u>					
	VE	Not		9.0 —	- ×	CH		М	St	
					×					
			9.50m SPT 3,6,9 N=15	-	×					
,			9.95m	-	×		9.95m			
				10.0 —			End of borehole at 9.95m, target depth			
]					
				-	-					
				-	-					
				11.0 —	1					
				-	-					
				-	-					
				12.0 —	-					
				-	-					
				_	-					
				13.0 —	1					
				-	1					
				-						
				-	-					
				14.0 —	-					
				-	-					
				-	-					
				15.0 —	-					
				-	1					
]					
				-	-					
		y Note viation ription] _{16.0} —						

NON-CORE DRILL HOLE - GEOLOGICAL LOG

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: BD DATE STARTED: 26/5/16 DATE COMPLETED: 26/5/16 DATE LOGGED: 26/5/16

LOGGED BY: MG

CHECKED BY: JK

HOLE NO : A1-BH6

FILE / JOB NO: IA110700 SHEET: 1 OF 2

ROGI	RESS		ILLIN #		_	z	MATERIAL		≿	
& CASING	WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	O DEPTH (m)	GRAPHIC LOG CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
<u>₹</u>					0.0 -		Silty CLAY: brown, low plasticity, with fine to medium gravel and rootlet:			FILL
				0.50m	-			D		
				SPT 6,8,8 N=16] .		0.60m Silty SAND: pale grey, fine grained sand, trace of fine to medium grave	ı		
				0.95m	-		0.80m and clay Silty CLAY: brown, medium plasticity, trace of rootlets	D - M		
					1.0 -	×	1.10m Silty CLAY: grey, brown, high plasticity			ALLUVIUM
				1.50m	-	× ×				
				SPT 2,4,5 N=9] .					
				1.95m						
					2.0				St	
					-	×				
					-					
					-	— × сн				
				3.00m SPT 4,9,11 N=20	3.0 -					
		VE		3.45m		×				
] .	<u>×</u>				
			Not Observed		-	× ×				
- AD/ I -			Not O		4.0 —					
						×				
				4.50m SPT 4,8,11 N=19	-	× ×	4.50m Silty CLAY: grey, red-brown, high plasticity, with ironstone gravel	м		
				4.95m	-	 				
				4.5011	5.0 —					
					-	<u>×</u> сн				
									VSt	
					-	<u> </u>				
				6.00m SPT 4,7,9 N=16	6.0	X	6.00m Silty CLAY: grey, brown, high plasticity			
					-					
		-		6.45m	1 .	 X				
					-	<u></u>				
					7.0 —	<u>х </u>				
		Е			-					
				7.50m SPT 4,7,10 N=17						
					-	<u> </u>				
	volar	natory	Note	7.95m	8.0 –	<u>×</u>				

NON-CORE DRILL HOLE - GEOLOGICAL LOG

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

ANGLE FROM HORIZONTAL: 90°

HOLE NO : A1-BH6

FILE / JOB NO: IA110700 SHEET: 2 OF 2

POSITION : SURFACE ELEVATION:

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: BD

		RILLIN		1	!	z 1	MATERIAL		l.	Ι
% CASING WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	, DЕРТН (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
				8.0 —	<u>× _</u>		Silty CLAY: grey, brown, high plasticity (continued)			ALLUVIUM
				-						
		Q		-	×					
<u> </u>		Not Observed		-	× _				VSt	
AD/I	E	Not		9.0 —		CH		M		
					<u> </u>					
			9.50m SPT 3,6,9 N=15	-	×					
			9.95m	-	x		9.95m		St	
•			J.JJIII	10.0 —	- ×		End of borehole at 9.95m, target depth			
				_	-					
				-	-					
				11.0 —	1					
				-	1					
				-	-					
				12.0 —	-					
				-	1					
				-						
				13.0 —	-					
				-	1					
					-					
				14.0 —	-					
				-	1					
				-						
					_					
				15.0 —	-					
				-	1					
				-]					
				-						
		Note iation ptions] _{16.0} —						

NON-CORE DRILL HOLE - GEOLOGICAL LOG

SURFACE ELEVATION:

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

ANGLE FROM HORIZONTAL: 90°

HOLE NO : A1-BH7

FILE / JOB NO: IA110700 SHEET: 1 OF 2

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

- DOO	DEOO		RILLIN				z	MATERIAL	T	<u></u>	
& CASING O	WATER SSE	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	O DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
.HA —		E			-			Gravelly CLAY: brown, low plasticity, fine to medium gravel, with rootlets, trace of debris (wood fragments) 0.35m	D		FILL
v.				0.50m		×		Silty CLAY: grey, brown, medium plasticity, trace of rootlets			ALLUVIUM
1				SPT 4,6,7 N=13	-	×	CI		D - M		
				0.95m	-	<u> </u>		0.90m			
					1.0 —	<u> </u>		Silty CLAY: grey, brown, high plasticity			
					-	×					
				1.50m SPT	-	×					
				3,3,6 N=9	-	×					
				1.95m] ·	<u></u>					
					2.0 —	x					
						×					
						×					
						<u></u>					
				3.00m	3.0 —	×					
				SPT 3,3,6 N=9	-	×	СН				
				3.45m	-	×					
] -	×					
			served		-	×					
			Not Observed		4.0 —	<u> </u>					
AD/T —		VE	_		-	<u> </u>				St	
A				4.50m	-	<u> </u> *×			M		
				SPT 3,5,6 N=11] -	× ×					
				4.95m	-	×					
				1.00111	5.0 —	×					
					-	<u></u>					
					-	×		5.50m	-		
					-	<u> </u>		Silty CLAY: grey, red-brown, high plasticity, trace of ironstone gravel			
				6.00m							
				SPT 4,6,8 N=14	6.0	<u> </u>					
					1	<u>×</u> _×					
				6.45m	1 .	<u>× </u>					
						<u> </u>	СН				
					7.0 —	x					
						× -					
					-						
				7.50m SPT 4,6,9	1 .						
				4,6,9 N=15	-	× _ ×					
				7.95m	8.0 —	×					

NON-CORE DRILL HOLE - GEOLOGICAL LOG

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

HOLE NO : A1-BH7 FILE / JOB NO : IA110700 SHEET : 2 OF 2

POSITION : SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

	D	RILLIN	NG				MATERIAL			
DRILLING & CASING & CASING	WATER SS SS DRILLING DRILLING	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
8				- 8.0 - -	× × × × × × × × × _ = × _ × _	CH	Silty CLAY: grey, red-brown, high plasticity, trace of ironstone gravel (continued)		St	ALLUVIUM -
——АД/Т	VE	Not Observed		9.0	× × × × × × ×		Silty CLAY: grey, brown, high plasticity, with ironstone gravel, trace of sand	М	\ (\)	- -
			9.50m SPT 5,9,12 N=21	-	x x x x x x x x	СН	0.05m		VSt	
			9.95m	10.0 —	<u> </u>		9.95m End of borehole at 9.95m, target depth			- -
				11.0 —						- -
				-						- -
				12.0 —						
				- 13.0 —						- - -
,				-						-
See Ex				14.0 —						
				- 15.0 —						- - -
				-						
See Ex details & basis	xplanator of abbre s of desc	y Note viation ription	es for is s.	1 16.0 ─						

NON-CORE DRILL HOLE - GEOLOGICAL LOG

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

HOLE NO : A1-BH8

FILE / JOB NO: IA110700 SHEET: 1 OF 2

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

POO	RESS		ILLIN «				z	MATERIAL		>	
& CASING DO	WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	O DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
HA —					-			Gravelly CLAY: brown, low plasticity, fine to medium gravel, with rootlets 0.30m	D		FILL
<u> </u>		E		0.50m SPT	-			Silty CLAY: brown, low to medium plasticity, trace of rootlets and black vitreous material	М		
				SPT 4,10,7 N=17	-			0.70m Silty SAND: pale grey, fine grained sand, trace of clay	D		
				0.95m	1.0 —	× ×		1.00m Silty CLAY: brown, medium plasticity			ALLUVIUM
				1.50m	-	 	CI		D - M		
				SPT 2,4,6 N=10	-	<u>~</u> _ ×		At 1.5, as above but trace of rootlets 1.70m			
				1.95m 2.00m	2.0 —	×		Silty CLAY: grey, red-brown, high plasticity			
					-	^ 					
				2.50m	-	 					
				3.00m	-	x					
				SPT 4,6,10 N=16	3.0 —	×					
				3.45m	-	×					
			Not Observed		-	×					
			Not O		4.0 —	~ - - ×					
—— AD/T		VE		4.50m	-	<u> </u>				St	
				SPT 3,6,7 N=13	-	^ 					
				4.95m	5.0 —	x	CH		М		
					-	x					
					-	X					
				6.00m SPT	6.0						
				3,5,8 N=13	-	×					
				6.45m	-	x x					
					7.0	x					
					-	×					
				7.50m SPT 3,5,7	-	<u>x </u>					
				3,5,7 N=12 7.95m	-	x 					
⊥_ See l	Expla	natory	Note		Ⅎ 8.0ー						

NON-CORE DRILL HOLE - GEOLOGICAL LOG

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

HOLE NO : A1-BH8

FILE / JOB NO : IA110700 SHEET : 2 OF 2

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

			ILLIN		I		z	MATERIAL		l_	
& CASING 50	WATER SS	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
so.					- 8.0 — - -	x _x _x		Silty CLAY: grey, red-brown, high plasticity (continued)		-	ALLUVIUM
		VE	Not Observed		-	x _ x _ x _ x _ x _ x _ x _ x _ x _ x _	СН		М	St	
		VL	No	9.50m	9.0 —	× 	011			Oi.	
1				SPT 4,5,9 N=14 9.95m	- - 10.0 —	 x 		9.95m End of borehole at 9.95m, target depth			
					-						
					11.0 —						
					-						
					12.0 —						
					-						
					13.0 —						
					-						
					14.0 —						
					-						
					15.0 —						
					-						
				s for s	- 16.0 —						

NON-CORE DRILL HOLE - GEOLOGICAL LOG

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

HOLE NO : A1-BH9 FILE / JOB NO: IA110700

SHEET: 1 OF 2

POSITION : SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: BD

	DF	RILLIN	NG				MATERIAL			
ROGRESS	ION IG	ATER	S & STS	(E)	೦	TION	MATERIAL PERCENTION	2 N	Z UC≺	
& CASING WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	O DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	
¥ H				-		> > >	Silty CLAY: brown, low plasticity, with fine to medium gravel and rootlets	D		FILL
			0.50m SPT 6,10,7 N=17	- -			At 0.4m, as above but clay is medium plasticity 0.60m Silty SAND: pale grey, fine grained sand, trace of fine to medium gravel			
			0.95m	-			0.80m Silty CLAY: brown, medium plasticity, trace of rootlets	D - M		
				1.0 —	×		1.20m Silty CLAY: brown, red-brown, high plasticity			ALLUVIUM
			1.50m SPT 2,4,5 N=9	-	^ 					
			1.95m	2.0	× _ ×	СН			St	
				_	^_ 					
				_			2.50m Silty CLAY: grey, brown, high plasticity, trace of ironstone gravel			
			3.00m SPT	3.0 —	 					
			SPT 3,7,11 N=18	-	x x x					
		,eq	0.1011	_	×				VSt	
AD/T —		Not Observed		4.0 —	x					
			4.50m	-	- × - ×					
			SPT 3,6,8 N=14	-	 			М		
			4.95m	5.0 —	× ×					
				_	×	СН				
				-	× ×					
			6.00m SPT 3,6,8 N=14	6.0 -					St	
			6.45m	-	x x				31	
				-	×					
				7.0 —	x					
			7.50m SPT 3,6,10 N=16	- -	× ×					
			7.95m	8.0	x					
See Expla letails of basis of	anatory abbre	y Note	es for	5.5						

NON-CORE DRILL HOLE - GEOLOGICAL LOG

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

HOLE NO : A1-BH9

FILE / JOB NO: IA110700 SHEET: 2 OF 2

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: BD

DOO	DECC		ILLIN «				z	MATERIAL		>	
& CASING DO	WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	5 DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
					8.0 —	×		Silty CLAY: grey, brown, high plasticity, trace of ironstone gravel (continued)			ALLUVIUM
			pə		-	× ×					
– AD/T ——			Not Observed		9.0		СН		М	St	
				9.50m	-	×					
				SPT 3,7,10 N=17	-	^ x x				VSt	
<u> </u>				9.95m	10.0 —	×		9.95m End of borehole at 9.95m, target depth			
					-	-					
					11.0 —	-					
					-	-					
					-	-					
					12.0 —	-					
					-	-					
					-	-					
					13.0 —	-					
					-						
					14.0 —	-					
					-	-					
					-	-					
					15.0 —	-					
					-	-					
					-						

NON-CORE DRILL HOLE - GEOLOGICAL LOG

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

HOLE NO : A1-BH10 FILE / JOB NO : IA110700 SHEET : 1 OF 2

POSITION : SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: BD

		RILLIN		1		7	MATERIAL	1	. 1	
& CASING WATER WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	O DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	
				-		> > >	Silty CLAY: brown, low plasticity, with rootlets, trace of fine to medium gravel and fine grained sand 0.40m	D		FILL
			0.50m SPT 4,7,14 N=21	_		> >	Silty CLAY: brown, low plasticity, trace of fine to medium gravel and rootlets 0.80m	D - M		
			0.95m	1.0 —		>	Silty SAND: pale grey, fine to medium grained sand	D		
			1.50m SPT	-	×		Silty CLAY: grey, brown, medium plasticity			ALLUVIUM
			3,5,6 N=11	-			At 1.8m, as above but clay is high plasticity			
				2.0 —	x x x	CI-CH			St	
				_	x					
			3.00m SPT 4,8,10 N=18	3.0 —	x x		3.00m Silty CLAY: grey, red-brown, high plasticity, with ironstone gravel, trace of sand	-		
			3.45m	-	x					
				4.0 —	X	СН			VSt	
				-	x x					
			4.50m SPT 4,6,8 N=14	- -	×			М		
			4.95m	5.0 —	X ×		5.00m Silty CLAY: grey, brown, high plasticity	_		
				-	× ×	СН			St	
			6.00m	- 6.0 —	X					
		<u></u>	SPT 4,5,11 N=16	-	× _ ×		6.30m Clayey SAND: grey, brown, medium to coarse grained sand			
				-	 	sc	6.80m Silty CLAY: grey, red-brown, high plasticity, trace of ironstone gravel		MD	
				7.0 —	×		y a grand grand grand grand grand grand			
			7.50m SPT 4,7,11 N=18	-	× _ × _ × _ × _ × _ × _ × _ × _ × _ × _	СН			VSt	
			7.95m	-	×					

NON-CORE DRILL HOLE - GEOLOGICAL LOG

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 1

SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

HOLE NO : A1-BH10

FILE / JOB NO: IA110700 SHEET: 2 OF 2

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: BD

		DRIL	LLIN	G				MATERIAL			
PROGRE					Ê	ပ	NOIL ,		삤롣	γñζ	
& CASING	WATER	PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	5 DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTUR	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
				9.50m	9.0 —	x x x x x x x x x x x x x x x x x x x	СН	Silty CLAY: grey, red-brown, high plasticity, trace of ironstone gravel (continued)	М	VSt	ALLUVIUM
				SPT 3,5,8 N=13	-	 		0.05m		St	
•				9.95m	10.0 —	×		End of borehole at 9.95m, target depth			-
					11.0 —						- - -
					12.0 —						-
					13.0 —						-
					14.0 —						-
Sag Ex					- 15.0 — - -						-
See Ex details & basis	of abb	tory Norevia	Notes ations	s for	16.0 —						

JACOBS Hole ID A1-GW1 CLIENT : Bankstown Airport Limited **POSITION** : Site 1 SHEET

CONTRACTOR: Epoca Environmental **EASTING** STATUS : Geotechnical Investigation : Bankstown Airport PROJECT NORTHING LOGGED BY: MG COORD. SYS. : MGA94 Zone 56 LOCATION

DRILL DATE: 30/05/2016 -PROJECT No. : IA110700 GROUND RL : 31/05/2016

: 1 OF 1

PROJE	CH	NO.	: IA1	10700	GROUN	ID RL :					31/05/2016
Method Drilling Water		(m) t	tion 4D)	Graphic Log	Soil / Rock Description	ID A1-GW1	Type Standpipe Piez		Stick Up & RL	Tip De 8.0	JCTION DETAILS pth & RL Installation Date Static Water Lew 00 m 31/05/2016
Method Drilling V		Depth (m)	Elevation (m AHD)	Graph	City CLAV, pale gray law plasticity with medium				isosomi (A	Consents
	ŀ				Silty CLAY: pale grey, low plasticity, with medium gravel and fine grained sand, trace of rootlets, dry (fill)	_				V P 1	Concrete Grout
	-			xx	Silty CLAY: brown, grey, medium plasticity, trace o rootlets, dry to moist, firm (alluvium)				Y///>		⋖ — Bentonite
	-	1		× _ x	At 1.0m, as above but clay is high plasticity, moist						1 Bentonie
	-			x x						1	—— 50mm, UPVC Class 18 Casing
	-			× .	Silty CLAY: grey, brown, high plasticity, trace of fine grained sand, moist, stiff (alluvium)	1.50 m					
	-	2		×							
	-			× ×				016			
	F			× _ x				31/05/2016			
	-	. 3		x	Silty CLAY: grey, brown, high plasticity, moist, stiff (alluvium)		A1-GW	/1			
	-			x 							50mm UPVC Class 18 slotted screen
AD/T	-	· 4		× 1							
	-			x							
	-			x x							2mm graded Sand
		5		× ×							
	F										
	-			 x							
	-	- 6		×							
	-			X X							
	-	. 7		× _ x	Clause CAND area have						
					Clayey SAND: grey, brown, medium to coarse grained sand, trace of ironstone gravel, remoulds to clayey sand, moist, medium dense to dense (alluvium)						
	- [
		8			End of borehole at 8.0m, target depth	8.00 m					
RIG					CHECKED BY : JK	REMA	.RK				
INCLINAT AZIMUTH HOLE DIA	Н	I : :			CHECKED DATE : 09/06/2016 APPROVED BY : SR APPROVED DATE :	INLIVIA	uux				

JACOBS

PROJECT No. : IA110700

HOLE DIA.

Hole ID

A1-GW2

LOGGED BY: MG

CLIENT : Bankstown Airport Limited CONTRACTOR : Epoca Environmental

EASTING : NORTHING :

POSITION

SHEET : 1 OF 1 STATUS :

PROJECT : Geotechnical Investigation LOCATION : Bankstown Airport

COORD. SYS. : MGA94 Zone 56 GROUND RL :

: Site 1

DRILL DATE: 30/05/2016 - 31/05/2016

FRO	JLU	I INO.	. IA I	10700	GROUND	RL . 31/05/2016
po	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description	PIEZOMETER CONSTRUCTION DETAILS ID Type Stick Up & RL Tip Depth & RL Installation Date Static Water Level A1-GW2 Standpipe Piezometer 7.00 m 31/05/2016
Method		Deptl	Eleva (m Al	Grap		A1-GW2
				\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Silty CLAY: brown, low plasticity, trace of rootlets, dry (topsoil)	Concrete
		_		×	Silty CLAY: grey, brown, medium plasticity, moist (alluvium)	Grout
				<u> </u>	(diatrially)	
		_		x		■ Bentonite
		_		<u>x</u> x		
		- 1		<u>x</u> _ x	Silty CLAY: grey, red-brown, high plasticity, moist (alluvium)	
				×		50mm, UPVC Class 18 Casing
				×		1.50 m
		_				
		– 2		X		
		-		<u> </u>	At 2.0m, as above but grey, brown	
		_		×		
		_		Ĺ×		
		-		×		
		- 3		x	France 2.0.2 France objects but and become with inspectors	50mm UPVC Class 18
		_		x	From 3.0-3.5m, as above but red-brown, with ironstone gravel	slotted screen
_		_				
AD/T		_		x		
		_		x		
		- 4		x		✓ 2mm graded Sand
		_		x	At 4.2m, as above but trace of ironstone gravel	
		-		×	-	
		_		Ĺ×		
		_		<u> </u>		
		- 5		x		
		_		x		
		_		<u>x </u>		
		_		×		
		- 6				31/06/2016
		_		×		A1-GW2 ▼
		_		×		
		-				
		 7		<u> </u>	End of hosphala at 7 Ore toward days	7.00 m
		-			End of borehole at 7.0m, target depth	
		-				
		_				
RIG		:			CHECKED BY : JK	REMARK
INCLI AZIM	NATIC	ON:			CHECKED DATE : 09/06/2016 APPROVED BY : SR	
HOLE		:			APPROVED DATE :	

APPROVED DATE :

JACOBS

Hole ID

A1-GW3

CLIENT : Bankstown Airport Limited **POSITION** : Site 1 SHEET : 1 OF 1 **EASTING STATUS**

NORTHING

CONTRACTOR: Epoca Environmental Geotechnical Investigation
 Bankstown Airport PROJECT

COORD. SYS.: MGA94 Zone 56

LOCATION PROJECT No. : IA110700 GROUND RL: LOGGED BY: MG DRILL DATE: 30/05/2016 -31/05/2016

PR	OJEC.	T No.	: IA1	10700) GROU	ND RL :			31/05/2016
									TION DETAILS
Method	Drilling Water	Depth (m)	Elevation (m AHD)	Graphic Log	Soil / Rock Description	ID Type A1-GW3 Standpipe Piezometer	Stick Up & RL	Tip Depth 8 6.00 m	
_		-			Silty SAND: brown, fine grained sand, trace of fine to medium gravel, clay and rootlets, dry (topsoil)				- Concrete
		_			Silty CLAY: brown, grey, low plasticity, trace of fine grained sand and rootlets, dry to moist (fill)			₩	- Grout
		_			Silty SAND: pale grey, fine to medium grained sand, to moist (fill)	dry		<	– Bentonite
		- 1		X	Silty CLAY: grey, brown, medium plasticity, moist (alluvium)				
		_		x x	At 1.2m, as above but clay is high plasticity			-	– 50mm, UPVC Class 18 Casing
		_		xx	At 1.6m, as above but trace of organics	1.50 m			
		_		x	Action, as above but trace of organics				
		_ 2		X .	Silty CLAY: red-brown, grey, high plasticity, moist (alluvium)	2016			
3-10-16		_				A1-GW3 ——			– 50mm UPVC Class 18
KM 1.01.1201		-		X X X X X X X X X X					slotted screen
AD/T		_ 3		<u> </u>	At 3.0m, as above but with ironstone gravel, trace of				
SKM 1.01.2.20		-		X X X X X X X X X X	sand				
Log MON PREZOMETER INSTALLATION LOG. LATITOTO GINT GPJ. << DrawingFile>> 09/08/2016 12:11 8:30 003 Datget Lab and in Start col. DGD LLb. SKM 10.1 22013-10-17 Ptj. SKM 10.1 2013-10-16 AD/T AD/T		_		×				-	– 2mm graded Sand
and In Situ Too		4		x					
3 Datgel Lab		-		×	At 4.0m, as above but with sand, trace of ironstone gravel				
8.30.00		-		<u> </u>	Silty CLAY: grey, brown, high plasticity, trace of fine grained sand, moist (alluvium)				
2016 12:1		-		x	grained sand, moist (alluvium)				
/90/60 <		_		X					
wingrile		- 5		x					
o «CDra		-		×					
25. INIE									
110700	\leq			<u> </u>					
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ATION		-		<u>x</u>					
NS IAL	1	6-			End of borehole at 6.0m, target depth	6.00 m	[.· · · · .	- 1,-1-	
M H H H H H		-							
, MEZO		-							
<u> </u>									
RIC INC	CLINATION	: ON :			CHECKED BY : JK CHECKED DATE : 09/06/2016 APPROVED BY : SR	REMARK			
HO	LE DIA.	:			APPROVED DATE :				



Appendix C – Groundwater Field Data Sheets

WELL DEVELOPMENT, GAUGING AND SAMPLING DATA SHEET

WELL No : AI-GN JACOBS

Auport - Site 1 Project No: **TA110700** Project Name: Bankstown Gauging Date Performed By: Gauging Method Well Diameter: Bore Depth: Time LNAPL Present: Y / N SWL Depth to LNAPL: (If yes, thickness); DNAPL Present: Y / N Comments: (If yes, thickness): Visual confirmation with bailer: Y / N Maintainance required : Photo Number : Purging / Development 6 05/16 Performed By: Well Diameter: 60 m Submersible pump Purge Method: SWL (start) Bore Depth (start): 7.991 Time Started: Volume Removed : 256 915 Time Stopped: SWL (end): Discharge Rate : Bore Depth (end): 000 Further no odour/sheen Brown, highly turked Comments: Brown, NAPL Present : Y / (N) no oclour, no sheen. (If yes, thickness): Sampling 2010616 Date: Performed By: Well Diameter: 50 mm Perastaltic pump Sampling Method: Time Started: Sampling Depth: ~ 7.5 SWL (start): 2.850 Time Stopped : 1162 LOPE Tubing Type: SWL (end): 3.068 Comments: Ø/N AI-QCOT Duplicate Sample Collected? Duplicate Sample ID: Field Analyses Redex terribating, no ocloses 0.1 16294 2.882 light hour, low 941 6.77 18.6 194.9 4.24 948 0.5 16392 19.0 4.00 2.948 6.63 188.7 3.57 41.1 3.43 39.3 3.39 39.2 1.0 173.0 19.0 954 2.987 16338 6.61 urlindity, no octour, 3.026 light hour, low 3.038 no sheen. 1.5 6.60 18.8 1000 16270 2.0 1006 6.59 171.9 1623L 19.1 Stabilisation Criteria **Well Volume Calculations** 200mm | 250mm Casing Diameter 125mm 150mm 300mm 25mm 50mm 100mm

0.98

Conversion Factor

WATER COLUMN (X) CONVERSION FACTOR (=) LITRES PER WELL VOLUME
_____(X) ____(=) ____(\$204 L

31.4

49.1

7.85

1.96

29.46

125.7

196.3

70.7

WELL DEVELOPMENT, GAUGING AND SAMPLING DATA SHEET

WELL No : ALGLIZ JACOBS

Project No ·	TA110700	

Project Name :

Bankstoun Airport - Site 1

			16	formed By	Per		1 1 1 1 1 1 1		Date	
=	iameter :	Wel			20				auging Method	G
7	Present: Y / N	LNAF		£	Bore Depth:				Time	
1	ckness):	(If yes,			to LNAPL:	Depth			SWL	
	Present: Y / N	DNAF							Comments	
	ckness) :									
	bailer: Y / N	nfirmation v	Visual co						nance required	Maintai
									Photo Number	
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1	er: 50 m	Well Diar	-		formed By:	Pei	ubli pun		Date Purge Method	
_					9 111		SWL (start)		Time Started	
7	n (start): 6-96	-			7 Volume		SWL (start)		Time Stopped	
_	h (end):			arge Rate :				-		
	Present:Y / W	NAF	1 steen	N DEPON	ACTUAL C	highly to		-40-4	Comments	
	ckness) ;	عبر (If yes,	no she	odow,	olity m	fulla	mod-high	Row,		
		SE INC.		Will be seen		A SECTION	ALC: UNKNOWN	la la sandi	pling	Sam
		10/-11/20		A .	in the state of th			20/06/16		Sain
	er: Somm	Well Dian		- 60	formed By :	_ Per	and the second	Perastalt	Date: • Dathod Mothod	90
_		~ 6.4	line De-P	0			c pump		: Time Started	Sa
	,		ling Depth		2			975	Time Stanted:	
_)		SWL (start)						Tubing Type:	
_		3.86	SWL (end)						Comments:	
									ouniments.	
H			_	Sample ID :	Dunlicate 9		YIN	ple Collected?	Duplicate San	100
no.	·			sample ID.	Duplicate			ipio odlicotca:	Daphodio Odii	
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ď.			7.50	NAME OF TAXABLE PARTY.						
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	(ear transport		54.7	4.68	(171.0	18.4	6.95	11365	0.1	
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^	Lear transpowe	3.426	54.7 52.1 53.4	83.4 44.44 62.4	171.0	18.4 18.6 18.8	6.76	12365 12372 12416	0.5	3
^	Lear transpowe	3.426 3.536 3.584 3.667	54.7 52.1	4.68	171.0	18.4	6.76	72372 72416 72415	1.0 1.0	13
^	Lear transpowe	3.426 3.536 3.584	54.7 52.1 53.4	4.42	171.0 224.7 251.6	18.4 18.6 18.8	6.76	12365 22372 22416 22415 21923	0.5 1.0 1.5 2.0	06 13 320 27
^ ^	lear/transpave o odour/sheu	3.426 3.536 3.584 3.667	54.7 52.1 53.4 52.4 46.2 51.6	83.4 4.44 4.53 4.24 24.4	171.0 224.7 251.6 279.5	18.4 18.6 18.8 18.9	676 674 672	12365 12372 12416 22415 21923 12136	0.5 1.0 1.5 2.0 2.5	59 06 13 320 27
^ ^	lear/transpave o odour/sheu	3.426 3.536 3.584 3.667 3.728	54.7 52.1 53.4 52.4 462	4.42	171.0 224.7 251.6 279.5 292.6 343.7	18.4 18.6 18.8 18.9	6.76 6.74 6.72 6.71 6.71	72365 72372 72416 72415 71923 72136 72182	0.5 1.0 1.5 2.0	06 13 20 27 134.
	lear/transpore to todour/sheu lear/transpore	3.426 3.536 3.584 3.657 3.728 3.632 3.832	54.7 52.1 53.4 52.4 46.2 51.6	4.68 4.44 4.53 4.45 4.01 4.4)	171.0 224.7 251.6 279.5 292.6	18.4 18.6 18.8 18.9 17.5 18.4	6.76 6.74 6.72 6.71	12365 12372 12416 22415 21923 12136	0.5 1.0 1.5 2.0 2.5	06 13 320 27
	lear/transpave o odour/sheu	3.426 3.536 3.584 3.657 3.728 3.632 3.832	54.7 52.1 53.4 52.4 46.2 51.6 50.8	### ### ### ### ### ### ### ### ### ##	171.0 224.7 251.6 279.5 292.6 343.7	18.4 18.6 18.8 18.9 17.5 18.4 18.3	6.76 6.74 6.72 6.71 6.71	72365 72372 72416 72415 71923 72136 72182	0.5 1.0 1.5 2.0 2.5 3.0	06 13 20 27 34.
~ ~	lear/transpore to todour/sheu lear/transpore	3.426 3.536 3.584 3.657 3.728 3.632 3.832	54.7 52.1 53.4 52.4 46.2 51.6 50.8	### ### ### ### ### ### ### ### ### ##	171.0 224.7 251.6 279.5 292.6 343.7	18.4 18.6 18.8 18.9 17.5 18.4 18.3	6.76 6.74 6.72 6.71 6.71	72365 72372 72416 72415 71923 72136 72182	0.5 1.0 1.5 2.0 2.5 3.0	20 20 27 34.
	lear/transpore to todour/sheu lear/transpore	3.426 3.536 3.584 3.657 3.728 3.632 3.832	54.7 52.1 53.4 52.4 46.2 51.6 50.8	### ### ### ### ### ### ### ### ### ##	171.0 224.7 251.6 279.5 292.6 343.7	18.4 18.6 18.8 18.9 17.5 18.4 18.3	6.76 6.74 6.72 6.71 6.71	72365 72372 72416 72415 71923 72136 72182	0.5 1.0 1.5 2.0 2.5 3.0	20 20 27 34.
V V	lear/transpore to todour/sheu lear/transpore	3.426 3.536 3.584 3.657 3.728 3.632 3.832	54.7 52.1 53.4 52.4 46.2 51.6 50.8	### ### ### ### ### ### ### ### ### ##	171.0 224.7 251.6 279.5 292.6 343.7	18.4 18.6 18.8 18.9 17.5 18.4 18.3	6.76 6.74 6.72 6.71 6.71	72365 72372 72416 72415 71923 72136 72182	0.5 1.0 1.5 2.0 2.5 3.0	06 13 20 27 34.
V V	lear/transpore to todour/sheu lear/transpore	3.426 3.536 3.584 3.657 3.728 3.632 3.832	54.7 52.1 53.4 52.4 46.2 51.6 50.8	### ### ### ### ### ### ### ### ### ##	171.0 224.7 251.6 279.5 292.6 343.7	18.4 18.6 18.8 18.9 17.5 18.4 18.3	6.76 6.74 6.72 6.71 6.71	72365 72372 72416 72415 71923 72136 72182	0.5 1.0 1.5 2.0 2.5 3.0	20 20 27 34.
	lear/transpore to todour/sheu lear/transpore	3.426 3.536 3.584 3.657 3.728 3.632 3.832	54.7 52.1 53.4 52.4 46.2 51.6 50.8	### ### ### ### ### ### ### ### ### ##	171.0 224.7 251.6 279.5 292.6 343.7	18.4 18.6 18.8 18.9 17.5 18.4 18.3	6.76 6.74 6.72 6.71 6.71	72365 72372 72416 72415 71923 72136 72182	0.5 1.0 1.5 2.0 2.5 3.0	20 20 27 34.
	lear/transpore to todour/sheu lear/transpore	3.426 3.536 3.584 3.657 3.728 3.632 3.832	54.7 52.1 53.4 52.4 46.2 51.6 50.8	### ### ### ### ### ### ### ### ### ##	171.0 224.7 251.6 279.5 292.6 343.7	18.4 18.6 18.8 18.9 17.5 18.4 18.3	6.76 6.74 6.72 6.71 6.71	72365 72372 72416 72415 71923 72136 72182	0.5 1.0 1.5 2.0 2.5 3.0	20 20 27 34.
V V	lear/transpore to todour/sheu lear/transpore	3.426 3.536 3.584 3.657 3.728 3.632 3.832	54.7 52.1 53.4 52.4 46.2 51.6 50.8	### ### ### ### ### ### ### ### ### ##	171.0 224.7 251.6 279.5 292.6 343.7	18.4 18.6 18.8 18.9 17.5 18.4 18.3	6.76 6.74 6.72 6.71 6.71	72365 72372 72416 72415 71923 72136 72182	0.5 1.0 1.5 2.0 2.5 3.0	6 .0 .7
	lear/transpore to todour/sheu lear/transpore	3.426 3.536 3.584 3.657 3.728 3.632 3.832	54.7 52.1 53.4 52.4 46.2 51.6 50.8	### ### ### ### ### ### ### ### ### ##	171.0 224.7 251.6 279.5 292.6 343.7	18.4 18.6 18.8 18.9 17.5 18.4 18.3	6.76 6.74 6.72 6.71 6.71	72365 72372 72416 72415 71923 72136 72182	0.5 1.0 1.5 2.0 2.5 3.0	20 20 27 34.
V V	lear/transpore to todour/sheu lear/transpore	3.426 3.536 3.584 3.657 3.728 3.632 3.832	54.7 52.1 53.4 52.4 46.2 51.6 50.8	### ### ### ### ### ### ### ### ### ##	171.0 224.7 251.6 279.5 292.6 343.7	18.4 18.6 18.8 18.9 17.5 18.4 18.3	6.76 6.74 6.72 6.71 6.71	72365 72372 72416 72415 71923 72136 72182	0.5 1.0 1.5 2.0 2.5 3.0	06 13 20 27 34.
	lear/transpore to todour/sheu lear/transpore	3.426 3.536 3.584 3.657 3.728 3.632 3.832	54.7 52.1 53.4 52.4 46.2 51.6 50.8	### ### ### ### ### ### ### ### ### ##	171.0 224.7 251.6 279.5 292.6 343.7	18.4 18.6 18.8 18.9 17.5 18.4 18.3	6.76 6.74 6.72 6.71 6.71	72365 72372 72416 72415 71923 72136 72182	0.5 1.0 1.5 2.0 2.5 3.0	06 3 20 27 34.
	lear/transpare	3.426 3.536 3.584 3.657 3.728 3.632 3.832	54.7 52.1 53.4 52.4 46.2 51.6 50.8	### ### ### ### ### ### ### ### ### ##	171.0 224.7 251.6 279.5 292.6 343.7	18.4 18.6 18.8 18.9 17.5 18.4 18.3	6.76 6.74 6.72 6.71 6.71	72365 72372 72416 72415 71923 72136 72182	0.5 1.0 1.5 2.0 2.5 3.0	20 20 27 34.
	lear/transpare	3.426 3.536 3.584 3.657 3.728 3.632 3.832	54.7 52.1 53.4 52.4 46.2 51.6 50.8	### ### ### ### ### ### ### ### ### ##	171.0 224.7 251.6 279.5 292.6 343.7	18.4 18.6 18.8 18.9 17.5 18.4 18.3	6.76 6.74 6.72 6.71 6.71	72365 72372 72416 72415 71923 72136 72182	0.5 1.0 1.5 2.0 2.5 3.0	06 13 20 27 134.
~ ~	lear/transpare	3.426 3.536 3.584 3.657 3.728 3.632 3.832	54.7 52.1 53.4 52.4 44.2 51.6 50.6 50.5	### ### ### ### ### ### ### ### ### ##	171.0 224.7 251.6 279.5 292.6 343.7	18.4 18.6 18.8 18.9 17.5 18.4 18.3	6.76 6.74 6.72 6.71 6.71	72365 72372 72416 72415 71923 72136 72182	0.5 1.0 1.5 2.0 2.5 3.0 3.5	20 27 27 34. 41
~ ~	lear/transpare	3.426 3.536 3.584 3.657 3.728 3.632 3.832	54.7 52.1 53.4 52.4 44.2 51.6 50.6 50.5	4.68 4.44 4.53 4.45 4.01 4.30 4.28	171.0 224.7 251.6 279.5 292.6 343.7 376.8	18.4 18.6 18.8 18.9 17.5 18.4 18.3	6.76 6.74 6.72 6.71 6.71 6.71 6.70	72365 72372 72416 22415 71923 72182 72182 72364	0.5 1.0 1.5 2.0 2.5 3.0 3.5	06 3 10 17 34 11 18
	lear/transpare	3.426 3.536 3.584 3.657 3.728 3.632 3.832	54.7 52.1 53.4 52.4 44.2 51.6 50.6 50.5	4.68 4.44 4.53 4.45 4.01 4.30 4.28	171.0 224.7 251.6 279.5 292.6 343.7 376.8	18.4 18.6 18.8 18.9 17.5 18.4 18.3	6.76 6.74 6.72 6.71 6.71 6.71 6.70	72365 72372 72416 22415 71923 72182 72182 72364	0.5 1.0 1.5 2.0 2.5 3.0 3.5	OG 3 70 27 34 41 H8
1	lear/transpare	3.426 3.536 3.584 3.657 3.728 3.632 3.832	54.7 52.1 53.4 52.4 44.2 51.6 50.6 50.5	4.68 4.44 4.53 4.45 4.01 4.30 4.28	171.0 224.7 251.6 279.5 292.6 343.7 376.8	18.4 18.6 18.8 18.9 17.5 18.4 18.3	6.76 6.74 6.72 6.71 6.71 6.71 6.70	72365 72372 72416 22415 71923 72182 72182 72364	0.5 1.0 1.5 2.0 2.5 3.0 3.5	206 3 20 27 34. 41 48

WATER COLUMN (X) CONVERSION FACTOR (=) LITRES PER WELL VOLUME

(X) (=) L

200

WELL DEVELOPMENT, GAUGING AND SAMPLING DATA SHEET

WELL No: PAT-GW3 JACOBS

Gaug	Date:	0	-0.15-		Perfo	rmed By:_			5'		
Ga	uging Method:			Bo	ore Depth :_				Diameter : _ _ Present : `	/ / N	
	Time : SWL :				o LNAPL :				nickness):	N	
	Comments:		4						Present:` nickness):_		*
Maintain	ance required :						Visual conf	irmation wi			
F	hoto Number:			D -			1				
ging / De	velopment	V lock		Porf	ormed By:	27		Well Diam	eter :	SOUM	100
	: Date : Durge Method										1
	Time Started	1000	SWL (start) : SWL (end) :	1.557		Removed : arge Rate :			pth (start) : epth (end) :		
	Time Stopped : Comments	Brown.	v. makky	fubrid.	no od	our /sh	een.	NAP	L Present:		
		BROWN,		irbid,	no bo	bour 1s	heer	(If yes, t	hickness) :		
Samp				i de Fa		BC		Well Diam	eter :	50mm	1
Sar	Date npling Method			Perl	ormed By :					00///	1
	Time Started	1113	h			•	ling Depth : WL (start) :	A 11			
	Time Stopped Tubing Type						SWL (start):				
	Comments						11 1/1				-
		nple Collected?	Y (N)		Duplicate S	Sample ID:					
96	Duplicate Sar	Itpic concerca:									
Field A		Itpia concercus									
Field At		at at		गुंडाता;	रिखालः	(djesojwa	r Oykai	SWL	Comments (c	olaur, turbidity,	
ROLL	nalyses	(IIS/10ú);	рН	(@)	((((())))	((3377))	1. Salt	J(65)	orphie,	शान्सक्ति।	a turlo
rine	volume kemby#((i))	(118104)) 73.429	рн 5.68	ACCEPTANCE OF STREET	(mv))	and the second	10000	2·478 2·535	orphie,	olour, turbidity, orear etc)	u tuvla
nne 117 123	Volume Reminivati(ii)	23929 24408 244252	5.68 5.23 5.20	18.8 19.1 18.9	(mV) 117.0 160.3 182.0	2.56 2.49 2.68	30.4 29.4 31.3	2·475 2·535 2·573	orphie,	शान्सक्ति।	od tearlo
101 123 129 135	Volume Remover((5)	105(00)) 23929 244252 24252 24268	5.68 5.23 5.20 5.17	(®) 8.8 9.1 8.9 8.9	17.0 160.3 182.0 188.0	2.56 2.49 2.68 2.40	30.4 29.4 31.3 29.0	2·478 2·535	orphie,	शान्सक्ति।	od tavlo ese
100 123 129 135	Volume Reminivati(ii)	23929 24408 244252	5.68 5.23 5.20	18.8 19.1 18.9	(mV) 117.0 160.3 182.0	2.56 2.49 2.68	30.4 29.4 31.3	2:475 2:535 2:573 2:604	orphie,	शान्सक्ति।	s turb ex
100 123 129 135	Volume Remover((i)) O. 1 O. 5 1. 5 2. 0	150 (15504)) 23929 244252 24252 24268 24181	5.68 5.73 5.20 5.17 5.17	(®) 18.8 19.1 18.9 18.9	(mV) 160.3 182.0 188.0 188.8	2.56 2.49 2.68 2.10 2.70	30.4 29.4 31.3 29.0 32.2	2.475 2.535 2.573 2.604 2.611	orphie,	शान्सक्ति।	tush se
100 123 129 135	Volume Remover((i)) O. 1 O. 5 1. 5 2. 0	150 (15504)) 23929 244252 24252 24268 24181	5.68 5.73 5.20 5.17 5.17	(®) 18.8 19.1 18.9 18.9	(mV) 160.3 182.0 188.0 188.8	2.56 2.49 2.68 2.10 2.70	30.4 29.4 31.3 29.0 32.2	2.475 2.535 2.573 2.604 2.611	orphie,	शान्सक्ति।	s turb ce
17 123 129 135	Volume Remover((i)) O. 1 O. 5 1. 5 2. 0	150 (15504)) 23929 244252 24252 24268 24181	5.68 5.73 5.20 5.17 5.17	(®) 18.8 19.1 18.9 18.9	(mV) 160.3 182.0 188.0 188.8	2.56 2.49 2.68 2.10 2.70	30.4 29.4 31.3 29.0 32.2	2.475 2.535 2.573 2.604 2.611	orphie,	शान्सक्ति।	turbis
17 123 129 135	Volume Remover((i)) O. 1 O. 5 1. 5 2. 0	150 (15504)) 23929 244252 24252 24268 24181	5.68 5.73 5.20 5.17 5.17	(®) 18.8 19.1 18.9 18.9	(mV) 160.3 182.0 188.0 188.8	2.56 2.49 2.68 2.10 2.70	30.4 29.4 31.3 29.0 32.2	2.475 2.535 2.573 2.604 2.611	orphie,	शान्सक्ति।	es fourth
17 123 129 135	Volume Remover((i)) O. 1 O. 5 1. 5 2. 0	150 (15504)) 23929 244252 24252 24268 24181	5.68 5.73 5.20 5.17 5.17	(®) 18.8 19.1 18.9 18.9	(mV) 160.3 182.0 188.0 188.8	2.56 2.49 2.68 2.10 2.70	30.4 29.4 31.3 29.0 32.2	2.475 2.535 2.573 2.604 2.611	orphie,	शान्सक्ति।	turbios
100 123 129 135	Volume Remover((i)) O. 1 O. 5 1. 5 2. 0	150 (15504)) 23929 244252 24252 24268 24181	5.68 5.73 5.20 5.17 5.17	(®) 18.8 19.1 18.9 18.9	(mV) 160.3 182.0 188.0 188.8	2.56 2.49 2.68 2.10 2.70	30.4 29.4 31.3 29.0 32.2	2.475 2.535 2.573 2.604 2.611	orphie,	शान्सक्ति।	es tourling
nne 117 123	Volume Remover((i)) O. 1 O. 5 1. 5 2. 0	150 (15504)) 23929 244252 24252 24268 24181	5.68 5.73 5.20 5.17 5.17	(®) 18.8 19.1 18.9 18.9	(mV) 160.3 182.0 188.0 188.8	2.56 2.49 2.68 2.10 2.70	30.4 29.4 31.3 29.0 32.2	2.475 2.535 2.573 2.604 2.611	orphie,	शान्सक्ति।	turbi
100 123 129 135	Volume Remover((i)) O. 1 O. 5 1. 5 2. 0	150 (15504)) 23929 244252 24252 24268 24181	5.68 5.73 5.20 5.17 5.17	(®) 18.8 19.1 18.9 18.9	(mV) 160.3 182.0 188.0 188.8	2.56 2.49 2.68 2.40 2.70 2.57	30.4 29.4 31.3 29.0 32.2	2.475 2.535 2.573 2.604 2.611	orphie,	शान्सक्ति।	tuvib ese
100 123 129 135	Volume Remover((i)) O. 1 O. 5 1. 5 2. 0	150 (15504)) 23929 244252 24252 24268 24181	5.68 5.73 5.20 5.17 5.17	(®) 18.8 19.1 18.9 18.9	(mV) 160.3 182.0 188.0 188.8	2.56 2.49 2.68 2.40 2.70 2.57	30.4 29.4 31.3 29.0 32.2	2.475 2.535 2.573 2.604 2.611	orphie,	शान्सक्ति।	tuvli ex
100 123 129 135	Volume Remover((i)) O. 1 O. 5 1. 5 2. 0	150 (15504)) 23929 244252 24252 24268 24181	5.68 5.73 5.20 5.17 5.17	(®) 18.8 19.1 18.9 18.9	17.0 160.3 182.0 188.0 188.8 189.3	2.56 2.49 2.68 2.40 2.70 2.70	30.4 29.4 31.3 29.0 32.2 30.6	2.475 2.535 2.573 2.604 2.611	orphie,	शान्सक्ति।	turb ese
117 123 129 135 141 147	(Motions (Remover(II))) O.1 O.5 1.0 2.5	150 (15504)) 23929 244252 24252 24268 24181	5.68 5.73 5.20 5.17 5.17	(®) 18.8 19.1 18.9 18.9	(mV) 160.3 182.0 188.0 188.8	2.56 2.49 2.68 2.40 2.70 2.70	30.4 29.4 31.3 29.0 32.2	2.475 2.535 2.573 2.604 2.611	orphie,	शान्सक्ति।	tuvli ex
117 123 129 135 141 147	Notions Remover(th) O.1 O.5 1.0 1.5 2.0 2.5 Calculations	150 (11/5/01)) 73,9729 71,440% 74,752 74,758 74,18 74,118	5.68 5.23 5.20 5.17 5.17	(®) 18.8 19.1 18.9 18.9	17.0 160.3 182.0 188.0 188.8 189.3	2.56 2.49 2.68 2.40 2.70 2.70	30.4 29.4 31.3 29.0 32.2 30.6	2.475 2.535 2.573 2.604 2.611	orphie,	शान्सक्ति।	es tour

WATER COLUMN (X) CONVERSION FACTOR (=) LITRES PER WELL VOLUME
_____(X) _____(=) _____L

20.2 L



Appendix D – Calibration Certificate

Multi Parameter Water Meter

Instrument

YSI Quatro Pro Plus

Serial No.

12D100012



Air-Met Scientific Pty Ltd 1300 137 067

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

Certificate of Calibration

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

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle	Instrument Reading
0011001	001101111111111111111111111111111111111			Number	
1. pH 7.00		pH 7.00		NH1818	pH 7.02
2. pH 4.00		pH 4.00		NF1636	pH 4.09
3. pH 10.00		pH 10.00		NH1870	pH 10.09
4. mV		228.5mV		NH1934/NH1935	228.6mV
5. EC		2.76mS		NF2056	2.76mS
6. D.O		0.00ppm		4005	0.00ppm
7. Temp		22.7°C		MultiTherm	22.5°C

Lin Wang

Calibrated by:

Calibration date:

17/06/2016

Next calibration due:

17/07/2016



Appendix E – Laboratory Certificates



Jacobs Group (Australia) P/L NSW Level 4, 100 Christie St St Leonards NSW 2065





Certificate of Analysis

NATA Accredited Accreditation Number 1261 Site Number 18217

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

Attention: Michael Stacey

Report 502324-S

Project name BANKSTOWN AIRPORT - SITE 1

Project ID IA110700
Received Date May 27, 2016

Client Sample ID			A1_BH1_0.0	A1_BH4_0.5	A1_TP01_0.0	A1_TP01_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My28376	S16-My28377	S16-My28378	S16-My28379
Date Sampled			May 24, 2016	May 24, 2016	May 25, 2016	May 25, 2016
•	LOR	l lade	Way 24, 2010	Way 24, 2010	Way 23, 2010	Way 23, 2010
Test/Reference Total Recoverable Hydrocarbons - 1999 NEPM F	_	Unit				
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
	50		< 50	< 50	< 50	< 50
TRH C10-36 (Total) BTEX	50	mg/kg	< 50	< 50	< 50	< 50
Benzene	0.1	ma/ka	-01	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1 < 0.1	< 0.1	< 0.1	< 0.1
	0.1	mg/kg		< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1 < 0.2	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene		mg/kg	< 0.1		_	<u> </u>
Xylenes - Total	0.3	mg/kg %	97	< 0.3 95	< 0.3	< 0.3 92
4-Bromofluorobenzene (surr.)	-	70	97	95	94	92
Total Recoverable Hydrocarbons - 2013 NEPM F			2.5	0.5	0.5	
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons		T				
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluorantheneN07	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5



mgt

Client Sample ID			A1_BH1_0.0	A1_BH4_0.5	A1_TP01_0.0	A1_TP01_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My28376	S16-My28377	S16-My28378	S16-My28379
Date Sampled			May 24, 2016	May 24, 2016	May 25, 2016	May 25, 2016
•	1.00	1.121	Way 24, 2010	Way 24, 2010	Way 23, 2010	Way 23, 2010
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons	T					
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	96	88	91	88
p-Terphenyl-d14 (surr.)	1	%	96	91	95	91
Organochlorine Pesticides	1					
Chlordanes - Total	0.1	mg/kg	-	-	< 0.1	-
4.4'-DDD	0.05	mg/kg	-	-	< 0.05	-
4.4'-DDE	0.05	mg/kg	-	-	< 0.05	=
4.4'-DDT	0.05	mg/kg	-	-	< 0.05	-
a-BHC	0.05	mg/kg	-	-	< 0.05	-
Aldrin	0.05	mg/kg	-	-	< 0.05	-
b-BHC	0.05	mg/kg	-	-	< 0.05	-
d-BHC	0.05	mg/kg	-	-	< 0.05	-
Dieldrin	0.05	mg/kg	-	-	< 0.05	-
Endosulfan I	0.05	mg/kg	-	-	< 0.05	-
Endosulfan II	0.05	mg/kg	-	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	-	-	< 0.05	-
Endrin	0.05	mg/kg	-	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	-	-	< 0.05	-
Endrin ketone	0.05	mg/kg	-	-	< 0.05	-
g-BHC (Lindane) Heptachlor	0.05 0.05	mg/kg	-	-	< 0.05 < 0.05	
Heptachlor epoxide	0.05	mg/kg	_	-	< 0.05	
Hexachlorobenzene	0.05	mg/kg mg/kg	_	-	< 0.05	
Methoxychlor	0.03	mg/kg		-	< 0.03	<u> </u>
Toxaphene	1	mg/kg	_	-	< 0.2	-
Dibutylchlorendate (surr.)	1	%	_	-	65	<u> </u>
Tetrachloro-m-xylene (surr.)	1	%	_		107	<u> </u>
Polychlorinated Biphenyls (PCB)	1	/0	_		107	_
Aroclor-1016	0.5	mg/kg			< 0.5	
Aroclor-1232	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1242	0.5	mg/kg	_	-	< 0.5	-
Aroclor-1248	0.5	mg/kg	_	-	< 0.5	-
Aroclor-1254	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1260	0.5	mg/kg	_	-	< 0.5	-
Total PCB*	0.5	mg/kg	_	-	< 0.5	-
Dibutylchlorendate (surr.)	1	%	_	-	65	-
Total Recoverable Hydrocarbons - 2013 NEPM Frac		1 70				
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
PFOS/PFOA/6:2FTS	100	i mg/kg	100	\ 100	\ 100	100
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	_	-	N090.22	_
Perfluorooctaniesuiloriic acid (PFOA)	0.005	mg/kg		-	N090.006	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.005	mg/kg	-	-	< 0.01	-
13C-PFHxA (surr.)	1	%		-	92	-
13C8-PFOS (surr.)	1	%	-	-	84	-



Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled			A1_BH1_0.0 Soil S16-My28376 May 24, 2016	A1_BH4_0.5 Soil S16-My28377 May 24, 2016	A1_TP01_0.0 Soil S16-My28378 May 25, 2016	A1_TP01_1.0 Soil S16-My28379 May 25, 2016
Test/Reference	LOR	Unit				
% Moisture Heavy Metals	1	%	6.1	20	6.1	23
Arsenic	2	mg/kg	4.3	5.0	4.1	8.7
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	7.9	12	7.6	23
Copper	5	mg/kg	< 5	8.3	< 5	12
Lead	5	mg/kg	13	7.5	100	17
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	< 5	5.5	14	16

Client Sample ID			A1_TP03_0.0	A1_TP03_0.5	A1_BH2_0.0	A1_BH5_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My28380	S16-My28381	S16-My28382	S16-My28383
Date Sampled			May 25, 2016	May 25, 2016	May 25, 2016	May 25, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM F	ractions	•				
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	36	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	190	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	240	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	466	< 50	< 50	< 50
ВТЕХ	•					
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	92	94	96	93
Total Recoverable Hydrocarbons - 2013 NEPM F	ractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2)N01	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5



Client Sample ID			A1_TP03_0.0	A1_TP03_0.5	A1_BH2_0.0	A1_BH5_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My28380	S16-My28381	S16-My28382	S16-My28383
· - ·			1	1		
Date Sampled			May 25, 2016	May 25, 2016	May 25, 2016	May 25, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons	<u> </u>	1				
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	90	89	88	122
p-Terphenyl-d14 (surr.)	1	%	91	90	90	129
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-	-
4.4'-DDD	0.05	mg/kg	< 0.05	-	-	-
4.4'-DDE	0.05	mg/kg	< 0.05	-	-	-
4.4'-DDT	0.05	mg/kg	< 0.05	-	-	-
a-BHC	0.05	mg/kg	< 0.05	-	-	-
Aldrin	0.05	mg/kg	< 0.05	-	-	-
b-BHC	0.05	mg/kg	< 0.05	-	-	-
d-BHC	0.05	mg/kg	< 0.05	-	-	-
Dieldrin	0.05	mg/kg	< 0.05	-	_	_
Endosulfan I	0.05	mg/kg	< 0.05	-	_	_
Endosulfan II	0.05	mg/kg	< 0.05	_	_	_
Endosulfan sulphate	0.05	mg/kg	< 0.05	_	_	_
Endrin	0.05	mg/kg	< 0.05	_	_	_
Endrin aldehyde	0.05	mg/kg	< 0.05	_	_	_
Endrin ketone	0.05	mg/kg	< 0.05	-	_	_
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	_	_
Heptachlor	0.05	mg/kg	< 0.05	-	_	_
Heptachlor epoxide	0.05	mg/kg	< 0.05	_	_	_
Hexachlorobenzene	0.05	mg/kg	< 0.05	_	_	_
Methoxychlor	0.2	mg/kg	< 0.2	_	_	_
Toxaphene	1	mg/kg	< 1	-	-	_
Dibutylchlorendate (surr.)	1	%	82	-	-	_
Tetrachloro-m-xylene (surr.)	1	%	124	-	-	-
Polychlorinated Biphenyls (PCB)		//	124			
	0.5		. O F			
Arcolor 1333	0.5	mg/kg	< 0.5	-	-	-
Arcelor 1242	0.5	mg/kg	< 0.5	-	-	-
Arcelor 1242	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1248	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1254	0.5	mg/kg	< 0.5	-	-	-
Aroclor-1260	0.5	mg/kg	< 0.5	-	-	-
Total PCB*	0.5	mg/kg	< 0.5	-	-	-
Dibutylchlorendate (surr.)	1	%	82	-	-	-
Total Recoverable Hydrocarbons - 2013 NEP						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	400	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100



Copper

Mercury

Lead

Nickel

Zinc

Client Sample ID Sample Matrix			A1_TP03_0.0 Soil	A1_TP03_0.5 Soil	A1_BH2_0.0 Soil	A1_BH5_0.5 Soil	
Eurofins mgt Sample No.			S16-My28380	S16-My28381	S16-My28382	S16-My28383	
Date Sampled			May 25, 2016	May 25, 2016	May 25, 2016	May 25, 2016	
Test/Reference	LOR	Unit					
PFOS/PFOA/6:2FTS							
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	N093.8	-	-	-	
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	N090.046	-	-	-	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	^{N09} 0.04	-	-	-	
13C-PFHxA (surr.)	1	%	98	-	-	-	
13C8-PFOS (surr.)	1	%	115	-	-	-	
% Moisture	1	%	12	23	7.2	19	
Heavy Metals		1					
Arsenic	2	mg/kg	2.6	7.4	11	16	
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4	
Chromium	5	mg/kg	6.5	24	15	35	

mg/kg

mg/kg

mg/kg

mg/kg

mg/kg

5.4

1000

< 0.05

< 5

29

7.3

12

< 0.05

< 5

< 5

< 5

140

< 0.05

< 5

6.0

10

24

< 0.05

< 5

9.5

5

5

0.05

5

5

Client Sample ID			A1_BH7_1.5	A1_BH8_0.0	A1_TP04_0.0	A1_TP05_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My28384	S16-My28385	S16-My28386	S16-My28387
Date Sampled			May 25, 2016	May 25, 2016	May 26, 2016	May 26, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM	Fractions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	55	< 50
TRH C29-C36	50	mg/kg	< 50	69	96	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	69	151	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	96	93	96	94
Total Recoverable Hydrocarbons - 2013 NEPM	Fractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2)N01	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5



Client Sample ID Sample Matrix			A1_BH7_1.5 Soil	A1_BH8_0.0 Soil	A1_TP04_0.0	A1_TP05_0.0
·						
Eurofins mgt Sample No.			S16-My28384	S16-My28385	S16-My28386	S16-My28387
Date Sampled			May 25, 2016	May 25, 2016	May 26, 2016	May 26, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons		<u> </u>				
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	93	88	89	89
p-Terphenyl-d14 (surr.)	1	%	97	95	91	92
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-		-	< 0.1
4.4'-DDD	0.05	mg/kg	-		-	< 0.05
4.4'-DDE	0.05	mg/kg	-		-	< 0.05
4.4'-DDT	0.05	mg/kg	-	-	-	< 0.05
a-BHC	0.05	mg/kg	-	-	-	< 0.05
Aldrin	0.05	mg/kg	-	-	-	< 0.05
b-BHC	0.05	mg/kg	-	-	-	< 0.05
d-BHC	0.05	mg/kg	-	-	-	< 0.05
Dieldrin	0.05	mg/kg	-	-	-	< 0.05
Endosulfan I	0.05	mg/kg	-	-	-	< 0.05
Endosulfan II	0.05	mg/kg	-	-	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	-	-	< 0.05
Endrin	0.05	mg/kg	-	-	-	< 0.05
Endrin aldehyde	0.05	mg/kg	-	-	-	< 0.05
Endrin ketone	0.05	mg/kg	-	-	-	< 0.05
g-BHC (Lindane) Heptachlor	0.05 0.05	mg/kg	-	-	-	< 0.05 < 0.05
Heptachlor epoxide	0.05	mg/kg	-	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg mg/kg		-	-	< 0.05
Methoxychlor	0.03	mg/kg	-	-	-	< 0.2
Toxaphene	1	mg/kg	-	-	-	< 1
Dibutylchlorendate (surr.)	1	// // // // // // // // // // // // //	-	-	-	74
Tetrachloro-m-xylene (surr.)	1	%	_	-	-	116
Polychlorinated Biphenyls (PCB)	1	/0	-	-	-	110
	0.5	ma/ka	_			-05
Aroclor 1333	0.5	mg/kg		-	-	< 0.5
Aroclor 1242	0.5	mg/kg	-	-	-	< 0.5
Aroclor 1242	0.5	mg/kg	-	-	-	< 0.5
Aroclor 1354	0.5	mg/kg	-	-	-	< 0.5
Aroclor 1360	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1260	0.5	mg/kg	-	-	-	< 0.5
Total PCB*	0.5	mg/kg	-	-	-	< 0.5
Dibutylchlorendate (surr.)	1	%	-	-	-	74



Client Sample ID Sample Matrix			A1_BH7_1.5 Soil	A1_BH8_0.0 Soil	A1_TP04_0.0 Soil	A1_TP05_0.0 Soil
Eurofins mgt Sample No.			S16-My28384	S16-My28385	S16-My28386	S16-My28387
Date Sampled			May 25, 2016	May 25, 2016	May 26, 2016	May 26, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	130	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
PFOS/PFOA/6:2FTS						
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	-	-	-	N090.012
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	-	-	-	< 0.005
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	-	-	-	< 0.01
13C-PFHxA (surr.)	1	%	-	-	-	61
13C8-PFOS (surr.)	1	%	-	-	-	101
% Moisture	1	%	15	11	7.7	13
Heavy Metals		70	10		7	10
Arsenic	2	mg/kg	5.2	7.4	16	10
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	11	15	8.4	30
Copper	5	mg/kg	13	18	10	9.8
Lead	5	mg/kg	10	21	7400	58
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	0.05
Nickel	5	mg/kg	< 5	13	< 5	9.0
Zinc	5	mg/kg	7.4	24	24	47

Client Sample ID			A1_TP05_0.7	A1_TP09_0.5	A1_TP10_0.0	A1_TP10_2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My28391	S16-My28395	S16-My28396	S16-My28397
Date Sampled			May 26, 2016	May 26, 2016	May 26, 2016	May 26, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM	Fractions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	150	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	220	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	370	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	97	95	86	93
Total Recoverable Hydrocarbons - 2013 NEPM	Fractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50



Client Sample ID			A1_TP05_0.7	A1_TP09_0.5	A1_TP10_0.0	A1_TP10_2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My28391	S16-My28395	S16-My28396	S16-My28397
Date Sampled			May 26, 2016	May 26, 2016	May 26, 2016	May 26, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons	•	•				
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	86	81	90	90
p-Terphenyl-d14 (surr.)	1	%	88	82	95	93
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	-	< 0.1	-
4.4'-DDD	0.05	mg/kg	-	-	< 0.05	-
4.4'-DDE	0.05	mg/kg	-	-	< 0.05	-
4.4'-DDT	0.05	mg/kg	-	-	< 0.05	-
a-BHC	0.05	mg/kg	-	-	< 0.05	-
Aldrin	0.05	mg/kg	-	-	< 0.05	-
b-BHC	0.05	mg/kg	-	-	< 0.05	-
d-BHC	0.05	mg/kg	-	-	< 0.05	-
Dieldrin	0.05	mg/kg	-	-	< 0.05	-
Endosulfan I	0.05	mg/kg	-	-	< 0.05	-
Endosulfan II	0.05	mg/kg	-	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	-	-	< 0.05	-
Endrin	0.05	mg/kg	-	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	-	-	< 0.05	-
Endrin ketone	0.05	mg/kg	-	-	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	-	-	< 0.05	-
Heptachlor	0.05	mg/kg	-	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	-	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	-	-	< 0.05	-
Methoxychlor	0.2	mg/kg	-	-	< 0.2	-
			1			

mg/kg

%

%

1

1

1

Dibutylchlorendate (surr.)

Tetrachloro-m-xylene (surr.)

Toxaphene

< 1

65

104



Client Sample ID			A1_TP05_0.7	A1_TP09_0.5	A1_TP10_0.0	A1_TP10_2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My28391	S16-My28395	S16-My28396	S16-My28397
Date Sampled			May 26, 2016	May 26, 2016	May 26, 2016	May 26, 2016
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls (PCB)		·				
Aroclor-1016	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1232	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1242	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1248	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1254	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1260	0.5	mg/kg	-	-	< 0.5	-
Total PCB*	0.5	mg/kg	-	-	< 0.5	-
Dibutylchlorendate (surr.)	1	%	-	-	65	-
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	360	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
PFOS/PFOA/6:2FTS						
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	-	-	N090.018	-
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	-	-	< 0.005	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	-	-	< 0.01	-
13C-PFHxA (surr.)	1	%	-	-	85	-
13C8-PFOS (surr.)	1	%	-	-	85	-
	T	T				
% Moisture	1	%	8.6	22	14	23
Heavy Metals						
Arsenic	2	mg/kg	11	15	8.9	7.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	12	38	17	20
Copper	5	mg/kg	8.2	12	16	10
Lead	5	mg/kg	120	38	54	15
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	< 5	6.9	8.2	< 5
Zinc	5	mg/kg	33	21	30	< 5

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled			A1_TP12_0.0 Soil S16-My28398 May 26, 2016	A1_TP12_0.5 Soil S16-My28400 May 26, 2016	A1_TP14_0.0 Soil S16-My28401 May 26, 2016	A1_TP14_1.0 Soil S16-My28403 May 26, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	200	75	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	200	75	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1



Client Sample ID			A1_TP12_0.0	A1_TP12_0.5	A1_TP14_0.0	A1_TP14_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My28398	S16-My28400	S16-My28401	S16-My28403
Date Sampled			May 26, 2016	May 26, 2016	May 26, 2016	May 26, 2016
•	1.00	Linit	Way 20, 2010	Way 20, 2010	Way 20, 2010	Way 20, 2010
Test/Reference BTEX	LOR	Unit				
	0.0		2.2			
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	94	94	94	93
Total Recoverable Hydrocarbons - 2013 NEPM		1 "	0.5	0.5	0.5	0.5
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons		T				
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluorantheneN07	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	88	86	73	85
p-Terphenyl-d14 (surr.)	1	%	94	89	71	86
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	< 0.1	-
4.4'-DDD	0.05	mg/kg	< 0.05	-	< 0.05	-
4.4'-DDE	0.05	mg/kg	< 0.05	-	< 0.05	-
4.4'-DDT	0.05	mg/kg	< 0.05	-	< 0.05	-
a-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Aldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
b-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
d-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Dieldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan I	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan II	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin ketone	0.05	mg/kg	< 0.05	-	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	< 0.05	-



Client Sample ID			A1_TP12_0.0	A1_TP12_0.5	A1_TP14_0.0	A1_TP14_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My28398	S16-My28400	S16-My28401	S16-My28403
Date Sampled			May 26, 2016	May 26, 2016	May 26, 2016	May 26, 2016
Test/Reference	LOR	Unit				
Organochlorine Pesticides	-					
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	< 0.05	-
Methoxychlor	0.2	mg/kg	< 0.2	-	< 0.2	-
Toxaphene	1	mg/kg	< 1	=	< 1	=
Dibutylchlorendate (surr.)	1	%	63	-	66	-
Tetrachloro-m-xylene (surr.)	1	%	91	-	93	-
Polychlorinated Biphenyls (PCB)		•				
Aroclor-1016	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1232	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1242	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1248	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1254	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1260	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PCB*	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibutylchlorendate (surr.)	1	%	63	-	66	-
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	190	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
PFOS/PFOA/6:2FTS						
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	N090.012	-	< 0.005	-
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	< 0.005	-	< 0.005	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	< 0.01	-	< 0.01	-
13C-PFHxA (surr.)	1	%	80	-	100	-
13C8-PFOS (surr.)	1	%	75	-	92	-
% Moisture	1	%	5.8	10	15	20
Heavy Metals						
Arsenic	2	mg/kg	3.7	15	8.7	6.3
Cadmium	0.4	mg/kg	0.9	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	14	17	18	19
Copper	5	mg/kg	28	52	15	8.5
Lead	5	mg/kg	32	33	21	10
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	40	26	5.0	< 5
Zinc	5	mg/kg	55	100	19	< 5

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled			A1_TP15_0.5 Soil S16-My28405 May 26, 2016	A1_TP02_0.0 Soil S16-My28406 May 27, 2016	A1_TP02_2.5 Soil S16-My28408 May 27, 2016	A1_TP06_0.0 Soil S16-My28409 May 27, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	74
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	150
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	224



Client Sample ID			A1_TP15_0.5	A1_TP02_0.0	A1_TP02_2.5	A1_TP06_0.0
Sample Matrix			Soil	Soil	Soil	Soil
•						
Eurofins mgt Sample No.			S16-My28405	S16-My28406	S16-My28408	S16-My28409
Date Sampled			May 26, 2016	May 27, 2016	May 27, 2016	May 27, 2016
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	94	94	96	92
Total Recoverable Hydrocarbons - 2013 NEPM F	ractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	89	88	88	88
p-Terphenyl-d14 (surr.)	1	%	93	90	92	89
Organochlorine Pesticides		T				
Chlordanes - Total	0.1	mg/kg	-	< 0.1	-	< 0.1
4.4'-DDD	0.05	mg/kg	-	< 0.05	-	< 0.05
4.4'-DDE	0.05	mg/kg	-	< 0.05	-	< 0.05
4.4'-DDT	0.05	mg/kg	-	< 0.05	-	< 0.05
a-BHC	0.05	mg/kg	-	< 0.05	-	< 0.05
Aldrin	0.05	mg/kg	-	< 0.05	=	< 0.05
b-BHC	0.05	mg/kg	-	< 0.05	-	< 0.05
d-BHC	0.05	mg/kg	-	< 0.05	-	< 0.05
Dieldrin Factor of Karal	0.05	mg/kg	-	< 0.05	-	< 0.05
Endosulfan I	0.05	mg/kg	-	< 0.05	-	< 0.05
Endosulfan II	0.05	mg/kg	-	< 0.05	-	< 0.05
Endosulfan sulphate Endrin	0.05 0.05	mg/kg mg/kg	-	< 0.05 < 0.05	-	< 0.05 < 0.05



[1	1	
Client Sample ID			A1_TP15_0.5	A1_TP02_0.0	A1_TP02_2.5	A1_TP06_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My28405	S16-My28406	S16-My28408	S16-My28409
Date Sampled			May 26, 2016	May 27, 2016	May 27, 2016	May 27, 2016
Test/Reference	LOR	Unit				
Organochlorine Pesticides		·				
Endrin aldehyde	0.05	mg/kg	-	< 0.05	-	< 0.05
Endrin ketone	0.05	mg/kg	-	< 0.05	-	< 0.05
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	-	< 0.05
Heptachlor	0.05	mg/kg	-	< 0.05	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	-	< 0.05
Methoxychlor	0.2	mg/kg	-	< 0.2	-	< 0.2
Toxaphene	1	mg/kg	=	< 1	=	< 1
Dibutylchlorendate (surr.)	1	%	-	67	-	70
Tetrachloro-m-xylene (surr.)	1	%	-	120	-	125
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	-	< 0.5	-	< 0.5
Aroclor-1232	0.5	mg/kg	-	< 0.5	-	< 0.5
Aroclor-1242	0.5	mg/kg	-	< 0.5	-	< 0.5
Aroclor-1248	0.5	mg/kg	-	< 0.5	-	< 0.5
Aroclor-1254	0.5	mg/kg	-	< 0.5	-	< 0.5
Aroclor-1260	0.5	mg/kg	-	< 0.5	-	< 0.5
Total PCB*	0.5	mg/kg	-	< 0.5	-	< 0.5
Dibutylchlorendate (surr.)	1	%	-	67	-	70
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	210
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
PFOS/PFOA/6:2FTS						
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	-	^{N09} 2.0	-	N093.4
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	-	^{N09} 0.024	-	N090.006
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	-	< 0.01	-	< 0.01
13C-PFHxA (surr.)	1	%	=	94	=	92
13C8-PFOS (surr.)	1	%	-	80	-	69
% Clay	1	%	-	-	48	-
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	-	-	870	-
pH (units)(1:5 soil:CaCl2 extract)	0.1	pH Units	-	-	5.3	-
% Moisture	1	%	7.9	4.2	16	5.9
Ion Exchange Properties						
Cation Exchange Capacity	0.05	meq/100g	-	-	12	-
Heavy Metals						
Arsenic	2	mg/kg	9.1	2.8	5.9	5.9
Cadmium	0.4	mg/kg	< 0.4	0.6	< 0.4	0.5
Chromium	5	mg/kg	17	7.3	10	14
Copper	5	mg/kg	9.3	5.6	8.7	9.5
Lead	5	mg/kg	65	17	10	330
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	< 5	< 5	< 5	7.6
Zinc	5	mg/kg	30	9.2	< 5	32



Client Sample ID			A1_TP06_0.3	A1_TP07_0.0	A1_TP07_0.5	A1_TP08_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My28410	S16-My28411	S16-My28412	S16-My28415
Date Sampled			May 27, 2016	May 27, 2016	May 27, 2016	May 27, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	80	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	80	< 50	< 50
ВТЕХ		1 3 3				
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.2	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	93	94	93	93
Total Recoverable Hydrocarbons - 2013 NEPM		,,,		1		
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons		mg/kg	\ 00	\ 30	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	1 30
Benzo(a)pyrene TEQ (lower bound) *	0.5	ma/ka	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)pervlene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	88	91	89	89
p-Terphenyl-d14 (surr.)	1	%	91	92	90	95
Organochlorine Pesticides		,,,	Ţ.	1 32		
Chlordanes - Total	0.1	mg/kg	_	< 0.1	-	_
4.4'-DDD	0.05	mg/kg		< 0.1	-	-
4.4'-DDE	0.05	mg/kg	-	< 0.05	-	-
4.4'-DDT	0.05	mg/kg	-	< 0.05	-	-
a-BHC	0.05	mg/kg	-	< 0.05	-	-
Aldrin	0.05	mg/kg	-	< 0.05	-	- -
b-BHC	0.05	mg/kg	-	< 0.05	-	-



Client Commis ID			14 TD00 00	44 7007 0.0	44 7007 0.5	44 7000 0.5
Client Sample ID			A1_TP06_0.3	A1_TP07_0.0	A1_TP07_0.5	A1_TP08_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My28410	S16-My28411	S16-My28412	S16-My28415
Date Sampled			May 27, 2016	May 27, 2016	May 27, 2016	May 27, 2016
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
d-BHC	0.05	mg/kg	-	< 0.05	=	-
Dieldrin	0.05	mg/kg	-	< 0.05	=	-
Endosulfan I	0.05	mg/kg	-	< 0.05	-	-
Endosulfan II	0.05	mg/kg	-	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	-	-
Endrin	0.05	mg/kg	-	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	-	< 0.05	-	-
Endrin ketone	0.05	mg/kg	-	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	-	-
Heptachlor	0.05	mg/kg	-	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	-	-
Methoxychlor	0.2	mg/kg	-	< 0.2	-	-
Toxaphene	1	mg/kg	-	< 1	-	-
Dibutylchlorendate (surr.)	1	%	-	62	-	-
Tetrachloro-m-xylene (surr.)	1	%	_	114	-	_
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	_	< 0.5	_	_
Aroclor-1232	0.5	mg/kg	_	< 0.5	_	_
Aroclor-1242	0.5	mg/kg	_	< 0.5	_	_
Aroclor-1248	0.5	mg/kg	_	< 0.5	_	_
Aroclor-1254	0.5	mg/kg	_	< 0.5	-	_
Aroclor-1260	0.5	mg/kg	_	< 0.5	-	_
Total PCB*	0.5	mg/kg	_	< 0.5	_	_
Dibutylchlorendate (surr.)	1	%	_	62	_	_
Total Recoverable Hydrocarbons - 2013 NEPM Frac	-	//		02		
TRH >C10-C16	50	ma/ka	< 50	< 50	< 50	< 50
	100	mg/kg				
TRH > C16-C34		mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
PFOS/PFOA/6:2FTS	0.005	m a/lea		N095.7		
Perfluorooctanesulfonic acid (PFOS) Perfluorooctanoic acid (PFOA)	0.005	mg/kg	-	N090.006	-	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.003	mg/kg		< 0.01	-	-
13C-PFHxA (surr.)		mg/kg	-	84	-	
	1 1	%	-		-	-
13C8-PFOS (surr.)	1	%	-	92	-	-
% Moisture	1	%	15	8.1	18	16
Heavy Metals	1		-			
Arsenic	2	mg/kg	5.5	8.3	5.6	15
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	9.1	19	19	33
Copper	5	mg/kg	< 5	20	9.6	16
Lead	5	mg/kg	10	280	11	270
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	< 5	9.5	< 5	6.9
Zinc	5	mg/kg	< 5	52	< 5	33



Γ		1	1	1	1	
Client Sample ID			A1_TP11_0.0	A1_TP11_0.5	A1_TP17_0.0	A1_TP17_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My28416	S16-My28419	S16-My28420	S16-My28421
Date Sampled			May 27, 2016	May 27, 2016	May 27, 2016	May 27, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	170	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	170	< 50	< 50
BTEX		199		11.0		
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	90	94	92	92
Total Recoverable Hydrocarbons - 2013 NEPM		, /0		0-1	52	02
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons	1 00	i iiig/ikg	100	100	100	100
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	88	89	90	87
p-Terphenyl-d14 (surr.)	1	%	93	93	93	88
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	< 0.1	-
4.4'-DDD	0.05	mg/kg	< 0.05	-	< 0.05	-
4.4'-DDE	0.05	mg/kg	< 0.05	-	< 0.05	-
4.4'-DDT	0.05	mg/kg	< 0.05	-	< 0.05	-
a-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Aldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
b-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-



Client Comple ID			14 7744 00	144 7044 0.5	14	144
Client Sample ID			A1_TP11_0.0	A1_TP11_0.5	A1_TP17_0.0	A1_TP17_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My28416	S16-My28419	S16-My28420	S16-My28421
Date Sampled			May 27, 2016	May 27, 2016	May 27, 2016	May 27, 2016
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
d-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Dieldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan I	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan II	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin ketone	0.05	mg/kg	< 0.05	-	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor	0.05	mg/kg	< 0.05	=	< 0.05	=
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	< 0.05	-
Methoxychlor	0.2	mg/kg	< 0.2	-	< 0.2	-
Toxaphene	1	mg/kg	< 1	_	< 1	-
Dibutylchlorendate (surr.)	1	%	59	-	77	-
Tetrachloro-m-xylene (surr.)	1	%	101	-	116	-
Polychlorinated Biphenyls (PCB)		1				
Aroclor-1016	0.5	mg/kg	< 0.5	-	< 0.5	_
Aroclor-1232	0.5	mg/kg	< 0.5	_	< 0.5	_
Aroclor-1232 Aroclor-1242	0.5	mg/kg	< 0.5	_	< 0.5	_
Aroclor-1248	0.5	mg/kg	< 0.5	-	< 0.5	
Aroclor-1254	0.5	mg/kg	< 0.5	-	< 0.5	
Aroclor-1260	0.5	mg/kg	< 0.5	-	< 0.5	
Total PCB*	0.5	mg/kg	< 0.5	-	< 0.5	
Dibutylchlorendate (surr.)	1	%	59	-	77	-
Total Recoverable Hydrocarbons - 2013 NEPM Frac		/0	39	-	111	-
	1		. 50	. 50	. 50	. 50
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	140	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	110	< 100	< 100
PFOS/PFOA/6:2FTS	T	T	N00		NOO · ·	
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	N090.23	-	N090.011	-
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	< 0.005	-	< 0.005	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	< 0.01	=	< 0.01	=
13C-PFHxA (surr.)	1	%	87	-	96	-
13C8-PFOS (surr.)	1	%	100	-	87	-
% Moisture	1	%	8.4	8.2	24	14
Heavy Metals						
Arsenic	2	mg/kg	9.9	9.1	4.1	2.8
Cadmium	0.4	mg/kg	< 0.4	< 0.4	1.2	< 0.4
Chromium	5	mg/kg	17	16	13	6.0
Copper	5	mg/kg	21	29	10	< 5
Lead	5	mg/kg	110	120	52	6.7
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	9.5	16	5.5	< 5
Zinc	5	mg/kg	38	55	26	< 5



Client Semule ID			A4 TD40 0.0	A4 TD40 0.5	T0400547 4	TD400547 4
Client Sample ID			A1_TP18_0.0	A1_TP18_0.5	TS160517_4	TB160517_4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My28422	S16-My28423	S16-My28424	S16-My28426
Date Sampled			May 27, 2016	May 27, 2016	May 27, 2016	May 27, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM F	ractions					
TRH C6-C9	20	mg/kg	< 20	< 20	-	-
TRH C10-C14	20	mg/kg	< 20	< 20	-	-
TRH C15-C28	50	mg/kg	< 50	< 50	-	-
TRH C29-C36	50	mg/kg	< 50	< 50	-	-
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	-	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	100%	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	99%	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	98%	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	98%	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	98%	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	98%	< 0.3
4-Bromofluorobenzene (surr.)	1	%	90	93	93	94
Total Recoverable Hydrocarbons - 2013 NEPM F	ractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	-	-
TRH C6-C10	20	mg/kg	< 20	< 20	-	-
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	-	-
TRH >C10-C16 less Naphthalene (F2)N01	50	mg/kg	< 50	< 50	-	-
Polycyclic Aromatic Hydrocarbons	·					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	-	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	-	-
Anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Chrysene	0.5	mg/kg	< 0.5	< 0.5	-	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	=
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	=	=
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-	=
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	-	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	-	-
2-Fluorobiphenyl (surr.)	1	%	86	87	-	-
p-Terphenyl-d14 (surr.)	1	%	91	91	-	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-	-
4.4'-DDD	0.05	mg/kg	< 0.05	-	-	-
4.4'-DDE	0.05	mg/kg	< 0.05	-	-	-
4.4'-DDT	0.05	mg/kg	< 0.05	-	-	-
a-BHC	0.05	mg/kg	< 0.05	-	-	-
Aldrin	0.05	mg/kg	< 0.05	-	-	-
b-BHC	0.05	mg/kg	< 0.05	-	-	-



		1				
Client Sample ID			A1_TP18_0.0	A1_TP18_0.5	TS160517_4	TB160517_4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My28422	S16-My28423	S16-My28424	S16-My28426
Date Sampled			May 27, 2016	May 27, 2016	May 27, 2016	May 27, 2016
Test/Reference	LOR	Unit				
Organochlorine Pesticides		•				
d-BHC	0.05	mg/kg	< 0.05	-	-	-
Dieldrin	0.05	mg/kg	< 0.05	-	-	-
Endosulfan I	0.05	mg/kg	< 0.05	-	-	-
Endosulfan II	0.05	mg/kg	< 0.05	-	=	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	=	-
Endrin	0.05	mg/kg	< 0.05	-	=	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	-	-
Endrin ketone	0.05	mg/kg	< 0.05	-	-	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	-	-
Heptachlor	0.05	mg/kg	< 0.05	-	-	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	_	_	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-	-
Methoxychlor	0.2	mg/kg	< 0.2	-	-	_
Toxaphene	1	mg/kg	< 1	-	-	_
Dibutylchlorendate (surr.)	1	%	73	-	-	_
Tetrachloro-m-xylene (surr.)	1	%	114	-	-	_
Polychlorinated Biphenyls (PCB)		,,,				
Aroclor-1016	0.5	mg/kg	< 0.5	_	_	_
Aroclor-1010	0.5	mg/kg	< 0.5	_		<u> </u>
Aroclor-1232 Aroclor-1242	0.5	mg/kg	< 0.5	_	_	
Aroclor-1248	0.5	mg/kg	< 0.5	<u> </u>	-	-
Aroclor-1254	0.5	mg/kg	< 0.5	_	-	
Aroclor-1260	0.5	mg/kg	< 0.5	_	-	
Total PCB*	0.5	mg/kg	< 0.5	_		
Dibutylchlorendate (surr.)	1	%	73	_		<u> </u>
Total Recoverable Hydrocarbons - 2013 NEPM Frac	-	/0	73	-	-	-
-			. 50	. 50		
TRH >C10-C16	50	mg/kg	< 50	< 50	-	-
TRH > C16-C34	100	mg/kg	< 100	< 100	-	-
TRH >C34-C40	100	mg/kg	< 100	< 100	-	-
PFOS/PFOA/6:2FTS	0.005		N090 000			
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	N090.006	-	-	-
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	< 0.005	-	-	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	< 0.01	-	-	-
13C-PFHxA (surr.)	1	%	84	-	=	-
13C8-PFOS (surr.)	1	%	93	-	-	-
9/ Maicture	1	0/	22	15		
% Moisture Heavy Metals	1	%	22	15	-	-
Arsenic	2	ma/l:~	7 5	0.2		
Cadmium	2	mg/kg	7.5	8.3	-	-
	0.4	mg/kg	< 0.4	< 0.4	-	-
Conner	5	mg/kg	13	22	-	-
Copper	5	mg/kg	9.9	15	-	-
Lead	5	mg/kg	20	16	-	-
Mercury	0.05	mg/kg	< 0.05	< 0.05	-	-
Nickel	5	mg/kg	5.3	7.7	-	-
Zinc	5	mg/kg	14	13	=	-



Client Sample ID Sample Matrix Eurofins mgt Sample No.			A1_BH3_0.0 Soil S16-My28427	A1_BH6_0.5 Soil S16-My28428	A1_BH9_1.5 Soil S16-My28429	A1_BH10_0.0 Soil S16-My28430
Date Sampled			May 26, 2016	May 26, 2016	May 26, 2016	May 26, 2016
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	95	91	93	92
% Moisture	1	%	9.0	6.8	19	6.6



Sample History

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

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Jun 02, 2016	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Sydney	Jun 01, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Jun 01, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Sydney	Jun 02, 2016	14 Day
- Method: E007 Polyaromatic Hydrocarbons (PAH)			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Jun 02, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Sydney	Jun 01, 2016	28 Day
- Method: LTM-MET-3040_R0 TOTAL AND DISSOLVED METALS AND MERCURY IN WATERS BY ICP-MS $$			
Eurofins mgt Suite B13			
Organochlorine Pesticides	Sydney	Jun 02, 2016	14 Day
- Method: E013 Organochlorine Pesticides (OC)			
Polychlorinated Biphenyls (PCB)	Sydney	Jun 02, 2016	28 Day
- Method: E013 Polychlorinated Biphenyls (PCB)			
PFOS/PFOA/6:2FTS	Brisbane	Jun 01, 2016	14 Day
- Method: LTM-ORG-2100 Analysis of PFCs in environmental samples by LC-MS/MS			
% Clay	Brisbane	May 31, 2016	6 Day
- Method: LTM-GEN-7040			
pH (units)(1:5 soil:CaCl2 extract)	Sydney	Jun 01, 2016	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
Conductivity (1:5 aqueous extract at 25°C)	Sydney	Jun 06, 2016	7 Day
- Method: LTM-INO-4030			
Ion Exchange Properties	Melbourne	Jun 03, 2016	
% Moisture	Sydney	May 28, 2016	14 Day
ALCO LATA OFFICIONAL CO			



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Melbourne 2-5 Kingston Town Close Oakleigh VIC 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney
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NATA # 1261 Site # 18217

Eurofins | mgt Analytical Services Manager : Andrew Black

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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 27, 2016 7:50 PM

Address: Level 4, 100 Christie St Report #: 502324 Due: Jun 6, 2016 St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 **Contact Name:** Michael Stacey

BANKSTOWN AIRPORT - SITE 1 Project Name:

Project ID: IA110700

	A1_BH4_0.5 May 24, 2016 Soil S16-My28377 A1_TP01_0.0 May 25, 2016 Soil S16-My28378 A1_TP01_1.0 May 25, 2016 Soil S16-My28378 A1_TP03_0.0 May 25, 2016 Soil S16-My28380 A1_TP03_0.5 May 25, 2016 Soil S16-My28380 A1_TP03_0.5 May 25, 2016 Soil S16-My28380						Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	ВТЕХ	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
								Х	Х	Х	Х	Х		Х	Х	X	Х
						Х	Х			^	^	^	Х		^	^	$\stackrel{\frown}{}$
			20134														
No			Sampling Time	Matrix	LAB ID												
1	A1_BH1_0.0	May 24, 2016		Soil	S16-My28376										Χ		Χ
2	A1_BH4_0.5	May 24, 2016		Soil	S16-My28377										Χ		Χ
3	A1_TP01_0.0	May 25, 2016		Soil	S16-My28378		Х						Х	Х	Χ		Х
4	A1_TP01_1.0	May 25, 2016		Soil	S16-My28379										Χ		Χ
5	A1_TP03_0.0	May 25, 2016		Soil	S16-My28380								Х	Χ	Χ		Х
6	A1_TP03_0.5	May 25, 2016		Soil	S16-My28381										Χ		Х
7	A1_BH2_0.0	May 25, 2016		Soil	S16-My28382										Χ		Х
8	A1_BH5_0.5	May 25, 2016		Soil	S16-My28383										Χ		Х
9	A1_BH7_1.5	May 25, 2016		Soil	S16-My28384										Χ		Х
10	A1_BH8_0.0	May 25, 2016		Soil	S16-My28385										Χ		Χ

Eurofins | mgt Unit F3, Building F, 16 Mars Road, Lane Cove West, NSW, Australia, 2066 ABN: 50 005 085 521 Telephone: +61 2 9900 8400 Facsimile: +61 2 9420 2977

Page 22 of 47



Melbourne

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NATA # 1261 Site # 20794

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Order No.:

Report #:

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IA110700

02 9928 2100

02 9928 2504

502324

Company Name: Jacobs Group (Australia) P/L NSW

Address: Level 4, 100 Christie St

St Leonards NSW 2065

Project Name: **BANKSTOWN AIRPORT - SITE 1**

Project ID: IA110700 Received: May 27, 2016 7:50 PM

Due: Jun 6, 2016 Priority: 5 Day

Contact Name: Michael Stacey

		Sa	mple Detail			% Clay	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	ВТЕХ	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Melk	ourne Laborato	ory - NATA Site	# 1254 & 142	271												Χ	
Syd	ney Laboratory	- NATA Site # 1	8217				Х	Х	Х	Х	Х	Х		Χ	Х	Х	Х
Bris	bane Laboratory	y - NATA Site #	20794			Χ							Х				
Exte	rnal Laboratory			,													
11	A1_TP04_0.0	May 26, 2016		Soil	S16-My28386		Х								Х		Х
12	A1_TP05_0.0	May 26, 2016		Soil	S16-My28387								Х	Χ	Х		Х
13	A1_TP05_0.3	May 26, 2016		Soil	S16-My28388		Х										
14	A1_TP05_ASB _0.3	May 26, 2016		Soil	S16-My28389			Х									
15	A1_TP05_ASB _0.4	May 26, 2016		Soil	S16-My28390			Х									
16	A1_TP05_0.7	May 26, 2016		Soil	S16-My28391										Χ		Х
17	A1_TP09_0.2	May 26, 2016		Soil	S16-My28392		Х										
18	A1_TP09_ASB _0.2	May 26, 2016		Soil	S16-My28393			Х									
19	A1_TP09_ASB _0.4	May 26, 2016		Soil	S16-My28394			Х									



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Order No.:

Phone:

IA110700 Report #:

502324 02 9928 2100

Fax: 02 9928 2504 Received: May 27, 2016 7:50 PM Due: Jun 6, 2016

Eurofins | mgt Analytical Services Manager : Andrew Black

Priority: 5 Day

Contact Name: Michael Stacey

NSW 2065 **BANKSTOWN AIRPORT - SITE 1 Project Name:**

St Leonards

Jacobs Group (Australia) P/L NSW

Level 4, 100 Christie St

Project ID: IA110700

Company Name:

Address:

% As As C, HO PT BI PR EL MA CS EL

		Sa	mple Detail			Clay	sbestos - WA guidelines	sbestos Absence /Presence	ANCELLED	OLD	H (units)(1:5 soil:CaCl2 extract)	TEX	FOS/PFOA/6:2FTS	urofins mgt Suite B13	oisture Set	ation Exchange Capacity	urofins mgt Suite B7	
Melb	ourne Laborato	ory - NATA Site	# 1254 & 142	271											<u> </u>	Х		ı
Sydı	ney Laboratory	- NATA Site # 1	8217				Х	Х	Х	Х	Х	Х		Х	Х	Х	Х	ı
Bris	bane Laboratory	/ - NATA Site #	20794			Χ							Х					ı
Exte	rnal Laboratory																	ı
20	A1_TP09_0.5	May 26, 2016		Soil	S16-My28395										Х		Х	ı
21	A1_TP10_0.0	May 26, 2016		Soil	S16-My28396								Χ	Х	Х		Х	ı
22	A1_TP10_2.0	May 26, 2016		Soil	S16-My28397										Х		Х	ı
23	A1_TP12_0.0	May 26, 2016		Soil	S16-My28398		Х						Х	Х	Х		Х	ı
24	A1_TP12_ASB _0.4	May 26, 2016		Soil	S16-My28399			Х										
25	A1_TP12_0.5	May 26, 2016		Soil	S16-My28400										Х		Х	ı
26	A1_TP14_0.0	May 26, 2016		Soil	S16-My28401		Х						Х	Х	Х		Х	ı
27	A1_TP14_ASB _0.2	May 26, 2016		Soil	S16-My28402			Х										
28	A1_TP14_1.0	May 26, 2016		Soil	S16-My28403										Х		Х	ı
29	A1_TP15_ASB	May 26, 2016		Soil	S16-My28404			Х										



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Company Name: Jacobs Group (Australia) P/L NSW

Address: Level 4, 100 Christie St

> St Leonards NSW 2065

Project Name: **BANKSTOWN AIRPORT - SITE 1**

Project ID: IA110700 Order No.: IA110700 Received: May 27, 2016 7:50 PM Report #: 502324 Due: Jun 6, 2016 Phone: 02 9928 2100 Priority: 5 Day

Contact Name: Fax: 02 9928 2504 Michael Stacey

			mple Detail			% Clay	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	ВТЕХ	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
								.,		.,				.,	.,	X	<u> </u>
		Laboratory - NATA Site # 18217						Х	Х	Х	Х	Х		Х	Х	Х	Х
	Dourne Laboratory - NATA Site # 1254 & 14271 They Laboratory - NATA Site # 18217 Deane Laboratory - NATA Site # 20794 The Instruction of the Instr												Х				\vdash
EXTE																	
30	—	May 26, 2016		Soil	\$16-My28405										Х		Х
31													Х	Х	X		X
32					<u> </u>		Х										
33	A1_TP02_2.5	May 27, 2016		Soil	S16-My28408	Х					Х				Х	Х	Х
34	A1_TP06_0.0	May 27, 2016		Soil	S16-My28409		Х						Х	Х	Х	- / \	X
35	A1 TP06 0.3	May 27, 2016		Soil	S16-My28410										Х		Х
36	A1_TP07_0.0	May 27, 2016		Soil	S16-My28411		Х						Х	Х	Х		Х
37	A1_TP07_0.5	May 27, 2016		Soil	S16-My28412										Х		Х
38	A1_TP08_0.3	May 27, 2016		Soil	S16-My28413		Х										
39	A1_TP08_ASB _0.4	May 27, 2016		Soil	S16-My28414			Х									



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IA110700

02 9928 2100

02 9928 2504

502324

Order No.:

Report #:

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Company Name: Jacobs Group (Australia) P/L NSW

Address: Level 4, 100 Christie St

> St Leonards NSW 2065

Project Name: **BANKSTOWN AIRPORT - SITE 1**

Project ID: IA110700 Received: May 27, 2016 7:50 PM

Due: Jun 6, 2016 Priority: 5 Day

Contact Name: Michael Stacey

		Sa	mple Detail			% Clay	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	ВТЕХ	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Mell	ourne Laborato	rne Laboratory - NATA Site # 1254 & 14271														Х	
Syd	ney Laboratory	- NATA Site # 1	8217				Х	Х	Х	Х	Х	Χ		Χ	Χ	Х	Х
Bris	bane Laboratory	y - NATA Site #	20794			Х							Χ				
Exte	rnal Laboratory																
40	A1_TP08_0.5	May 27, 2016		Soil	S16-My28415										Х		Х
41	A1_TP11_0.0	May 27, 2016		Soil	S16-My28416		Х						Χ	Χ	Х		Х
42	A1_TP11_0.3	May 27, 2016		Soil	S16-My28417		Χ										
43	A1_TP11_ASB _0.4	May 27, 2016		Soil	S16-My28418				Х								
44	A1_TP11_0.5	May 27, 2016		Soil	S16-My28419										Х		Х
45	A1_TP17_0.0	May 27, 2016		Soil	S16-My28420								Х	Х	Х		Х
46	A1_TP17_1.0	May 27, 2016		Soil	S16-My28421										Х	igsqcup	Х
47	A1_TP18_0.0	May 27, 2016		Soil	S16-My28422		Х						Χ	Х	Х	igsqcup	Х
48	A1_TP18_0.5	May 27, 2016		Soil	S16-My28423										Χ		Х
49	TS160517_4	May 27, 2016		Soil	S16-My28424							Х					
50	TB160517_4	May 27, 2016		Soil	S16-My28426							Χ					



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Order No.:

02 9928 2100

Report #:

Phone:

Fax:

Company Name: Jacobs Group (Australia) P/L NSW

Address: Level 4, 100 Christie St

> St Leonards NSW 2065

Project Name: **BANKSTOWN AIRPORT - SITE 1**

Project ID: IA110700 IA110700 Received: May 27, 2016 7:50 PM 502324

Due: Jun 6, 2016 Priority: 5 Day

Contact Name: Michael Stacey 02 9928 2504

		Sa	mple Detail			% Clay	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	BTEX	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Melk	ourne Laborato	ne Laboratory - NATA Site # 1254 & 14271 aboratory - NATA Site # 18217														Х	
Sydi	ney Laboratory	- NATA Site # 1	8217				Χ	Х	Х	Χ	Х	Х		Х	Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794			Х							Х				
Exte	rnal Laboratory																
51	A1_BH3_0.0	May 26, 2016	;	Soil	S16-My28427							Х			Х		
52	A1_BH6_0.5	May 26, 2016		Soil	S16-My28428							Χ			Х		
53	A1_BH9_1.5	May 26, 2016	:	Soil	S16-My28429							Х			Х		
54	A1_BH10_0.0	May 26, 2016	:	Soil	S16-My28430							Х			Х		
55	A1_BH1_0.5	May 24, 2016	;	Soil	S16-My28431					Х							
56	A1_BH1_1.5	May 24, 2016	;	Soil	S16-My28432					Х							
57	A1_BH4_0.0	May 24, 2016	;	Soil	S16-My28433					Х							
58	A1_BH4_1.5	May 24, 2016	;	Soil	S16-My28434					Х							
59	A1_TP01_0.5	May 25, 2016	;	Soil	S16-My28435					Х							
60	A1_TP03_1.0	May 25, 2016	;	Soil	S16-My28436					Х							
61	A1_BH2_0.5	May 25, 2016		Soil	S16-My28437					Χ							



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NATA # 1261 Site # 20794

ABN - 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Order No.:

Report #:

Phone:

Fax:

IA110700

02 9928 2100

02 9928 2504

502324

Company Name: Jacobs Group (Australia) P/L NSW

Address: Level 4, 100 Christie St

> St Leonards NSW 2065

Project Name: **BANKSTOWN AIRPORT - SITE 1**

Project ID: IA110700 Received: May 27, 2016 7:50 PM

Due: Jun 6, 2016 Priority: 5 Day

Contact Name: Michael Stacey

		Sa	mple Detail			% Clay	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	ВТЕХ	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Mell	ourne Laborate	ne Laboratory - NATA Site # 1254 & 14271														Х	
Syd	ney Laboratory	- NATA Site # 1	8217				Х	Х	Х	Χ	Х	Х		Х	Χ	Х	Х
Bris	bane Laborator	y - NATA Site#	20794			Х							Х				
Exte	rnal Laboratory	<u>'</u>															
62	A1_BH2_1.5	May 25, 2016		Soil	S16-My28438					Х							
63	A1_BH5_0.0	May 25, 2016		Soil	S16-My28439					Χ							
64	A1_BH5_1.5	May 25, 2016		Soil	S16-My28440					Х							
65	A1_BH7_0.0	May 25, 2016		Soil	S16-My28441					Х							
66	A1_BH7_0.5	May 25, 2016		Soil	S16-My28442					Х							
67	A1_BH8_0.5	May 25, 2016		Soil	S16-My28443					Х							
68	A1_BH8_1.5	May 25, 2016		Soil	S16-My28444					Χ							
69	A1_TP04_0.4	May 26, 2016		Soil	S16-My28445					Χ							
70	A1_TP04_0.6	May 26, 2016		Soil	S16-My28446					Χ							
71	A1_TP04_1.0	May 26, 2016		Soil	S16-My28447					Χ							
72	A1_TP04_2.0	May 26, 2016		Soil	S16-My28448					Χ							



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Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217

Eurofins | mgt Analytical Services Manager : Andrew Black

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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 27, 2016 7:50 PM

Address: Level 4, 100 Christie St Report #: 502324 Due: Jun 6, 2016 St Leonards Phone: 02 9928 2100 **Priority:** 5 Day

Contact Name: Michael Stacey NSW 2065 Fax: 02 9928 2504

% A A C H P B P E A C E

Χ

BANKSTOWN AIRPORT - SITE 1 Project Name:

Project ID: IA110700

A1_TP10_1.1 May 26, 2016

A1_TP10_2.5 May 26, 2016

		Sa	mple Detail			Clay	sbestos - WA guidelines	sbestos Absence /Presence	ANCELLED	OLD	H (units)(1:5 soil:CaCl2 extract)	TEX	FOS/PFOA/6:2FTS	urofins mgt Suite B13	oisture Set	ation Exchange Capacity	urofins mgt Suite B7	
Mel	bourne Laborate	ory - NATA Site	# 1254 & 142	271												Х		
Syc	Iney Laboratory	- NATA Site # 1	8217				Х	Х	Х	Х	Х	Х		Х	Х	Х	Х	
Bris	sbane Laborator	y - NATA Site #	20794			Χ							Х					
Ext	ernal Laboratory	<u>/</u>																
73	A1_TP04_2.5	May 26, 2016		Soil	S16-My28449					Х								
74	A1_TP05_1.0	May 26, 2016		Soil	S16-My28450					Х								
75	A1_TP05_2.0	May 26, 2016		Soil	S16-My28451					Х								
76	A1_TP05_2.5	May 26, 2016		Soil	S16-My28452					Х								
77	A1_TP09_0.0	May 26, 2016		Soil	S16-My28453					Х								
78	A1_TP09_0.7	May 26, 2016		Soil	S16-My28454					Х								
79	A1_TP09_1.0	May 26, 2016		Soil	S16-My28455					Х								
80	A1_TP10_0.5	May 26, 2016		Soil	S16-My28456					Х								
81	A1_TP10_0.9	May 26, 2016		Soil	S16-My28457					Х								

S16-My28458

S16-My28459

Soil

Soil



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 Report #:
 502324
 Due:
 Jun 6, 2016

 St Leonards
 Phone:
 02 9928 2100
 Priority:
 5 Day

NSW 2065 Fax: 02 9928 2504 Contact Name: Michael Stacey

Project Name: BANKSTOWN AIRPORT - SITE 1

Project ID: IA110700

		Sa	mple Detail			% Clay	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	ВТЕХ	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Melk	ourne Laborato	ory - NATA Site	# 1254 & 142	271												Х	
Syd	ney Laboratory	- NATA Site # 1	8217				Χ	Х	Х	Χ	Х	Х		Х	Χ	Х	Х
Bris	bane Laborator	y - NATA Site #	20794			Χ							Х				
Exte	rnal Laboratory	<u>, </u>															
84	A1_TP12_0.8	May 26, 2016		Soil	S16-My28460					Χ							
85	A1_TP12_1.0	May 26, 2016		Soil	S16-My28461					Χ							
86	A1_TP12_2.0	May 26, 2016		Soil	S16-My28462					Χ							
87	A1_TP12_2.5	May 26, 2016		Soil	S16-My28463					Χ							
88	A1_TP14_0.5	May 26, 2016		Soil	S16-My28464					Χ							
89	A1_TP14_2.0	May 26, 2016		Soil	S16-My28465					Χ							
90	A1_TP14_2.5	May 26, 2016		Soil	S16-My28466					Χ							
91	A1_TP15_0.0	May 26, 2016		Soil	S16-My28467					Χ							
92	A1_TP15_0.8	May 26, 2016		Soil	S16-My28468					Χ							
93	A1_TP15_1.0	May 26, 2016		Soil	S16-My28469					Χ							
94	A1_TP02_0.5	May 27, 2016		Soil	S16-My28470					Χ							



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Eurofins | mgt Analytical Services Manager : Andrew Black

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 St Leonards
 Phone:
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 Priority:
 5 Day

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 Phone:
 02 9928 2100
 Priority:
 5 Day

 NSW 2065
 Fax:
 02 9928 2504
 Contact Name:
 Michael Stacey

Project Name: BANKSTOWN AIRPORT - SITE 1
Project ID: IA110700

		Sa	mple Detail			% Clay	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	ВТЕХ	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Melk	ourne Laborate	ory - NATA Site	# 1254 & 142	271												Х	
Syd	ney Laboratory	- NATA Site # 1	8217				Х	Х	Х	Χ	Х	Х		Х	Χ	Х	Х
Bris	bane Laborator	y - NATA Site#	20794			Χ							Х				
Exte	rnal Laboratory	<u>, </u>															
95	A1_TP02_1.0	May 27, 2016		Soil	S16-My28471					Х							
96	A1_TP02_2.0	May 27, 2016		Soil	S16-My28472					Χ							
97	A1_TP06_0.5	May 27, 2016		Soil	S16-My28473					Х							
98	A1_TP06_1.0	May 27, 2016		Soil	S16-My28474					Х							
99	A1_TP07_0.3	May 27, 2016		Soil	S16-My28475					Х							
100	A1_TP07_1.0	May 27, 2016		Soil	S16-My28476					Χ							
101	A1_TP07_2.0	May 27, 2016		Soil	S16-My28477					Χ							
102	A1_TP07_2.5	May 27, 2016		Soil	S16-My28478					Χ							
103	A1_TP08_0.0	May 27, 2016		Soil	S16-My28479					Χ							
104	A1_TP08_0.8	May 27, 2016		Soil	S16-My28480					Χ							
105	A1_TP08_1.0	May 27, 2016		Soil	S16-My28481					Χ							



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NATA # 1261 Site # 20794

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 27, 2016 7:50 PM

Address: Level 4, 100 Christie St Report #: 502324 Due: Jun 6, 2016 St Leonards Phone: 02 9928 2100 Priority: 5 Day

Contact Name: NSW 2065 Fax: 02 9928 2504 Michael Stacey

Project Name: **BANKSTOWN AIRPORT - SITE 1**

Project ID: IA110700

		Sa	mple Detail			% Clay	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	втех	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
	ourne Laborato	•		71												Х	
	ney Laboratory -						Χ	Х	Х	Х	Х	Х		Х	Х	Х	Х
	bane Laboratory		20794			Х							Х				
	rnal Laboratory			T	1												
		May 27, 2016		Soil	S16-My28482					Х						Ш	
107	A1_TP08_2.5	May 27, 2016		Soil	S16-My28483					Х							
108	A1_TP11_ASB _0.3	May 27, 2016		Soil	S16-My28484				Х								
109	A1_TP11_0.7	May 27, 2016		Soil	S16-My28485					Х							
110	A1_TP11_1.0	May 27, 2016		Soil	S16-My28486					Х							
111	A1_TP11_2.0	May 27, 2016		Soil	S16-My28487					Х							
112	A1_TP11_2.5	May 27, 2016		Soil	S16-My28488					Х							
113	A1_TP17_0.5	May 27, 2016		Soil	S16-My28489					Х							
114	A1_TP18_0.8	May 27, 2016		Soil	S16-My28490					Х							
115	A1_TP18_1.0	May 27, 2016		Soil	S16-My28491					Х							
116	A1_BH3_0.5	May 26, 2016		Soil	S16-My28492					Х							



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Project Name: **BANKSTOWN AIRPORT - SITE 1**

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		Sa	mple Detail			% Clay	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	ВТЕХ	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Melb	ourne Laborato	ory - NATA Site	# 1254 & 142	71												Χ	
Sydr	ney Laboratory	- NATA Site # 1	8217				Χ	Х	Χ	Χ	Х	Х		Х	Х	Х	Х
Bris	oane Laborator	y - NATA Site #	20794			Х							Χ				Ш
	rnal Laboratory	,			T												
117	A1_BH3_1.5	May 26, 2016		Soil	S16-My28493					Х							
118	A1_BH6_0.0	May 26, 2016		Soil	S16-My28494					Х							Ш
119	A1_BH6_1.5	May 26, 2016		Soil	S16-My28495					Х							
120	A1_BH9_0.0	May 26, 2016		Soil	S16-My28496					Χ							
121	A1_BH9_0.5	May 26, 2016		Soil	S16-My28497					Χ							
122	A1_BH10_0.5	May 26, 2016		Soil	S16-My28498					Х							
123	A1_BH10_1.5	May 26, 2016		Soil	S16-My28499					Χ							
Test	Counts					1	13	8	2	68	1	6	12	12	38	1	34



Internal Quality Control Review and Glossary

General

- 1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 4. Results are uncorrected for matrix spikes or surrogate recoveries.
- 5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise
- 6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

Units

 mg/kg: milligrams per Kilogram
 mg/l: milligrams per litre

 ug/l: micrograms per litre
 ppm: Parts per million

 ppb: Parts per billion
 %: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry Where a moisture has been determined on a solid sample the result is expressed on a dry basis.

LOR Limit of Reporting.

SPIKE Addition of the analyte to the sample and reported as percentage recovery.

RPD Relative Percent Difference between two Duplicate pieces of analysis.

LCS Laboratory Control Sample - reported as percent recovery
CRM Certified Reference Material - reported as percent recovery

Method Blank In the case of solid samples these are performed on laboratory certified clean sands

In the case of water samples these are performed on de-ionised water.

Surr - Surrogate The addition of a like compound to the analyte target and reported as percentage recovery.

DuplicateA second piece of analysis from the same sample and reported in the same units as the result to show comparison.

Batch Duplicate A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.

Batch SPIKE Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.

USEPA United States Environmental Protection Agency

APHA American Public Health Association

TCLP Toxicity Characteristic Leaching Procedure

COC Chain of Custody
SRA Sample Receipt Advice

CP Client Parent - QC was performed on samples pertaining to this report

NCP Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within

TEQ Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

QC Data General Comments

- 1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxaphene is not added to the Spike.
- 5. Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- 6. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time.

 Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- 8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- 9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Report Number: 502324-S



Quality Control Results

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Method Blank	•				
Total Recoverable Hydrocarbons - 1999 NEPM Fra	actions				
TRH C6-C9	mg/kg	< 20	20	Pass	
TRH C10-C14	mg/kg	< 20	20	Pass	
TRH C15-C28	mg/kg	< 50	50	Pass	
TRH C29-C36	mg/kg	< 50	50	Pass	
Method Blank					
ВТЕХ					
Benzene	mg/kg	< 0.1	0.1	Pass	
Toluene	mg/kg	< 0.1	0.1	Pass	
Ethylbenzene	mg/kg	< 0.1	0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2	0.2	Pass	
o-Xylene	mg/kg	< 0.1	0.1	Pass	
Xylenes - Total	mg/kg	< 0.3	0.3	Pass	
Method Blank	1 5 5			•	
Total Recoverable Hydrocarbons - 2013 NEPM Fra	actions				
Naphthalene	mg/kg	< 0.5	0.5	Pass	
TRH C6-C10	mg/kg	< 20	20	Pass	
Method Blank	1 3 3				
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	mg/kg	< 0.5	0.5	Pass	
Acenaphthylene	mg/kg	< 0.5	0.5	Pass	
Anthracene	mg/kg	< 0.5	0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5	0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5	0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5	0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5	0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5	0.5	Pass	
Chrysene	mg/kg	< 0.5	0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5	0.5	Pass	
Fluoranthene	mg/kg	< 0.5	0.5	Pass	
Fluorene	mg/kg	< 0.5	0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5	0.5	Pass	
Naphthalene	mg/kg	< 0.5	0.5	Pass	
Phenanthrene	mg/kg	< 0.5	0.5	Pass	
Pyrene	mg/kg	< 0.5	0.5	Pass	
Method Blank	1 3 3				
Organochlorine Pesticides					
Chlordanes - Total	mg/kg	< 0.1	0.1	Pass	
4.4'-DDD	mg/kg	< 0.05	0.05	Pass	
4.4'-DDE	mg/kg	< 0.05	0.05	Pass	
4.4'-DDT	mg/kg	< 0.05	0.05	Pass	
a-BHC	mg/kg	< 0.05	0.05	Pass	
Aldrin	mg/kg	< 0.05	0.05	Pass	
b-BHC	mg/kg	< 0.05	0.05	Pass	
d-BHC	mg/kg	< 0.05	0.05	Pass	
Dieldrin	mg/kg	< 0.05	0.05	Pass	
Endosulfan I	mg/kg	< 0.05	0.05	Pass	
Endosulfan II	mg/kg	< 0.05	0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05	0.05	Pass	
Endrin	mg/kg	< 0.05	0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05	0.05	Pass	



Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Endrin ketone	mg/kg	< 0.05	0.05	Pass	Code
g-BHC (Lindane)	mg/kg	< 0.05	0.05	Pass	
Heptachlor	mg/kg	< 0.05	0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05	0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05	0.05	Pass	
Methoxychlor	mg/kg	< 0.2	0.2	Pass	
Toxaphene	mg/kg	<1	1	Pass	
Method Blank	19/119		,	1 466	
Polychlorinated Biphenyls (PCB)		T T			
Aroclor-1016	mg/kg	< 0.5	0.5	Pass	
Aroclor-1232	mg/kg	< 0.5	0.5	Pass	
Aroclor-1242	mg/kg	< 0.5	0.5	Pass	
Aroclor-1248	mg/kg	< 0.5	0.5	Pass	
Aroclor-1254	mg/kg	< 0.5	0.5	Pass	
Aroclor-1260	mg/kg	< 0.5	0.5	Pass	
Total PCB*	mg/kg	< 0.5	0.5	Pass	
Method Blank	ı my/ky		0.5	1 033	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH >C10-C16	mg/kg	< 50	50	Pass	
TRH >C16-C34	mg/kg	< 100	100	Pass	
TRH >C34-C40	mg/kg	< 100	100	Pass	
Method Blank	Hig/kg	< 100	100	1 033	
PFOS/PFOA/6:2FTS		T T			
Perfluorooctanesulfonic acid (PFOS)	mg/kg	< 0.005	0.005	Pass	
Perfluorooctanic acid (PFOA)	mg/kg	< 0.005	0.005	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	mg/kg	< 0.003	0.003	Pass	
Method Blank	Hig/kg	< 0.01	0.01	1 033	
% Clay	%	< 1	1	Pass	
Method Blank	70			1 433	
Heavy Metals					
Arsenic	mg/kg	< 2	2	Pass	
Cadmium	mg/kg	< 0.4	0.4	Pass	
Chromium	mg/kg	< 5	5	Pass	
Copper		< 5	5	Pass	
Lead	mg/kg	< 5	5	Pass	
	mg/kg	< 0.05			
Mercury	mg/kg		0.05	Pass	
Nickel	mg/kg	< 5	5	Pass	
Zinc	mg/kg	< 5	5	Pass	
LCS - % Recovery					
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	0/	72	70.400	Poss	
TRH C6-C9	%	73	70-130	Pass	
TRH C10-C14	%	103	70-130	Pass	
LCS - % Recovery					
BTEX	0/	02	70.400	Pass	
Benzene	%	92	70-130	Pass	
Toluene	%	94	70-130	Pass	
Ethylbenzene	%	93	70-130	Pass	
m&p-Xylenes	%	94	70-130	Pass	
o-Xylene	%	94	70-130	Pass	
Xylenes - Total	%	94	70-130	Pass	
LCS - % Recovery					
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				_	
Naphthalene	%	89	70-130	Pass	
TRH C6-C10	%	82	70-130	Pass	I



Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery					
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	%	94	70-130	Pass	
Acenaphthylene	%	81	70-130	Pass	
Anthracene	%	99	70-130	Pass	
Benz(a)anthracene	%	86	70-130	Pass	
Benzo(a)pyrene	%	82	70-130	Pass	
Benzo(b&j)fluoranthene	%	83	70-130	Pass	
Benzo(g.h.i)perylene	%	84	70-130	Pass	
Benzo(k)fluoranthene	%	102	70-130	Pass	
Chrysene	%	111	70-130	Pass	
Dibenz(a.h)anthracene	%	80	70-130	Pass	
Fluoranthene	%	92	70-130	Pass	
Fluorene	%	92	70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	78	70-130	Pass	
Naphthalene	%	100	70-130	Pass	
Phenanthrene	%	108	70-130	Pass	
Pyrene	%	102	70-130	Pass	
LCS - % Recovery	,				
Organochlorine Pesticides					
Chlordanes - Total	%	108	70-130	Pass	
4.4'-DDD	%	109	70-130	Pass	
4.4'-DDE	%	111	70-130	Pass	
4.4'-DDT	%	110	70-130	Pass	
a-BHC	%	106	70-130	Pass	
Aldrin	%	105	70-130	Pass	
b-BHC	%	97	70-130	Pass	
d-BHC	%	112	70-130	Pass	
Dieldrin	%	105	70-130	Pass	
Endosulfan I	%	106	70-130	Pass	
Endosulfan II	%	106	70-130	Pass	
Endosulfan sulphate	%	109	70-130	Pass	
Endrin	%	104	70-130	Pass	
Endrin aldehyde	%	110	70-130	Pass	
Endrin ketone	%	103	70-130	Pass	
g-BHC (Lindane)	%	104	70-130	Pass	
Heptachlor	%	102	70-130	Pass	
Heptachlor epoxide	%	107	70-130	Pass	
Hexachlorobenzene	%	96	70-130	Pass	
Methoxychlor	%	100	70-130	Pass	
Toxaphene	%	88	70-130	Pass	
LCS - % Recovery	70		10-130	1 000	
Polychlorinated Biphenyls (PCB)		T T		I	
Aroclor-1260	%	122	70-130	Pass	
LCS - % Recovery	j 70	122	1 10-130	rass	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions		T T			
TRH >C10-C16	%	101	70-130	Pass	
LCS - % Recovery	70	101	1 10-130	1 1 435	
PFOS/PFOA/6:2FTS		T T			
Perfluorooctanesulfonic acid (PFOS)	%	105	E0 150	Poss	
		105	50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	102	50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	%	96	50-150	Pass	
LCS - % Recovery	0/	110	70.400	Desa	
% Clay	%	110	70-130	Pass	<u> </u>



Test			Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Heavy Metals							
Arsenic			%	104	70-130	Pass	
Cadmium			%	109	70-130	Pass	
Chromium			%	93	70-130	Pass	
Copper			%	92	70-130	Pass	
Lead			%	91	70-130	Pass	
Mercury			%	104	70-130	Pass	
Nickel			%	107	70-130	Pass	
Zinc			%	109	70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
Polycyclic Aromatic Hydrocarbo	ns			Result 1			
Acenaphthene	S16-My28376	СР	%	95	70-130	Pass	
Acenaphthylene	S16-My28376	СР	%	90	70-130	Pass	
Anthracene	S16-My28376	СР	%	97	70-130	Pass	
Benz(a)anthracene	S16-My28376	CP	%	93	70-130	Pass	
Benzo(a)pyrene	S16-My28376	CP	%	85	70-130	Pass	
Benzo(b&j)fluoranthene	S16-My28376	CP	%	84	70-130	Pass	
Benzo(g.h.i)perylene	S16-My28376	CP	%	85	70-130	Pass	
Benzo(k)fluoranthene	S16-My28376	CP	%	100	70-130	Pass	
Chrysene	S16-My28376	CP	%	109	70-130	Pass	
Dibenz(a.h)anthracene	S16-My28376	CP	%	83	70-130	Pass	
Fluoranthene	S16-My28376	CP	%	93	70-130	Pass	
Fluorene	S16-My28376	CP	%	95	70-130	Pass	
Indeno(1.2.3-cd)pyrene	S16-My28376	CP	%	83	70-130	Pass	
Naphthalene	S16-My28376	CP	%	101	70-130	Pass	
Phenanthrene	S16-My28376	CP	%	107	70-130	Pass	
Pyrene	S16-My28376	CP	%	102	70-130	Pass	
Spike - % Recovery	310-Wy20370	l Ci	/0	102	10-130	1 033	
Total Recoverable Hydrocarbons	- 1000 NEDM Fract	tions		Result 1			
TRH C6-C9	S16-My28377	CP	%	77	70-130	Pass	
TRH C10-C14	S16-My28377	CP	%	106	70-130	Pass	
Spike - % Recovery	310-Wy20377	_ CF	/0	100	70-130	Fass	
BTEX				Result 1			
Benzene	S16-My28377	СР	%	88	70 120	Pass	
		CP	%	90	70-130		
Toluene	S16-My28377 S16-My28377	CP	% %	89	70-130 70-130	Pass Pass	
Ethylbenzene m&p-Xylenes	S16-My28377	CP	% %	90	70-130	Pass	
		CP	%	90		Pass	
o-Xylene Xylenes - Total	S16-My28377	CP	%	90	70-130		
Spike - % Recovery	S16-My28377	I CP	70] 90]	70-130	Pass	
	- 2012 NEDM From	tions		Posult 1			
Total Recoverable Hydrocarbons			0/	Result 1	70.400	Doca	
Naphthalene TRU C6 C40	S16-My28377	CP	%	89	70-130	Pass	
TRH C6-C10	S16-My28377	CP	%	83	70-130	Pass	
Spike - % Recovery	2042 NEDM Fa	·iono		Decult 4			
Total Recoverable Hydrocarbons			0/	Result 1	70.400	Dar -	
TRH >C10-C16	S16-My28377	CP	%	105	70-130	Pass	
Spike - % Recovery				Daniel I			
Organochlorine Pesticides	040 00000	NCD	64	Result 1	70.400	D.	
Chlordanes - Total	S16-Jn02686	NCP	%	101	70-130	Pass	
Spike - % Recovery							
Polychlorinated Biphenyls (PCB)				Result 1			
Aroclor-1260	S16-My27938	NCP	%	95	70-130	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery						ı	
PFOS/PFOA/6:2FTS				Result 1			
Perfluorooctanesulfonic acid (PFOS)	B16-Jn00475	NCP	%	111	50-150	Pass	
Spike - % Recovery						ı	
PFOS/PFOA/6:2FTS		, ,		Result 1			
Perfluorooctanoic acid (PFOA)	S16-My28380	CP	%	128	50-150	Pass	
1H.1H.2H.2H- perfluorooctanesulfonic acid (6:2 FTS)	S16-My28380	СР	%	128	50-150	Pass	
Spike - % Recovery	,	3:		.=-	33.733	1 2.23	
Heavy Metals				Result 1			
Arsenic	S16-My28385	СР	%	87	70-130	Pass	
Cadmium	S16-My28385	CP	%	94	70-130	Pass	
Chromium	S16-My28385	CP	%	90	70-130	Pass	
Copper	S16-My28385	CP	%	82	70-130	Pass	
Lead	S16-My28385	CP	%	75	70-130	Pass	
Mercury	S16-My28385	CP	%	100	70-130	Pass	
Nickel	S16-My28385	CP	%	97	70-130	Pass	
Zinc	S16-My28385	CP	%	108	70-130	Pass	
Spike - % Recovery	010 My20303	0, 1	70	100	70-130	1 433	
Polycyclic Aromatic Hydrocarbons				Result 1			
Acenaphthene	S16-My28386	СР	%	94	70-130	Pass	
Acenaphthylene	S16-My28386	CP	%	94	70-130	Pass	
Anthracene	S16-My28386	CP	%	94	70-130	Pass	
Benz(a)anthracene	S16-My28386	CP	%	98	70-130	Pass	
Benzo(a)pyrene	S16-My28386	CP	%	94	70-130	Pass	
Benzo(b&j)fluoranthene	S16-My28386	CP	%	92	70-130	Pass	
Benzo(g.h.i)perylene	S16-My28386	CP	%	86	70-130	Pass	
Benzo(k)fluoranthene	S16-My28386	CP	%	100	70-130	Pass	
` '	S16-My28386	CP	%	100	70-130	Pass	
Chrysene Dibenz(a.h)anthracene	S16-My28386	CP	%	83	70-130	Pass	
Fluoranthene	S16-My28386	CP	%	102	70-130	Pass	
		CP					
Fluorene	S16-My28386		%	99	70-130	Pass	
Indeno(1.2.3-cd)pyrene	S16-My28386	CP	%	85	70-130 70-130	Pass	
Naphthalene	S16-My28386	CP	%	100		Pass	
Phenanthrene	S16-My28386	CP	%	109	70-130	Pass	
Pyrene	S16-My28386	CP	%	111	70-130	Pass	
Spike - % Recovery	4000 NEDM Front	iono		Dogult 1		I	
Total Recoverable Hydrocarbons -			0/	Result 1	70.120	Doos	
TRH C6-C9	S16-My28387	CP	%	73	70-130	Pass	
TRH C10-C14	S16-My28387	CP	%	110	70-130	Pass	
Spike - % Recovery BTEX				Result 1			
Benzene	S16-My28387	СР	%	86	70-130	Pass	
Toluene	S16-My28387	CP	<u> </u>	90	70-130	Pass	
Ethylbenzene	S16-My28387	CP	%	89	70-130	Pass	
m&p-Xylenes	S16-My28387	CP	<u> </u>	90	70-130	Pass	
o-Xylene	S16-My28387	CP	// %	90	70-130	Pass	
Xylenes - Total	S16-My28387	CP	<u> </u>	90	70-130	Pass	
Spike - % Recovery	5 15 WIY 20307	<u> </u>	/0		70-130	1 433	
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1			
Naphthalene	S16-My28387	CP	%	86	70-130	Pass	
rapriliaiono							
TRH C6-C10	S16-My28387	CP	%	81	70-130	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbon	s - 2013 NEPM Fract	ions		Result 1			
TRH >C10-C16	S16-My28387	CP	%	114	70-130	Pass	
Spike - % Recovery							
Heavy Metals				Result 1			
Arsenic	S16-My28403	СР	%	92	70-130	Pass	
Cadmium	S16-My28403	СР	%	105	70-130	Pass	
Chromium	S16-My28403	СР	%	94	70-130	Pass	
Copper	S16-My28403	СР	%	87	70-130	Pass	
Lead	S16-My28403	СР	%	103	70-130	Pass	
Mercury	S16-My28403	CP	%	107	70-130	Pass	
Nickel	S16-My28403	CP	%	99	70-130	Pass	
Zinc	S16-My28403	CP	%	98	70-130	Pass	
Spike - % Recovery	1 010 1111/20100	<u> </u>	,,,		10 100	1 400	
Total Recoverable Hydrocarbon	s - 1999 NEPM Fract	ions		Result 1			
TRH C6-C9	S16-My28406	CP	%	78	70-130	Pass	
TRH C10-C14	S16-My28406	CP	%	112	70-130	Pass	
Spike - % Recovery	310-Wy20400	L CF	/0	112	1 10-130	<u>газэ</u>	
BTEX				Booult 1			
	C16 My20400	СР	0/	Result 1	70.420	Desa	
Benzene	S16-My28406		%	90	70-130	Pass	
Toluene	S16-My28406	CP	%	90	70-130	Pass	
Ethylbenzene	S16-My28406	CP	%	90	70-130	Pass	
m&p-Xylenes	S16-My28406	CP	%	90	70-130	Pass	
o-Xylene	S16-My28406	CP	%	90	70-130	Pass	
Xylenes - Total	S16-My28406	CP	%	90	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbon	s - 2013 NEPM Fract	ions		Result 1			
Naphthalene	S16-My28406	CP	%	83	70-130	Pass	
TRH C6-C10	S16-My28406	CP	%	84	70-130	Pass	
Spike - % Recovery							
Organochlorine Pesticides				Result 1			
4.4'-DDD	S16-My28406	CP	%	130	70-130	Pass	
4.4'-DDE	S16-My28406	CP	%	109	70-130	Pass	
4.4'-DDT	S16-My28406	CP	%	78	70-130	Pass	
a-BHC	S16-My28406	CP	%	102	70-130	Pass	
Aldrin	S16-My28406	CP	%	116	70-130	Pass	
b-BHC	S16-My28406	CP	%	116	70-130	Pass	
d-BHC	S16-My28406	CP	%	119	70-130	Pass	
Dieldrin	S16-My28406	СР	%	106	70-130	Pass	
Endosulfan I	S16-My28406	СР	%	107	70-130	Pass	
Endosulfan II	S16-My28406	СР	%	107	70-130	Pass	
Endosulfan sulphate	S16-My28406	СР	%	103	70-130	Pass	
Endrin	S16-My28406	СР	%	103	70-130	Pass	
Endrin aldehyde	S16-My28406	СР	%	75	70-130	Pass	
Endrin ketone	S16-My28406	CP	%	116	70-130	Pass	
g-BHC (Lindane)	S16-My28406	CP	%	99	70-130	Pass	
Heptachlor	S16-My28406	CP	%	114	70-130	Pass	
Heptachlor epoxide	S16-My28406	CP	%	110	70-130	Pass	
Hexachlorobenzene	S16-My28406	CP	%	107	70-130	Pass	
Methoxychlor	S16-My28406	CP	//	89	70-130	Pass	
Spike - % Recovery	1 0 10 Wy20400		/0	00	1 70-130	1 433	
Total Recoverable Hydrocarbon	e - 2013 NEDM Erost	ione		Result 1			
•			0/		70.420	Desa	
TRH >C10-C16	S16-My28406	CP	%	122	70-130	Pass	
Spike - % Recovery							



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Arsenic	S16-My28419	CP	%	97			70-130	Pass	
Cadmium	S16-My28419	CP	%	96			70-130	Pass	
Chromium	S16-My28419	CP	%	77			70-130	Pass	
Mercury	S16-My28419	CP	%	100			70-130	Pass	
Nickel	S16-My28419	CP	%	86			70-130	Pass	
Zinc	S16-My28419	CP	%	112			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1					
TRH C6-C9	S16-My28421	СР	%	70			70-130	Pass	
TRH C10-C14	S16-My28421	СР	%	97			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S16-My28421	СР	%	90			70-130	Pass	
Toluene	S16-My28421	СР	%	90			70-130	Pass	
Ethylbenzene	S16-My28421	СР	%	89			70-130	Pass	
m&p-Xylenes	S16-My28421	CP	%	90			70-130	Pass	
o-Xylene	S16-My28421	СР	%	90			70-130	Pass	
Xylenes - Total	S16-My28421	CP	%	90			70-130	Pass	
Spike - % Recovery	,				<u> </u>			7 5.55	
Total Recoverable Hydrocarbons -	· 2013 NEPM Fract	ions		Result 1					
Naphthalene	S16-My28421	СР	%	88			70-130	Pass	
TRH C6-C10	S16-My28421	CP	%	77			70-130	Pass	
Spike - % Recovery									
		-							
l lotal Recoverable Hydrocarbons -	· 2013 NEPM Fract	ions		Result 1					
Total Recoverable Hydrocarbons - TRH >C10-C16		ions CP	%	Result 1			70-130	Pass	
	S16-My28421 Lab Sample ID		% Units				70-130 Acceptance	Pass Pass Limits	Qualifying Code
TRH >C10-C16	S16-My28421	CP QA		97			Acceptance	Pass	
TRH >C10-C16 Test	S16-My28421 Lab Sample ID	QA Source		97	Result 2	RPD	Acceptance	Pass	
TRH >C10-C16 Test Duplicate	S16-My28421 Lab Sample ID	QA Source		97 Result 1	Result 2	RPD <1	Acceptance	Pass	
TRH >C10-C16 Test Duplicate Total Recoverable Hydrocarbons	S16-My28421 Lab Sample ID 1999 NEPM Fract	CP QA Source	Units	97 Result 1 Result 1			Acceptance Limits	Pass Limits	
TRH >C10-C16 Test Duplicate Total Recoverable Hydrocarbons - TRH C6-C9	\$16-My28421 Lab Sample ID - 1999 NEPM Fract \$16-My28376	CP QA Source ions	Units mg/kg	97 Result 1 Result 1 < 20	< 20	<1	Acceptance Limits	Pass Limits	
TRH >C10-C16 Test Duplicate Total Recoverable Hydrocarbons - TRH C6-C9 TRH C10-C14	S16-My28421 Lab Sample ID 1999 NEPM Fract S16-My28376 S16-My28376	CP QA Source ions CP CP	Units mg/kg mg/kg	97 Result 1 Result 1 < 20 < 20	< 20 < 20	<1 <1	Acceptance Limits 30% 30%	Pass Limits Pass Pass	
TRH >C10-C16 Test Duplicate Total Recoverable Hydrocarbons - TRH C6-C9 TRH C10-C14 TRH C15-C28	S16-My28421 Lab Sample ID 1999 NEPM Fract S16-My28376 S16-My28376 S16-My28376	CP QA Source ions CP CP CP	mg/kg mg/kg mg/kg	97 Result 1 Result 1 < 20 < 20 < 50	< 20 < 20 < 50	<1 <1 <1	Acceptance Limits 30% 30% 30%	Pass Limits Pass Pass Pass Pass	
TRH >C10-C16 Test Duplicate Total Recoverable Hydrocarbons - TRH C6-C9 TRH C10-C14 TRH C15-C28 TRH C29-C36	S16-My28421 Lab Sample ID 1999 NEPM Fract S16-My28376 S16-My28376 S16-My28376	CP QA Source ions CP CP CP	mg/kg mg/kg mg/kg	97 Result 1 Result 1 < 20 < 20 < 50	< 20 < 20 < 50	<1 <1 <1	Acceptance Limits 30% 30% 30%	Pass Limits Pass Pass Pass Pass	
TRH >C10-C16 Test Duplicate Total Recoverable Hydrocarbons - TRH C6-C9 TRH C10-C14 TRH C15-C28 TRH C29-C36 Duplicate	S16-My28421 Lab Sample ID 1999 NEPM Fract S16-My28376 S16-My28376 S16-My28376	CP QA Source ions CP CP CP	mg/kg mg/kg mg/kg	97 Result 1 < 20 < 20 < 50 < 50	< 20 < 20 < 50 < 50	<1 <1 <1 <1	Acceptance Limits 30% 30% 30%	Pass Limits Pass Pass Pass Pass	
TRH >C10-C16 Test Duplicate Total Recoverable Hydrocarbons - TRH C6-C9 TRH C10-C14 TRH C15-C28 TRH C29-C36 Duplicate BTEX	S16-My28421 Lab Sample ID 1999 NEPM Fract S16-My28376 S16-My28376 S16-My28376 S16-My28376	CP QA Source ions CP CP CP CP	mg/kg mg/kg mg/kg mg/kg	97 Result 1 < 20 < 20 < 50 < 50 Result 1	< 20 < 20 < 50 < 50 Result 2	<1 <1 <1 <1 RPD	30% 30% 30% 30% 30%	Pass Limits Pass Pass Pass Pass Pass	
TRH >C10-C16 Test Duplicate Total Recoverable Hydrocarbons - TRH C6-C9 TRH C10-C14 TRH C15-C28 TRH C29-C36 Duplicate BTEX Benzene	S16-My28421 Lab Sample ID - 1999 NEPM Fract S16-My28376 S16-My28376 S16-My28376 S16-My28376 S16-My28376	CP QA Source ions CP CP CP CP CP	mg/kg mg/kg mg/kg mg/kg	97 Result 1 < 20 < 20 < 50 < 50 Result 1 < 0.1	< 20 < 20 < 50 < 50 Result 2	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30%	Pass Limits Pass Pass Pass Pass Pass	
TRH >C10-C16 Test Duplicate Total Recoverable Hydrocarbons - TRH C6-C9 TRH C10-C14 TRH C15-C28 TRH C29-C36 Duplicate BTEX Benzene Toluene	S16-My28421 Lab Sample ID 1999 NEPM Fract S16-My28376 S16-My28376 S16-My28376 S16-My28376 S16-My28376 S16-My28376	CP QA Source ions CP CP CP CP CP CP	mg/kg mg/kg mg/kg mg/kg	97 Result 1 < 20 < 20 < 50 < 50 Result 1 < 0.1 < 0.1	< 20 < 20 < 50 < 50 < 50	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30%	Pass Limits Pass Pass Pass Pass Pass Pass Pass	
TRH >C10-C16 Test Duplicate Total Recoverable Hydrocarbons - TRH C6-C9 TRH C10-C14 TRH C15-C28 TRH C29-C36 Duplicate BTEX Benzene Toluene Ethylbenzene	\$16-My28421 Lab Sample ID 1999 NEPM Fract \$16-My28376	CP QA Source ions CP CP CP CP CP CP CP CP CP	mg/kg mg/kg mg/kg mg/kg mg/kg	97 Result 1 < 20 < 20 < 50 < 50 Result 1 < 0.1 < 0.1 < 0.2	< 20 < 20 < 50 < 50 < 50 Nesult 2 < 0.1 < 0.1	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30% 30%	Pass Limits Pass Pass Pass Pass Pass Pass Pass P	
TRH >C10-C16 Test Duplicate Total Recoverable Hydrocarbons - TRH C6-C9 TRH C10-C14 TRH C15-C28 TRH C29-C36 Duplicate BTEX Benzene Toluene Ethylbenzene m&p-Xylenes	\$16-My28421 Lab Sample ID 1999 NEPM Fract \$16-My28376	CP QA Source ions CP	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	97 Result 1 < 20 < 20 < 50 < 50 Result 1 < 0.1 < 0.1 < 0.2 < 0.1	< 20 < 20 < 50 < 50 Result 2 < 0.1 < 0.1 < 0.2 < 0.1	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30% 30%	Pass Limits Pass Pass Pass Pass Pass Pass Pass P	
TRH >C10-C16 Test Duplicate Total Recoverable Hydrocarbons - TRH C6-C9 TRH C10-C14 TRH C15-C28 TRH C29-C36 Duplicate BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene	\$16-My28421 Lab Sample ID 1999 NEPM Fract \$16-My28376	CP QA Source ions CP	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	97 Result 1 < 20 < 20 < 50 < 50 Result 1 < 0.1 < 0.1 < 0.2	< 20 < 20 < 50 < 50 < 80 Result 2 < 0.1 < 0.1 < 0.1 < 0.2	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30% 30% 30%	Pass Limits Pass Pass Pass Pass Pass Pass Pass P	
TRH >C10-C16 Test Duplicate Total Recoverable Hydrocarbons - TRH C6-C9 TRH C10-C14 TRH C15-C28 TRH C29-C36 Duplicate BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene Xylenes - Total	\$16-My28421 Lab Sample ID -1999 NEPM Fract \$16-My28376 \$16-My28376	CP QA Source ions CP	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	97 Result 1 < 20 < 20 < 50 < 50 Result 1 < 0.1 < 0.1 < 0.2 < 0.3	< 20 < 20 < 50 < 50 Result 2 < 0.1 < 0.1 < 0.2 < 0.1	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30% 30% 30%	Pass Limits Pass Pass Pass Pass Pass Pass Pass P	
TRH >C10-C16 Test Duplicate Total Recoverable Hydrocarbons - TRH C6-C9 TRH C10-C14 TRH C15-C28 TRH C29-C36 Duplicate BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene Xylenes - Total Duplicate	\$16-My28421 Lab Sample ID -1999 NEPM Fract \$16-My28376 \$16-My28376	CP QA Source ions CP	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	97 Result 1 < 20 < 20 < 50 < 50 Result 1 < 0.1 < 0.1 < 0.2 < 0.1	< 20 < 20 < 50 < 50 < 50 Result 2 < 0.1 < 0.1 < 0.1 < 0.2 < 0.3	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30% 30% 30%	Pass Limits Pass Pass Pass Pass Pass Pass Pass P	
TRH >C10-C16 Test Duplicate Total Recoverable Hydrocarbons - TRH C6-C9 TRH C10-C14 TRH C15-C28 TRH C29-C36 Duplicate BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene Xylenes - Total Duplicate Total Recoverable Hydrocarbons -	\$16-My28421 Lab Sample ID 1999 NEPM Fract \$16-My28376	CP QA Source ions CP	mg/kg	97 Result 1 < 20 < 20 < 50 < 50 < 50 < 0.1 < 0.1 < 0.2 < 0.1 < 0.3 Result 1 < 0.5	< 20 < 20 < 50 < 50 < 50 Result 2 < 0.1 < 0.1 < 0.1 < 0.2 < 0.1 < 0.3	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30% 30% 30% 30%	Pass Limits Pass Pass Pass Pass Pass Pass Pass P	
TRH >C10-C16 Test Duplicate Total Recoverable Hydrocarbons - TRH C6-C9 TRH C10-C14 TRH C15-C28 TRH C29-C36 Duplicate BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene Xylenes - Total Duplicate Total Recoverable Hydrocarbons - Naphthalene	\$16-My28421 Lab Sample ID 1999 NEPM Fract \$16-My28376	CP QA Source ions CP	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	97 Result 1 < 20 < 20 < 50 < 50 Result 1 < 0.1 < 0.1 < 0.2 < 0.3 Result 1	< 20 < 20 < 50 < 50 < 50 Result 2 < 0.1 < 0.1 < 0.2 < 0.1 < 0.3	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30% 30% 30% 30%	Pass Limits Pass Pass Pass Pass Pass Pass Pass P	
TRH >C10-C16 Test Duplicate Total Recoverable Hydrocarbons - TRH C6-C9 TRH C10-C14 TRH C15-C28 TRH C29-C36 Duplicate BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene Xylenes - Total Duplicate Total Recoverable Hydrocarbons - Naphthalene TRH C6-C10	\$16-My28421 Lab Sample ID 1999 NEPM Fract \$16-My28376	CP QA Source ions CP	mg/kg	97 Result 1 < 20 < 20 < 50 < 50 Result 1 < 0.1 < 0.1 < 0.1 < 0.2 < 0.1 < 0.3 Result 1 < 0.2	< 20 < 20 < 50 < 50 < 50 Result 2 < 0.1 < 0.1 < 0.1 < 0.2 < 0.1 < 0.3	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30% 30% 30% 30%	Pass Limits Pass Pass Pass Pass Pass Pass Pass P	
TRH >C10-C16 Test Duplicate Total Recoverable Hydrocarbons - TRH C6-C9 TRH C10-C14 TRH C29-C36 Duplicate BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene Xylenes - Total Duplicate Total Recoverable Hydrocarbons - Naphthalene TRH C6-C10 Duplicate Total Recoverable Hydrocarbons -	\$16-My28421 Lab Sample ID 1999 NEPM Fract \$16-My28376	CP QA Source ions CP	mg/kg	97 Result 1 < 20 < 20 < 50 < 50 Result 1 < 0.1 < 0.1 < 0.1 < 0.3 Result 1 < 0.5 < 20 Result 1	< 20 < 20 < 50 < 50 < 50 Result 2 < 0.1 < 0.1 < 0.2 < 0.1 < 0.3 Result 2 < 0.5 < 20 Result 2	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30% 30% 30% 30%	Pass Limits Pass Pass Pass Pass Pass Pass Pass P	
TRH >C10-C16 Test Duplicate Total Recoverable Hydrocarbons - TRH C6-C9 TRH C10-C14 TRH C29-C36 Duplicate BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene Xylenes - Total Duplicate Total Recoverable Hydrocarbons - Naphthalene TRH C6-C10 Duplicate	\$16-My28421 Lab Sample ID 1999 NEPM Fract \$16-My28376	CP QA Source ions CP	mg/kg	97 Result 1 < 20 < 20 < 50 < 50 Result 1 < 0.1 < 0.1 < 0.1 < 0.2 < 0.1 < 0.3 Result 1 < 0.2	< 20 < 20 < 50 < 50 < 50 Result 2 < 0.1 < 0.1 < 0.2 < 0.1 < 0.3 Result 2 < 0.5 < 20	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30% 30% 30% 30%	Pass Pass Pass Pass Pass Pass Pass Pass	



Duplicate									
PFOS/PFOA/6:2FTS				Result 1	Result 2	RPD			
Perfluorooctanesulfonic acid				Tresult 1	1100uit 2	I II D			
(PFOS)	S16-My28378	CP	mg/kg	0.22	0.25	10	30%	Pass	
Perfluorooctanoic acid (PFOA)	S16-My28378	CP	mg/kg	0.006	0.005	5.0	30%	Pass	
1H.1H.2H.2H-									
perfluorooctanesulfonic acid (6:2 FTS)	S16-My28378	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Duplicate	0.0 m, 200.0	<u> </u>	19,9	1 0.0 .	1 0.0 1		3373	1 466	
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S16-My28380	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S16-My28380	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S16-My28380	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S16-My28380	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S16-My28380	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S16-My28380	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S16-My28380	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S16-My28380	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S16-My28380	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S16-My28380	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S16-My28380	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S16-My28380	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S16-My28380	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S16-My28380	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S16-My28380	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S16-My28380	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S16-My28380	CP		< 0.05	< 0.05	<1	30%	Pass	
· ·	·	CP	mg/kg						
Heptachlor epoxide	S16-My28380	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S16-My28380		mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S16-My28380	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Toxaphene	S16-My28380	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate (BOD)				Door It 4	D 11 0	DDD	<u> </u>	I	
Polychlorinated Biphenyls (PCB)	C4C M. 20200	CD		Result 1	Result 2	RPD	200/	Dana	
Aroclor-1016	S16-My28380	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1232	S16-My28380	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S16-My28380	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S16-My28380	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S16-My28380	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S16-My28380	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate				T	I				
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-My28384	CP	mg/kg	5.2	6.8	27	30%	Pass	
Cadmium	S16-My28384	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S16-My28384	CP	mg/kg	11	12	13	30%	Pass	
Copper	S16-My28384	CP	mg/kg	13	13	4.0	30%	Pass	
Lead	S16-My28384	CP	mg/kg	10	13	27	30%	Pass	
Mercury	S16-My28384	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Nickel	S16-My28384	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S16-My28384	CP	mg/kg	7.4	6.5	12	30%	Pass	
Duplicate				T _	1 _	_			
Polycyclic Aromatic Hydrocarbons			1	Result 1	Result 2	RPD		1	
Acenaphthene	S16-My28385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S16-My28385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S16-My28385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S16-My28385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S16-My28385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S16-My28385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	



Duplicate							ı				
Polycyclic Aromatic Hydrocarbon				Result 1	Result 2	RPD					
Benzo(g.h.i)perylene	S16-My28385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass			
Benzo(k)fluoranthene	S16-My28385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass			
Chrysene	S16-My28385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass			
Dibenz(a.h)anthracene	S16-My28385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass			
Fluoranthene	S16-My28385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass			
Fluorene	S16-My28385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass			
Indeno(1.2.3-cd)pyrene	S16-My28385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass			
Naphthalene	S16-My28385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass			
Phenanthrene	S16-My28385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass			
Pyrene	S16-My28385	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass			
Duplicate Popult 4 Popult 2 PDD											
			1	Result 1	Result 2	RPD					
% Moisture	S16-My28385	СР	%	11	9.6	14	30%	Pass			
Duplicate	4000 1:22:										
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD	2001	+			
TRH C6-C9	S16-My28386	CP	mg/kg	< 20	< 20	<1	30%	Pass			
Duplicate				D 11.4		555					
BTEX	040 14 00000	0.0		Result 1	Result 2	RPD	000/	D			
Benzene	S16-My28386	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass			
Toluene	S16-My28386	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass			
Ethylbenzene	S16-My28386	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass			
m&p-Xylenes	S16-My28386	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass			
o-Xylene	S16-My28386	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass			
Xylenes - Total	S16-My28386	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass			
Duplicate Total Recoverable Hydrocarbons - 2013 NEPM Fractions Result 1 Result 2 RPD											
Naphthalene	S16-My28386	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass			
TRH C6-C10	S16-My28386	CP		< 20	< 20	<1	30%	Pass			
Duplicate	310-Wy26366	CF	mg/kg	< 20	< 20	<u> </u>	30 /6	Fass			
Organochlorine Pesticides				Result 1	Result 2	RPD					
Chlordanes - Total	S16-My28401	СР	mg/kg	< 0.1	< 0.1	<1	30%	Pass			
4.4'-DDD	S16-My28401	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass			
4.4'-DDE	S16-My28401	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass			
4.4'-DDT	S16-My28401	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass			
a-BHC	S16-My28401	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass			
Aldrin	S16-My28401	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass			
b-BHC	S16-My28401	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass			
d-BHC	S16-My28401	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass			
Dieldrin	S16-My28401	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass			
Endosulfan I	S16-My28401	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass			
Endosulfan II	S16-My28401	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass			
Endosulfan sulphate	S16-My28401	СР	mg/kg	< 0.05	< 0.05	<1	30%	Pass			
Endrin	S16-My28401	СР	mg/kg	< 0.05	< 0.05	<1	30%	Pass			
Liidiiii				< 0.05	< 0.05	<1	30%	Pass			
Endrin aldehyde	S16-My28401	CP	mg/kg								
		CP CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass			
Endrin aldehyde	S16-My28401				< 0.05 < 0.05	<1 <1	30% 30%	Pass Pass			
Endrin aldehyde Endrin ketone	S16-My28401 S16-My28401	СР	mg/kg	< 0.05				1 1			
Endrin aldehyde Endrin ketone g-BHC (Lindane)	\$16-My28401 \$16-My28401 \$16-My28401	CP CP	mg/kg mg/kg	< 0.05 < 0.05	< 0.05	<1	30%	Pass			
Endrin aldehyde Endrin ketone g-BHC (Lindane) Heptachlor	S16-My28401 S16-My28401 S16-My28401 S16-My28401	CP CP	mg/kg mg/kg mg/kg	< 0.05 < 0.05 < 0.05	< 0.05 < 0.05	<1 <1	30% 30%	Pass Pass			
Endrin aldehyde Endrin ketone g-BHC (Lindane) Heptachlor Heptachlor epoxide	S16-My28401 S16-My28401 S16-My28401 S16-My28401 S16-My28401	CP CP CP	mg/kg mg/kg mg/kg mg/kg	< 0.05 < 0.05 < 0.05 < 0.05	< 0.05 < 0.05 < 0.05	<1 <1 <1	30% 30% 30%	Pass Pass Pass			



Duplicate									
Polychlorinated Biphenyls (PCB)				Result 1	Result 2	RPD			
Aroclor-1016	S16-My28401	СР	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1232	S16-My28401	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1232 Aroclor-1242	S16-My28401	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S16-My28401	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S16-My28401	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254 Aroclor-1260	S16-My28401	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate	0101WJ20401	01	i ilig/kg	\ \ 0.5	V 0.5		3070	1 433	
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-My28401	СР	mg/kg	8.7	8.7	<1	30%	Pass	
Cadmium	S16-My28401	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S16-My28401	CP	mg/kg	18	15	14	30%	Pass	
Copper	S16-My28401	CP	mg/kg	15	15	4.0	30%	Pass	
Lead	S16-My28401	CP	mg/kg	21	33	44	30%	Fail	Q15
Mercury	S16-My28401	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	Q10
Nickel	S16-My28401	CP	mg/kg	5.0	5.8	14	30%	Pass	
Zinc	S16-My28401	CP	mg/kg	19	21	7.0	30%	Pass	
Duplicate	0101WJ20401	01	i ilig/kg	13	21	7.0	3070	1 433	
Polycyclic Aromatic Hydrocarbons	•			Result 1	Result 2	RPD			
Acenaphthene	S16-My28403	СР	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S16-My28403	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S16-My28403	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S16-My28403	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S16-My28403	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&i)fluoranthene	S16-My28403	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S16-My28403	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S16-My28403	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S16-My28403	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S16-My28403	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S16-My28403	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S16-My28403	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S16-My28403	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S16-My28403	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S16-My28403	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S16-My28403	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate	010 Wy20400	01	i ilig/kg	1 0.0	V 0.0		0070	1 433	
Daphouto				Result 1	Result 2	RPD			
% Moisture	S16-My28403	СР	%	20	20	<1	30%	Pass	
Duplicate	C10 Wy20400	OI .	70	20	20		0070	1 433	
Total Recoverable Hydrocarbons -	1999 NFPM Fract	ions		Result 1	Result 2	RPD			
TRH C6-C9	S16-My28405	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S16-My28405	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S16-My28405	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S16-My28405	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate	010 My20100	<u> </u>	ı mg/ng	100	100	71	0070	1 400	
BTEX				Result 1	Result 2	RPD			
Benzene	S16-My28405	СР	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S16-My28405	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S16-My28405	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S16-My28405	CP	mg/kg	< 0.1	< 0.2	<1	30%	Pass	
o-Xylene	S16-My28405	CP	mg/kg	< 0.2	< 0.1	<1	30%	Pass	
Xylenes - Total	S16-My28405	CP	mg/kg	< 0.3	< 0.1	<1	30%	Pass	
Duplicate	1 010 WIY20400		ı myrky		, , 0.0		JU /0	1 433	
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ione		Result 1	Result 2	RPD			
Naphthalene	S16-My28405	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	\$16-My28405	CP					30%		
11(1100-010	J 10-1011926405	UP	mg/kg	< 20	< 20	<1	30%	Pass	



-									
Duplicate									
Total Recoverable Hydrocarbons			1	Result 1	Result 2	RPD			
TRH >C10-C16	S16-My28405	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S16-My28405	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S16-My28405	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate	l	l I							
			1	Result 1	Result 2	RPD		_	
% Clay	S16-My28408	CP	%	48	48	<1	30%	Pass	
Conductivity (1:5 aqueous extract at 25°C)	S16-My29631	NCP	uS/cm	140	120	11	30%	Pass	
Duplicate	1 0.0,2000.	.,	u.e				1 0070		
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-My28416	СР	mg/kg	9.9	8.5	15	30%	Pass	
Cadmium	S16-My28416	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S16-My28416	CP	mg/kg	17	16	2.0	30%	Pass	
Copper	S16-My28416	CP	mg/kg	21	20	6.0	30%	Pass	
Lead	S16-My28416	CP	mg/kg	110	120	13	30%	Pass	
Mercury	S16-My28416	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Nickel	S16-My28416	CP	mg/kg	9.5	11	19	30%	Pass	
Zinc	S16-My28416	CP	mg/kg	38	39	2.0	30%	Pass	
Duplicate	1		1					1 3.00	
Total Recoverable Hydrocarbons -	· 1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C6-C9	S16-My28420	СР	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S16-My28420	СР	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S16-My28420	СР	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S16-My28420	СР	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate			, , ,	,	,				
BTEX				Result 1	Result 2	RPD			
Benzene	S16-My28420	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S16-My28420	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S16-My28420	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S16-My28420	СР	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S16-My28420	СР	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S16-My28420	СР	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons	· 2013 NEPM Fract	ions		Result 1	Result 2	RPD			
Naphthalene	S16-My28420	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S16-My28420	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons	s			Result 1	Result 2	RPD			
Acenaphthene	S16-My28420	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S16-My28420	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S16-My28420	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S16-My28420	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S16-My28420	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S16-My28420	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S16-My28420	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S16-My28420	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S16-My28420	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S16-My28420	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S16-My28420	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S16-My28420	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S16-My28420	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S16-My28420	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S16-My28420	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S16-My28420	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	



Duplicate											
Total Recoverable Hydrocarbons		Result 1	Result 2	RPD							
TRH >C10-C16	S16-My28420	CP	mg/kg	< 50	< 50	<1	30%	Pass			
TRH >C16-C34	S16-My28420	CP	mg/kg	< 100	< 100	<1	30%	Pass			
TRH >C34-C40	S16-My28420	CP	mg/kg	< 100	< 100	<1	30%	Pass			
Duplicate											
PFOS/PFOA/6:2FTS				Result 1	Result 2	RPD					
Perfluorooctanesulfonic acid (PFOS)	S16-My28420	СР	mg/kg	0.011	0.009	19	30%	Pass			
Perfluorooctanoic acid (PFOA)	S16-My28420	CP	mg/kg	< 0.005	< 0.005	<1	30%	Pass			
1H.1H.2H.2H- perfluorooctanesulfonic acid (6:2 FTS)	S16-My28420	СР	mg/kg	< 0.01	< 0.01	<1	30%	Pass			



Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description

F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis). N01

Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.

N02

F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes. N04

Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs N07 N09 Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear standard.

Q15 The RPD reported passes Eurofins I mot's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Andrew Black Analytical Services Manager Bob Symons Senior Analyst-Inorganic (NSW) Senior Analyst-Metal (VIC) Emily Rosenberg Ivan Taylor Senior Analyst-Metal (NSW) Rhys Thomas Senior Analyst-Ashestos (NSW) Richard Corner Senior Analyst-Inorganic (QLD) Richard Corner Senior Analyst-Organic (QLD) Ryan Hamilton Senior Analyst-Organic (NSW) Ryan Hamilton Senior Analyst-Volatile (NSW)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

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

Uncertainty data is available on request

Eurofins, Img shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In on case shall Eurofins I mg be liable for consequential damages including, but not limited to, lost or ordific, samages for refault to its medic deadlines and lots for failure to meet deadlines and lots for failure to meet deadlines and lots the samples as preceded in all and refaults only to the interests tot. Unless indicated otherwise, the lists is year, indicated otherwise, the lists is year, indicated otherwise, the lists year, indicated otherwise, indicated otherwise, the lists year, indicated otherwise, indicated otherwise, the lists year, indicated otherwise, and indicated otherwise the list year, indicated otherwise, the list year, indicated otherwise, and indicate otherwise, the lists year, indicated otherwise, the lists year, indicated otherwise, and indicated otherwise the list year, indicated otherwise, the list year, and indicated otherwise, a



Certificate of Analysis





NATA Accredited Accreditation Number 1261 Site Number 18217

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

Jacobs Group (Australia) P/L NSW Level 4, 100 Christie St St Leonards NSW 2065

Attention: Michael Stacey
Report 502324-AID

Project Name BANKSTOWN AIRPORT - SITE 1

Project ID IA110700
Received Date May 27, 2016
Date Reported Jun 06, 2016

Methodology:

Asbestos ID

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

Subsampling Soil Samples

The whole sample submitted is first dried and then sieved through a 10mm sieve followed by a 2mm sieve. All fibrous matter viz greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) Iron ores - Sampling and Sample preparation procedures is employed. Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis in accordance with AS 4964-2004.

Bonded asbestoscontaining material (ACM) The material is first examined and any fibres isolated and where required interfering organic fibres or matter may be removed by treating the sample for several hours at a temperature not exceeding 400 ± 30 °C. The resultant material is then ground and examined in accordance with AS 4964-2004.

Limit of Reporting

The nominal detection limit of the AS4964 method is around 0.01%. The examination of large sample sizes (at least 500 ml is recommended) may improve the likelihood of identifying asbestos material in the greater than 2 mm fraction. The NEPM screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. NOTE: NATA News, September 2011 – page 34, states, "Weighing of fibres is problematic and can lead to loss of fibres and potential exposure for laboratory analysts. To request laboratories to report information which is outside the scope of AS 4964-2004 and the scope of their accreditation is misleading and is most unwise" therefore such values reported are outside the scope of Eurofins | mgt NATA accreditation as designated by an asterisk.

Report Number: 502324-AID







NATA Accredited Accreditation Number 1261 Site Number 18217

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

Project Name BANKSTOWN AIRPORT - SITE 1

Project ID IA110700

Date Sampled May 25, 2016 to May 27, 2016

Report 502324-AID

Client Sample ID	Eurofins mgt Sample No.	Date Sampled	Sample Description	Result
A1_TP01_0.0	16-My28378	May 25, 2016	Approximate Sample 872g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}
A1_TP04_0.0	16-My28386	May 26, 2016	Approximate Sample 798g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. M11
A1_TP05_0.3	16-My28388	May 26, 2016	Approximate Sample 861g Sample consisted of: Brown coarse grain sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. M11
A1_TP05_ASB_0.3	16-My28389	May 26, 2016	Approximate Sample 28g / 80x60x5mm Sample consisted of: Grey compressed fibre cement material	Chrysotile, amosite and crocidolite asbestos detected.
A1_TP05_ASB_0.4	16-My28390	May 26, 2016	Approximate Sample 42g / 140x50x5mm Sample consisted of: Grey compressed fibre cement material	Chrysotile, amosite and crocidolite asbestos detected.
A1_TP09_0.2	16-My28392	May 26, 2016	Approximate Sample 843g Sample consisted of: Brown coarse grain sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. M11
A1_TP09_ASB_0.2	16-My28393	May 26, 2016	Approximate Sample 60g / 140x65x5mm Sample consisted of: Grey compressed fibre cement material	Chrysotile asbestos detected.
A1_TP09_ASB_0.4	16-My28394	May 26, 2016	Approximate Sample 119g / 111x60x5mm Sample consisted of: Grey compressed fibre cement material	Chrysotile asbestos detected.
A1_TP12_0.0	16-My28398	May 26, 2016	Approximate Sample 806g Sample consisted of: Brown coarse grain sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. M11
A1_TP12_ASB_0.4	16-My28399	May 26, 2016	Approximate Sample 30g / 60x40x7mm Sample consisted of: Grey compressed fibre cement material	Chrysotile and amosite asbestos detected.

Report Number: 502324-AID







NATA Accredited Accreditation Number 1261 Site Number 18217

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

Client Sample ID	Eurofins mgt Sample No.	Date Sampled	Sample Description	Result
A1_TP14_0.0	16-My28401	May 26, 2016	Approximate Sample 809g Sample consisted of: Brown coarse grain sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}
A1_TP14_ASB_0.2	16-My28402	May 26, 2016	Approximate Sample 13g / 55x41x5mm Sample consisted of: Grey compressed fibre cement material	Chrysotile, amosite and crocidolite asbestos detected.
A1_TP15_ASB_0.2	16-My28404	May 26, 2016	Approximate Sample 18g / 50x34x8mm Sample consisted of: Grey compressed fibre cement material	Chrysotile, amosite and crocidolite asbestos detected.
A1_TP02_0.2	16-My28407	May 27, 2016	Approximate Sample 988g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. M11
A1_TP06_0.0	16-My28409	May 27, 2016	Approximate Sample 761g Sample consisted of: Brown coarse grain sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. M11
A1_TP07_0.0	16-My28411	May 27, 2016	Approximate Sample 838g Sample consisted of: Brown coarse grain sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. M11
A1_TP08_0.3	16-My28413	May 27, 2016	Approximate Sample 888g Sample consisted of: Brown coarse grain sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. M11
A1_TP08_ASB_0.4	16-My28414	May 27, 2016	Approximate Sample 19g / 80x25x5mm Sample consisted of: Assorted grey compressed fibre cement material	Chrysotile and amosite asbestos detected.
A1_TP11_0.0	16-My28416	May 27, 2016	Approximate Sample 101g Sample consisted of: Brown coarse grain sandy soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
A1_TP11_0.3	16-My28417	May 27, 2016	Approximate Sample 1043g Sample consisted of: Brown coarse grain sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. M11
A1_TP18_0.0	16-My28422	May 27, 2016	Approximate Sample 819g Sample consisted of: Brown coarse grain sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. M11



Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Jun 07, 2016	Indefinite
Asbestos - LTM-ASB-8020	Sydney	Jun 07, 2016	Indefinite



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Melbourne

3-5 Kingston Town Close Oakleigh VIC 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone: +61 2 9900 8400
NATA # 1261 Site # 18217

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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 27, 2016 7:50 PM

 Address:
 Level 4, 100 Christie St
 Report #:
 502324
 Due:
 Jun 6, 2016

 St Leonards
 Phone:
 02 9928 2100
 Priority:
 5 Day

NSW 2065 Fax: 02 9928 2504 Contact Name: Michael Stacey

Project Name: BANKSTOWN AIRPORT - SITE 1

Project ID: IA110700

Eurofins | mgt Analytical Services Manager : Andrew Black

	Sample Detail Melbourne Laboratory - NATA Site # 1254 & 14271							Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	втех	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Melb	Melbourne Laboratory - NATA Site # 1254 & 14271															Х	
Sydı	ney Laboratory	- NATA Site # 1	8217				Х	Х	Х	Х	Х	Х		Х	Χ	Х	Х
Bris	bane Laborator	y - NATA Site #	20794			Х							Χ				
Exte	rnal Laboratory	,															
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID												
1	A1_BH1_0.0	May 24, 2016		Soil	S16-My28376										Χ		Χ
2	A1_BH4_0.5	May 24, 2016		Soil	S16-My28377										Χ		Х
3	A1_TP01_0.0	May 25, 2016		Soil	S16-My28378		Х						Х	Х	Χ		Х
4	A1_TP01_1.0	May 25, 2016		Soil	S16-My28379										Χ		Χ
5	A1_TP03_0.0	May 25, 2016		Soil	S16-My28380								Χ	Χ	Χ		Х
6	A1_TP03_0.5	May 25, 2016		Soil	S16-My28381										Χ		Х
7	A1_BH2_0.0	May 25, 2016		Soil	S16-My28382										Χ		Х
8	A1_BH5_0.5	May 25, 2016		Soil	S16-My28383										Χ		Х
9	A1_BH7_1.5	May 25, 2016		Soil	S16-My28384										Χ		Х
10	A1_BH8_0.0	May 25, 2016		Soil	S16-My28385										Х		Χ



Company Name:

mgt

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Melbourne

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NATA # 1261 Site # 18217

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

Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 27, 2016 7:50 PM

Address: Level 4. 100 Christie St Report #: 502324 Due: Jun 6, 2016 St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 **Contact Name:** Michael Stacey

Project Name: **BANKSTOWN AIRPORT - SITE 1**

	12 A1_TP05_0.0 May 26, 2016 Soil S16-My28387 13 A1_TP05_0.3 May 26, 2016 Soil S16-My28388 14 A1_TP05_ASB May 26, 2016 Soil S16-My28389 14 A1_TP05_ASB May 26, 2016 Soil S16-My28389								CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	BTEX	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Melk	ourne Laborato	ory - NATA Site	# 1254 & 142	271												Х	
Sydi	ney Laboratory	- NATA Site # 1	8217				Х	Х	Х	Х	Х	Х		Х	Х	Х	Х
Bris	bane Laboratory	y - NATA Site #	20794			Χ							Х				
Exte	rnal Laboratory																
11	A1_TP04_0.0	May 26, 2016		Soil	S16-My28386		Χ								Х		Х
12	A1_TP05_0.0	May 26, 2016		Soil	S16-My28387								Х	Х	Х		Х
13	A1_TP05_0.3	May 26, 2016		Soil	S16-My28388		Х										
14	A1_TP05_ASB _0.3	May 26, 2016		Soil	S16-My28389			Х									
15	A1_TP05_ASB _0.4	May 26, 2016		Soil	S16-My28390			Х									
16	A1_TP05_0.7	May 26, 2016		Soil	S16-My28391										Х		Х
17	A1_TP09_0.2	May 26, 2016		Soil	S16-My28392		Х										
18	A1_TP09_ASB _0.2	May 26, 2016	·	Soil	S16-My28393			Х									
19	A1_TP09_ASB _0.4	May 26, 2016		Soil	S16-My28394			Х									



ABN - 50 005 085 521 e.mail: EnviroSales@eurofins.com web: www.eurofins.com.au

Melbourne

3-5 Kingston Town Close Oakleigh VIC 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271

Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400

NATA # 1261 Site # 18217

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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 27, 2016 7:50 PM

Address: Level 4. 100 Christie St Report #: 502324 Due: Jun 6, 2016

St Leonards Phone: 02 9928 2100 Priority: 5 Day NSW 2065 Fax: 02 9928 2504 **Contact Name:** Michael Stacey

Project Name: **BANKSTOWN AIRPORT - SITE 1**

			% Clay	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	BTEX	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7			
	ourne Laborato			271			.,								.,	X	
	ney Laboratory						Х	Х	Х	Х	Х	Х	\ \	Х	Х	Х	Х
	bane Laboratory		20794			Х							Х				
20	rnal Laboratory A1_TP09_0.5			Soil	S16-My28395										Х		Х
21	A1_TP09_0.5 A1_TP10_0.0	May 26, 2016 May 26, 2016		Soil	S16-My28396								Х	Х	X		X
22	A1_TP10_0.0	May 26, 2016		Soil	S16-My28397										X		X
23	A1_TP12_0.0	May 26, 2016		Soil	S16-My28398		Х						Х	Х	X		X
24	A1_TP12_ASB _0.4			Soil	S16-My28399			Х									
25	A1_TP12_0.5	May 26, 2016		Soil	S16-My28400										Х		Х
26	A1_TP14_0.0	May 26, 2016		Soil	S16-My28401		Х						Х	Х	Χ		Х
27	A1_TP14_ASB _0.2	May 26, 2016		Soil	S16-My28402			Х									
28	A1_TP14_1.0	May 26, 2016		Soil	S16-My28403										Χ		Χ
29	A1_TP15_ASB	May 26, 2016		Soil	S16-My28404			Х									



Company Name:

Address:

mgt

Jacobs Group (Australia) P/L NSW

BANKSTOWN AIRPORT - SITE 1

ABN - 50 005 085 521 e.mail: EnviroSales@eurofins.com web: www.eurofins.com.au

Melbourne

3-5 Kingston Town Close Oakleigh VIC 3166 Phone: +61 3 8564 5000 NATA # 1261

Site # 1254 & 14271

Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400

NATA # 1261 Site # 18217

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

Order No.: IA110700 Received: May 27, 2016 7:50 PM

Level 4. 100 Christie St Report #: 502324 Due: Jun 6, 2016 St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 **Contact Name:** Michael Stacey

Project Name:

			% Clay	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	BTEX	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7			
Melk	ourne Laborato	ory - NATA Site	# 1254 & 142	271												Х	
Syd	ney Laboratory	- NATA Site # 1			Х	Х	Х	Χ	Х	Х		Х	Χ	Х	Х		
Bris	bane Laborator	y - NATA Site #	20794			Х							Х				
Exte	rnal Laboratory	,															
	_0.2																
30	A1_TP15_0.5	May 26, 2016		Soil	S16-My28405										Х		Х
31	A1_TP02_0.0	May 27, 2016		Soil	S16-My28406								Х	Х	Х		Х
32	A1_TP02_0.2	May 27, 2016		Soil	S16-My28407		Х										
33	A1_TP02_2.5	May 27, 2016		Soil	S16-My28408	Χ					Х				Х	Х	Х
34	A1_TP06_0.0	May 27, 2016		Soil	S16-My28409		Х						Х	Х	Х		Х
35	A1_TP06_0.3	May 27, 2016		Soil	S16-My28410										Х		Х
36	A1_TP07_0.0	May 27, 2016		Soil	S16-My28411		Х						Х	Х	Χ		Х
37	A1_TP07_0.5	May 27, 2016		Soil	S16-My28412										Χ		Х
38	A1_TP08_0.3	May 27, 2016		Soil	S16-My28413		Х										
39	A1_TP08_ASB _0.4	May 27, 2016		Soil	S16-My28414			Х									



Company Name:

Project Name:

Project ID:

Address:

mgt

Jacobs Group (Australia) P/L NSW

BANKSTOWN AIRPORT - SITE 1

Level 4. 100 Christie St

St Leonards

NSW 2065

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Melbourne

3-5 Kingston Town Close Oakleigh VIC 3166 Phone: +61 3 8564 5000 NATA # 1261

Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone: +61 2 9900 8400

NATA # 1261 Site # 18217

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

Order No.: IA110700 Received: May 27, 2016 7:50 PM

 Report #:
 502324
 Due:
 Jun 6, 2016

 Phone:
 02 9928 2100
 Priority:
 5 Day

Fax: 02 9928 2504 Contact Name: Michael Stacey

			% Clay	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	втех	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7			
Melk	ourne Laborato	ory - NATA Site	# 1254 & 142	271												Х	
Sydi	ey Laboratory	- NATA Site # 1	8217				Х	Х	Х	Х	Х	Х		Х	Х	Х	Х
Bris	oane Laborator	y - NATA Site #	20794			Χ							Х				
Exte	rnal Laboratory																
40	A1_TP08_0.5	May 27, 2016		Soil	S16-My28415										Х		Χ
41	A1_TP11_0.0	May 27, 2016		Soil	S16-My28416			Х					Х	Х	Х		Χ
42	A1_TP11_0.3	May 27, 2016		Soil	S16-My28417		Х										
43	A1_TP11_ASB _0.4	May 27, 2016		Soil	S16-My28418				Х								
44	A1_TP11_0.5	May 27, 2016		Soil	S16-My28419										Х		Х
45	A1_TP17_0.0	May 27, 2016		Soil	S16-My28420								Х	Х	Х		Х
46	A1_TP17_1.0	May 27, 2016		Soil	S16-My28421										Х		Х
47	A1_TP18_0.0	May 27, 2016		Soil	S16-My28422		Х						Х	Х	Х		Х
48	A1_TP18_0.5	May 27, 2016		Soil	S16-My28423										Х		Х
49	TS160517_4	May 27, 2016		Soil	S16-My28424							Х					
50	TB160517_4	May 27, 2016		Soil	S16-My28426							Х					



Project Name:

mgt

BANKSTOWN AIRPORT - SITE 1

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Melbourne

3-5 Kingston Town Close Oakleigh VIC 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271

Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400

NATA # 1261 Site # 18217

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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 27, 2016 7:50 PM

Address: Level 4. 100 Christie St Report #: 502324 Due: Jun 6, 2016 St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 **Contact Name:** Michael Stacey

			% Clay	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	втех	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7			
Mell	ourne Laborato	ory - NATA Site	# 1254 & 142	271												Х	
Syd	ney Laboratory			Х	Х	Х	Χ	Х	Х		Х	Х	Х	Х			
Bris	bane Laborator	y - NATA Site #	20794			Χ							Х				
Exte	rnal Laboratory	<u>.</u>															
51	A1_BH3_0.0	May 26, 2016		Soil	S16-My28427							Х			Х		
52	A1_BH6_0.5	May 26, 2016		Soil	S16-My28428							Х			Х		
53	A1_BH9_1.5	May 26, 2016		Soil	S16-My28429							Х			Х		
54	A1_BH10_0.0	May 26, 2016		Soil	S16-My28430							Х			Х		
55	A1_BH1_0.5	May 24, 2016		Soil	S16-My28431					Χ							
56	A1_BH1_1.5	May 24, 2016		Soil	S16-My28432					Χ							
57	A1_BH4_0.0	May 24, 2016		Soil	S16-My28433					Χ							
58	A1_BH4_1.5	May 24, 2016		Soil	S16-My28434					Χ							
59	A1_TP01_0.5	May 25, 2016		Soil	S16-My28435					Χ							
60	A1_TP03_1.0	May 25, 2016		Soil	S16-My28436					Χ							
61	A1_BH2_0.5	May 25, 2016		Soil	S16-My28437					Χ							



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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 27, 2016 7:50 PM

Address: Level 4. 100 Christie St Report #: 502324 Due: Jun 6, 2016 St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 **Contact Name:** Michael Stacey

Project Name: **BANKSTOWN AIRPORT - SITE 1**

		% Clay	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	ВТЕХ	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7				
Mell	ourne Laborato	ory - NATA Site	# 1254 & 142	271												Х	
Syd	ney Laboratory	- NATA Site # 1	8217				Х	Х	Х	Х	Х	Х		Х	Χ	Х	Х
Bris	bane Laborator	y - NATA Site#	20794			Х							Х				
Exte	rnal Laboratory	,															
62	A1_BH2_1.5	May 25, 2016		Soil	S16-My28438					Х							
63	A1_BH5_0.0	May 25, 2016		Soil	S16-My28439					Χ							
64	A1_BH5_1.5	May 25, 2016		Soil	S16-My28440					Χ							
65	A1_BH7_0.0	May 25, 2016		Soil	S16-My28441					Х							
66	A1_BH7_0.5	May 25, 2016		Soil	S16-My28442					Х							
67	A1_BH8_0.5	May 25, 2016		Soil	S16-My28443					Х							
68	A1_BH8_1.5	May 25, 2016		Soil	S16-My28444					Χ							
69	A1_TP04_0.4	May 26, 2016		Soil	S16-My28445					Х							
70	A1_TP04_0.6	May 26, 2016		Soil	S16-My28446					Χ							
71	A1_TP04_1.0	May 26, 2016		Soil	S16-My28447					Χ							
72	A1_TP04_2.0	May 26, 2016		Soil	S16-My28448					Χ							



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NATA # 1261 Site # 18217

Brisbane1/21 Smallwood Place
Murarrie QLD 4172
Phone: +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 27, 2016 7:50 PM

 Address:
 Level 4, 100 Christie St
 Report #:
 502324
 Due:
 Jun 6, 2016

 St Leonards
 Phone:
 02 9928 2100
 Priority:
 5 Day

NSW 2065 Fax: 02 9928 2504 Contact Name: Michael Stacey

Project Name: BANKSTOWN AIRPORT - SITE 1

			% Clay	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	BTEX	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7			
Mell	ourne Laborato	ory - NATA Site	# 1254 & 142	71												Х	
Syd	ney Laboratory	- NATA Site # 1	8217				Χ	Х	Х	Χ	Х	Х		Χ	Χ	Х	Х
Bris	bane Laborator	y - NATA Site #	20794			Х							Х				
Exte	rnal Laboratory	<u>, </u>			_												
73	A1_TP04_2.5	May 26, 2016		Soil	S16-My28449					Χ							
74	A1_TP05_1.0	May 26, 2016		Soil	S16-My28450					Х							
75	A1_TP05_2.0	May 26, 2016		Soil	S16-My28451					Х							
76	A1_TP05_2.5	May 26, 2016		Soil	S16-My28452					Х							
77	A1_TP09_0.0	May 26, 2016		Soil	S16-My28453					Х							
78	A1_TP09_0.7	May 26, 2016		Soil	S16-My28454					Х							
79	A1_TP09_1.0	May 26, 2016		Soil	S16-My28455					Χ							
80	A1_TP10_0.5	May 26, 2016		Soil	S16-My28456					Χ							
81	A1_TP10_0.9	May 26, 2016		Soil	S16-My28457					Χ							
82	A1_TP10_1.1	May 26, 2016		Soil	S16-My28458					Χ							
83	A1_TP10_2.5	May 26, 2016		Soil	S16-My28459					Х							



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NATA # 1261 Site # 18217

Eurofins | mgt Analytical Services Manager : Andrew Black

Brisbane1/21 Smallwood Place
Murarrie QLD 4172
Phone: +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 27, 2016 7:50 PM

 Address:
 Level 4, 100 Christie St
 Report #:
 502324
 Due:
 Jun 6, 2016

NSW 2065 Fax: 02 9928 2504 Contact Name: Michael Stacey

Project Name: BANKSTOWN AIRPORT - SITE 1
Project ID: IA110700

		Sa	mple Detail			% Clay	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	втех	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Melk	ourne Laborate	ory - NATA Site	# 1254 & 1427	'1												Х	
Syd	ney Laboratory	- NATA Site # 1	8217				Х	Х	Х	Х	Χ	Х		Х	Χ	Χ	Χ
Bris	bane Laborator	y - NATA Site #	20794			Χ							Х				
Exte	rnal Laboratory	<u>'</u>															
84	A1_TP12_0.8	May 26, 2016	(Soil	S16-My28460					Х							
85	A1_TP12_1.0	May 26, 2016	5	Soil	S16-My28461					Х							
86	A1_TP12_2.0	May 26, 2016	5	Soil	S16-My28462					Χ							
87	A1_TP12_2.5	May 26, 2016	5	Soil	S16-My28463					Х							
88	A1_TP14_0.5	May 26, 2016	(Soil	S16-My28464					Х							
89	A1_TP14_2.0	May 26, 2016	(Soil	S16-My28465					Χ							
90	A1_TP14_2.5	May 26, 2016		Soil	S16-My28466					Χ							
91	A1_TP15_0.0	May 26, 2016	(Soil	S16-My28467					Х							
92	A1_TP15_0.8	May 26, 2016	(Soil	S16-My28468					Х							
93	A1_TP15_1.0	May 26, 2016	(Soil	S16-My28469					Х							
94	A1_TP02_0.5	May 27, 2016	(Soil	S16-My28470					Х							



IA110700

Project ID:

mgt

ABN - 50 005 085 521 e.mail: EnviroSales@eurofins.com web: www.eurofins.com.au

Melbourne

3-5 Kingston Town Close Oakleigh VIC 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271

Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400

NATA # 1261 Site # 18217

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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 27, 2016 7:50 PM

Address: Level 4. 100 Christie St Report #: 502324 Due: Jun 6, 2016 St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 **Contact Name:** Michael Stacey

Project Name: **BANKSTOWN AIRPORT - SITE 1**

Eurofins | mgt Analytical Services Manager : Andrew Black

			% Clay	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	ВТЕХ	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7			
Melk	ourne Laborato	ory - NATA Site												Х			
Syd	ney Laboratory	- NATA Site # 1			Х	Х	Х	Χ	Х	Х		Х	Χ	Х	Χ		
Bris	bane Laborator	y - NATA Site #	20794			Χ							Х				
Exte	rnal Laboratory																
95	A1_TP02_1.0	May 27, 2016		Soil	S16-My28471					Х							
96	A1_TP02_2.0	May 27, 2016		Soil	S16-My28472					Χ							
97	A1_TP06_0.5	May 27, 2016		Soil	S16-My28473					Х							
98	A1_TP06_1.0	May 27, 2016		Soil	S16-My28474					Х							
99	A1_TP07_0.3	May 27, 2016		Soil	S16-My28475					Х							
100	A1_TP07_1.0	May 27, 2016		Soil	S16-My28476					Х							
101	A1_TP07_2.0	May 27, 2016		Soil	S16-My28477					Χ							
102	A1_TP07_2.5	May 27, 2016		Soil	S16-My28478					Χ							
103	A1_TP08_0.0	May 27, 2016		Soil	S16-My28479					Χ							
104	A1_TP08_0.8	May 27, 2016		Soil	S16-My28480					Χ							
105	A1_TP08_1.0	May 27, 2016		Soil	S16-My28481					Χ							



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 Address:
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 St Leonards
 Phone:
 02 9928 2100
 Priority:
 5 Day

NSW 2065 Fax: 02 9928 2504 Contact Name: Michael Stacey

Project Name: BANKSTOWN AIRPORT - SITE 1

	07 A1_TP08_2.5 May 27, 2016 Soil S16-My28483								CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	втех	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Melb	ourne Laborato	ory - NATA Site	# 1254 & 142	71												Х	
Sydr	ey Laboratory	- NATA Site # 1	8217				Х	Х	Х	Х	Х	Х		Х	Χ	Х	Χ
Brisl	oane Laboratory	y - NATA Site #	20794			Χ							Х				
Exte	rnal Laboratory	, -															
106	A1_TP08_2.0	May 27, 2016		Soil	S16-My28482					Х							
107	A1_TP08_2.5	May 27, 2016		Soil	S16-My28483					Х							
108	A1_TP11_ASB _0.3	May 27, 2016		Soil	S16-My28484				Х								
109	A1_TP11_0.7	May 27, 2016		Soil	S16-My28485					Х							
110	A1_TP11_1.0	May 27, 2016		Soil	S16-My28486					Х							
111	A1_TP11_2.0	May 27, 2016		Soil	S16-My28487					Х							
112	A1_TP11_2.5	May 27, 2016		Soil	S16-My28488					Χ							
113	A1_TP17_0.5	May 27, 2016		Soil	S16-My28489					Х							
114	A1_TP18_0.8	May 27, 2016		Soil	S16-My28490					Χ							
115	A1_TP18_1.0	May 27, 2016		Soil	S16-My28491					Х							
116	A1_BH3_0.5	May 26, 2016		Soil	S16-My28492					Х							



BANKSTOWN AIRPORT - SITE 1

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Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 27, 2016 7:50 PM

Address: Level 4. 100 Christie St Report #: 502324 Due: Jun 6, 2016 St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 **Contact Name:** Michael Stacey

Project Name:

		Sai	mple Detail		% Clay	Asbestos - WA guidelines	Asbestos Absence /Presence	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	ВТЕХ	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Melb	ourne Laborato	ory - NATA Site												Χ		
Sydi	ney Laboratory	- NATA Site # 1	3217			Χ	Х	Х	Χ	Χ	Χ		Х	Х	Χ	Х
		y - NATA Site #	20794		Х							Х				
	rnal Laboratory															
117	A1_BH3_1.5	May 26, 2016	Soil	S16-My28493					Х							
118	A1_BH6_0.0	May 26, 2016	Soil	S16-My28494					Х							
119	A1_BH6_1.5	May 26, 2016	S16-My28495					Χ								
120	A1_BH9_0.0	May 26, 2016	S16-My28496					Х								
121	A1_BH9_0.5	May 26, 2016	S16-My28497					Х								
122	A1_BH10_0.5	May 26, 2016	S16-My28498					Х								
123	A1_BH10_1.5	May 26, 2016	S16-My28499					Х								
Test	Counts			1	12	9	2	68	1	6	12	12	38	1	34	



Internal Quality Control Review and Glossary

General

- 1. QC data may be available on request.
- 2. All soil results are reported on a dry basis, unless otherwise stated
- 3. Samples were analysed on an 'as received' basis.
- 4. This report replaces any interim results previously issued.

Holding Times

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

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

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w: weight for weight basis grams per kilogram
Filter loading: fibres/100 graticule areas

Reported Concentration: fibres/mL Flowrate: L/min

Terms

ΑF

Dry Where a moisture has been determined on a solid sample the result is expressed on a dry basis.

LOR Limit of Reporting.
COC Chain of custody
SRA Sample Receipt Advice

ISO International Stardards Organisation

AS Australian Standards

WA DOH Western Australia Department of Health

NOHSC National Occupational Health and Safety Commission

ACM Bonded asbestos-containing material means any material containing more than 1% asbestos and comprises asbestos-containing-material which is in sound condition,

although possibly broken or fragmented, and where the asbestos is bound in a matrix such as cement or resin. Common examples of ACM include but are not limited to: pipe and boiler insulation, sprayed-on fireproofing, troweled-on acoustical plaster, floor tile and mastic, floor linoleum, transite shingles, roofing materials, wall and ceiling plaster, ceiling tiles, and gasket materials. This term is restricted to material that cannot pass a 7 mm x 7 mm sieve. This sieve size is selected because it approximates the thickness of common asbestos cement sheeting and for fragments to be smaller than this would imply a high degree of damage and hence potential

for fibre release

FA FA comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. This type of friable asbestos

is defined here as asbestos material that is in a degraded condition such that it can be broken or crumbled by hand pressure. This material is typically unbonded or

was previously bonded and is now significantly degraded (crumbling).

PACM Presumed Asbestos-Containing Material means thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later

than 1980 that are assumed to contain greater than one percent asbestos but have not been sampled or analyzed to verify or negate the presence of asbestos.

Asbestos fines (AF) are defined as free fibres, or fibre bundles, smaller than 7mm. It is the free fibres which present the greatest risk to human health, although very

small fibres (< 5 microns in length) are not considered to be such a risk. AF also includes small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve.

(Note that for bonded ACM fragments to pass through a 7 mm x 7 mm sieve implies a substantial degree of damage which increases the potential for fibre release.)

AC Asbestos cement means a mixture of cement and asbestos fibres (typically 90:10 ratios).



Comments

Sample Integrity

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

Qualifier Codes/Comments

Code Description N/A Not applicable

M11 NATA accreditation does not cover the performance of this service.

Authorised by:

Rhys Thomas Senior Analyst-Asbestos (NSW)

Glenn Jackson

National Operations Manager

Final Report - this report replaces any previously issued Report

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

Uncertainty data is available on request

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Page 18 of 18

Report Number: 502324-AID



ABN - 50 005 085 521

e.mail: EnviroSales@eurofins.com

web: www.eurofins.com.au

Melbourne 3-5 Kingston Town Close Oakleigh Vic 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400 NATA # 1261 Site # 18217 Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Sample Receipt Advice

Company name: Jacobs Group (Australia) P/L NSW

Contact name: Michael Stacey

Project name: BANKSTOWN AIRPORT - SITE 1

Project ID: IA110700 COC number: Not provided

Turn around time: 5 Day

Date/Time received: May 27, 2016 7:50 PM

Eurofins | mgt reference: 502324

Sample information

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

Notes

Sample ID A1_TP11_ASB_0.3 not received, A1_TP11_ASB_0.4 duplicated on bag. Analysis cancelled until further client confirmation.

Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone: (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Michael Stacey - michael.stacey@jacobs.com.





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Page 3 of 11



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agrand you black to find a Approval by V. Labora Approval on the Y D10

Submission of samplest othe taboral ory will be documed as acceptance of Eurofinst mgt. Standard Terms and Conditions unless agreed otherwise. A copy of Eurofinst mgt. Standard Terms and Conditions in



Eurafins | mgt Sydney tab Unit F3Building F 16Mars Rd Lane Cove West NSW 2066 P +612 9900 8400 E EnviroS ampteNSW@eurofins com au

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Company	Jacobs		Purchas	se Order	1	EAH	070	0			Project A	danager	B	AIR	CUMM	INCI	1	Pro]	ject N	ame	B	anks	stow	~ Airjort -	Site #
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	t Leonards NSW 2065		(Tree)		z ć		acid	(AV/As)					g T	- J	c acid			Email	for D	esults		Micl	hae	l.Stacey@ja	cobs.c
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ntact Phone 0:	2 9032 1467		L hymnelo		√ As, C	Eurofins mgt Suite: B13 OCP/ PCB	Perfluoroctanoic acid (PFOA) / Perfluoroctanesulfonic acid (PFOS) / 6:2 fluorotelomer sulfonate (6:2 FTS)	Asbestos - WA/NEPM Guidelines - Quantitative (0.001% w/w)		(CEC)			C. C.	Polycyclic Aromatic Hydrocarbons (PAH)Trace Level	Perfluoroctanoic acid (PFOA) / Perfluoroctanesulfonic acid (PFOS) / 6:2 fluorotelorner sulfonate (6:2 FTS)				rn Aro		-	1DAY'		ZDAY T	3 DAY'
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cial Direction			111111111111111111111111111111111111111	Soil	H/ BTEXN Pb, Zn, Hg	Suite: B	OA) / F	elines -	pH (CaCl2)	inge Ca	% Clay content	Water	√ BTE) Zn, Hg	trocarbo	OA) / F					Cont	tainers	i		Method of Ship	ment
elinguished by	B. Cumming		hery metal	a	37 TRH	s mgt	cid (PF fluoro	M Guid	4	Excha	8		B6 TR	tic Hyo	cid (PF 2 fluoro									Courier ()
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	ient Sample ID	Date	M at the	J	Eurofii		Perfi	Asbes					Euro	&	Perf									Sample Comments / (Werning	OG Hazard
AI-T	P14-0.5	26/05/16	Soil																						
A1-T	P14_10		1		X																				
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A1-T	P02-0-0	या/ठड/12			X	×	×		1/2/2																
1 Al-	TP02-0-2	27/05/16	*					X																	
2 A1-	1605 0.2	27/03/16	8011								0.														
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Sydney Lab

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Eurofins (mgt Methourne Lab 2 Kingston Town Close Oakleigh, VIC 3166 P +61 38564 5000 F +61 38564 5090 E EnviroSampleVic @eurofins.com au

Bankstonn Aport - Sitel IA110700 BLAIR CUMMINGS Project Name Purchase Order Project Manager Jacobs Company Eurofinstmgt Quote Bectrom Results ESdat IA110700 160413JACN Project No Format Level 4 100 Christie Strest Address St Leonards NSW 2085 acid Asbestos - WANEPM Guidelines - Quantitative (0.001% w/w) Perfluoroctanoic acid (PFOA) / Perfluoroctanesulfonic acid Michael.Stacey@jacobs.c ਰੰ Polycyclic Aromatic Hydrocarbons (PAH) -. Trace Level Email for Results Perfluoroctanoic acid (PFOA) / Perfluorocctanesulfonic om, Blair Gumming Gjacols. con ਫ਼ੌ (PFOS) / 6.2 fluorotelomer suffonate (6.2 FTS) (PFOS) / 6.2 fluorotelomer suffonate (6.2 FTS) Michael Stacey Contact Name Eurofins mgt Suite: B6 TRH/ BTEXN/ As, Cd, Cr, Eurofins mgt Suite: B13 OCP/ PCB Ą, Cation Exchange Capacity (CEC) Contact Phone 3DAY 02 9032 1467 Turn Around Eurofins mgt Suite: B7 TRH/ BTEXN/ PAH/ Requirements SDAY(SId) Cher(% Clay content pH (CaCl2) Special Direction Containers Method of Shipment B. Cummings Courler (Relinquished by 25ml. Amber Glav Hand Delivered dominies (Signature) (Time / Date) Sample Comments / DG Hazard Matrix Client Sample ID Date Warning A1- TPOZ 1.0 Soil 28 05/16 A1-TP02_2.0 X A1-TP02 2.5 X X X A1- TPO6_ 0. D X X X X A1-TP06-0.3 X A1-TPO6 0.5 A1-TPO6_1.0 X X A1-TP07_ 0.0 X X A1-TP07- 0.3 A1-TP07 0.5 A1-TP07_ 1.0 11 A1-TP07-20 2125/16 Time Date Signature Temperature Received By SYD I BNE I MEL I PER I ADLINEW I DAR Laboratory Use Only Time Signature Report No Date __/_/__ Received By SYD | BNE | MEL | PER | ADL | NEW | DAR

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Sydney Lab

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Bankstow Airport - Site 1 BLAIR CUMMINGS Project Name Purchase Order IA110700 Project Manager Jacobs Company Electronic Results JA110700 Eurofinsimgt Quote 160413JACN Project No Format Level 4 100 Christie Street Additest St Leonards NSW 2066 Perfluotooctanoic acid (PFOA) / Perfluorooctanesulfonic acid (PFOS) / 8.2 fluorotelomer suffonate (8.2 FTS) 뜐 Perfluoroctanoic acid (PFOA) / Perfluoroctanesulfonic acid Asbestos - WANEPM Guidelines - Quantitative (0.001% w/w) Michael.Stacey@jacobs.c ਲੋਂ Ź Polycyclic Aromatic Hydrocarbons (PAH) -. Trace Level Email for Results om, Blair. Cumning Ejacob, Con (PFOS) / 6.2 fluorotelomer sulfonate (6.2 FTS) Michael Stacey Contact Name Eurofins mgt Suite: B6 TRH/ BTEXN/ As, Cd, Cr, Cation Exchange Capacity (CEC) 3DAY Contact Phone 02 9032 1467 Turn Around Requirements 5 DAY(Sid) Cther(Special Direction Method of Shipment Containers B. Cummings Courier (Relinquished by 125ml Amber Gazz Hand Delivered 40mLviel (Signature) (Time / Date) Sample Comments | DG Hazard Client Sample ID Date Matrix Warning 501 27/05/11 AI-TP07.2.5 A1-TPO8- 0.0 NAM! A1- TPO8_ 0.3 X A1- TPO8_ASB_04 X A1_TPO8_ 0.5 A1-TPO8-0.8 A1-TP08-1.0 A1-TP08-210 AI-TPO8_2.5 A1- TP11-0.0 X X A1-TP11_ASB_0.3 X AI-TPII- 0.3 2705/6 Time Signature Temperature Received By SYD I BNE | MEL | PER | ADL | NEW | DAR Laboratory Use Only Report No Date Time Signature SYD I BNE I MEL I PER LADLINEW LOAR Received By Submission of samplest of hetaboratory will be deemed as acceptance of Eurofins; mgl. Standard Terms and Conditions unless agreed of herwise. A copy of Eurofins; mgl. Standard Terms and Conditionals



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Eurofest (mgi Brisbane Lab Unit 1.21Smallwood Place, Murarrie, QLD 4f72 P
+617 3902 4600 E
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Eurolins Imgt Molbourne Lab 2Kingst on Town Close Oakleigh, VC 3166 P +61 38564 5000 F +61 38564 5090 E EnviroSampleVic ∰eurofins com.au

Bankstown Airport - Site 1 BLAIR OUMMING Project Name IA110700 Printedt Manager Purchase Order Jacobs Company Electronic Results Esdat Eurofins mgt Quote 160413JACN Project No Format Level 4 100 Christie Street Address St Leonards NSW 2066 Perfluoroctanoic acid (PFOA) / Perfluoroctanesulfonic acid 윤 Michael.Stacey@jacobs.c Asbestos - WA/NEPM Guidelines - Quantitative (0.001% w/w) ਰੰ ź Polycyclic Aromatic Hydrocarbons (PAH) -. Trace Level Email for Results Perfluoroctanoic acid (PFOA) / Perfluoroctanesulfonic om, Blair. Cumming Ejacon. 10 (PFOS) / 6.2 fluorotelomer suffonate (6.2 FTS) Michael Stacey Contact Name B6 TRH BTEXN As, Cd, Cr, Eurofins mgt Suite: B13 OCP/ PCB Cation Exchange Capacity (CEC) Eurofins mgt Suite: B7 TRH/ BTEXIV/PAH/ As, Contact Phone 02 9032 1467 Turn Around Requirements pH (CaCl2) Special Direction Method of Shipment Containers Courier (Relinguished by 200ml Ambor Glare (25ml. Ambar Gara Asbeatos 10 Hand Delivered 40mLvial (Signature) (Time / Date) Sample Comments | DG Hazard Client Sample ID M at rtx Werning A1-TP11-ASB_04 27/05/16 A1-TP11- 0.5 A1-TP11- 0.7 AISTPIL 1.0 ALTPIL Z.D AL_TPI1- 2.5 X A1-TP17-0.0 X A1-TP17-05 A1-TP17- 1.0 X X X A1-TP18-00 X X AI-TP18-0.5 X A1-TP18_ 0.8 Time Signature Temperature Date Received By SYD | SHE | MEL | PER | ADL | NEW | DAR Laboratory Use Only Report Ne Date Time Signature Receiver SYD (BNE (MEL | PER | ADL | NEW | DAR

Page 9 of 11

Manual M. Mattally C. Saigle Approvally T. Lifeline Approved at Sun 2 St.

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Eucotina | mgt Motpourer Lab

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Company	Jacobs		Purchas	e Order		1	TA110	700			Projecti	Mänager	BL	AIR	CUMMIN	CS	Pro	jed N	ame	B	anle	ston	in Airport - St	tc 1
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Contact Name	Michael Stacey		147 Tall		ర్		suffonic FTS)	0.001%					8	ace Lev	sulfonis FTS)		CHE		COUNT		<u>om</u>	B	lax. Cumning	E jacols.
Contact Phone No	02 9032 1467		T phicagon and a		PAH As, C	OCP/ PCB	fluorooctane Iffonate (6:2	uantitative (city (CEC)	2		V As, Cd, C	s (PAH) Tr	fluorooctane ulfonate (6:2			rn Arc quiren		W.	1DAY		-	3DAY'
Special Direction			paradordi	Soil	H BTEXN/ Pb, Zn, Hg	ite: 813	A) / Perlomer su	D - seuj	pH (CaCl2)	je Capa	% Clay content	Water	4' BTEXN Zn, Hg	carboni	A) / Per lorner s				Co	nt siner	S		Method of Prip	ment
Relinquished by (Signature)	19:10 21	T	Naket Where article as	8	Eurofins mgt Suite: B7 TRH/ BTEXN/ PAH/ As, Cd, Pb, Zn, Hg	Eurofins mgt Suite: B13 OCP/ PCB	Perfluorooctanoic acid (PFOA) / Perfluorooctanesuffonic acid (PFOS) / 8:2 Nuorotelomer suffonate (8:2 FTS)	Ashestos - WA/NEPM Guidelines - Quantitative (0.001% w/w)	Hd	Cation Exchange Capacity (CEC)	% EG 8	\$	Eurofins mgt Suite: B6 TRH/ BTEXN/ As, Cd, Cr, Cu, N, Zn, Hg	Polycyclic Aromatic Hydrocarbons (PAH)Trace Level	Perfluoroctanoic acid (PFOA) / Perfluoroctanesulfonic acid (PFOS) / 6.2 fluorotelorrer sulfonate (6.2 FTS)		rtic	lertic	Tartie Lar Glass	riel	er Gerr		Courier ()
(Time / Date)	19:10	05116	Analysis market	STEX	mgt S	ш	(PFOS	- SC					s mgt (reyelic ,	Orbocta (PFC)		1L Plantic	250mLPlartic	125mLPfartic 200mt &mber Glass	40mlviel	Wint Anter Ger	Aer	Post al	
Ne	Client Sample ID	Date	Malrix	8	Eurofins		Perfluc	Asbest					Eurofin	Pg.	Perflu				,				Sample Comments E Warning	DG Hazard
1 AI	-TP18-1.0	27/5/4	Soil																Î					
2 7	3 160517-4	27/05/14	Soil	X															1					
1000	B 160517-4	27/05/16	Soil	X			F																	
the same of the sa	1- BH3-0.0	26/05/16	1	X																-	Ш			
5 A	1-BH03-0.5	1																		\perp				
в А	1-BH03-15																				Ш	Ш		
7 A	1-BH46-0.0																							
8 (71-BH46_0.5			X														Ш						
8	A1-BH#6-1.5																							
10 A	1- BH9_0.0																						4	
_	A1-BH9_0.5																							
12	AI-BH9_ 1.5	*	+	X																				
Laboratory	Use Received By	X			SKD SWE	MEL IPER	ADL NEW	DAR		Date		51	-	ime	125	- 181	-						Temperature	
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CHAIN OF CUSTODY RECORD

MI 2005 JR. Madining P. Smiger Approved by T. Lakens Approved to JR 7 875

Services Lab

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Eurofine †mgt Meleaurne Lab 2 Kingst on Town Close, Oakleigh, VC 3166 P +61 38564 5000 F +61 38564 5090 E EnviroSampleVic@eurofins.com au

Bankstown Airport - Sitel BLAIR CUMMINON Project Name IA110700 Project Manager Purchase Order Jacobs Company Electronic Results Eurofinsimgt Quote TA110700 Esdet 160413JACN Project No. Format Level 4 100 Christie Street Perfluoroctanoic acid (PFOA) / Perfluoroctanesulfonic acid St Leonards NSW 2065 2 8 Address acid Asbestos - WANNEPM Guidelines - Quantitative (0.001% w/w) Michael.Stacey@jacobs.c ਨੁੰ Polycyclic Aromatic Hydrocarbons (PAH) -. Trace Level Eurofins mgt Suite. B6 TRH/ BTEXIV As, Cd, Cr, Cu, Ni, **Emall for Results** om, Blasi Cunning & Gjacob con Perfluoroctanoic acid (PFOA) / Perfluoroctanesulfonic ច (PFCS) / 6.2 fluorotelomer suffonate (6:2 FTS) (PFOS) / 6:2 fluorotelomer suffonate (6:2 FTS) Michael Stacey Eurofins mgt Suite. B7 TRH/ BTEXN/ PAH/ As, Cd, Contact Name Eurofins mgt Suite: B13 OCP/ PCB 1DAY* 3DAY Cation Exchange Capacity (CEC) Contact Phone **Turn Around** 02 9032 1467 Requirements DAY(SId) Cher(% Clay content pH (CaCl2) Special Direction Method of Shipment Containers Courler (B. Cumming Relinquished by 200mL Amber Glary Tanl Anber Ger Hand Delivered 40mLviel (Signature) Postal (Time / Date) Sample Comments / DG Hazard Werning M at the Date Client Sample ID Na Sail 26/05/16 A1-BH10-0.0 Son 26/05/16 A1-B10 - 0.3 AI-BHID 1.5 5 8 9 10 502324 12 270516 Time Signature Temperature SYD I BNE I MELIPER LADL I NEW LOAR Received By Laboratory Use Signature Report No Time Date Only SYD | BNE | MEL | PER | ADL | NEW | DAR Received By Submission of sampliest othe laboratory will be decorded as accept ance of Earof ins) mgt. Standard Terms and Conditions unless agreed otherwise. A copy of Eurofins; mgt. Standard Terms and Conditions is

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Jacobs Group (Australia) P/L NSW Level 4, 100 Christie St St Leonards NSW 2065 IIAC MRA



Certificate of Analysis

NATA Accredited Accreditation Number 1261 Site Number 18217

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

Attention: Blair Cummings

Report 502800-S

Project name BANKSTOWN AIRPORT - SITE 1

Project ID IA110700
Received Date Jun 01, 2016

Client Sample ID			A1_TP13_0.0	A1_TP13_0.4	A1_TP16_0.0	A1_TP16_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Jn01280	S16-Jn01281	S16-Jn01282	S16-Jn01283
Date Sampled			May 30, 2016	May 30, 2016	May 30, 2016	May 30, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	150	< 50	77	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	170	< 50
TRH C10-36 (Total)	50	mg/kg	150	< 50	247	< 50
BTEX	1	, , ,				
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	94	51	53	50
Total Recoverable Hydrocarbons - 2013 NEPM	Fractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2)N01	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	1.6	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	1.8	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	2.1	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	0.6	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	1.2	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	1.2	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	1.1	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	0.9	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	0.8	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	1.0	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	0.9	< 0.5



Client Sample ID			A1_TP13_0.0	A1_TP13_0.4	A1_TP16_0.0	A1_TP16_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Jn01280	S16-Jn01281	S16-Jn01282	S16-Jn01283
Date Sampled			May 30, 2016	May 30, 2016	May 30, 2016	May 30, 2016
Test/Reference	LOR	Linit	May 30, 2010	May 30, 2010	Way 30, 2010	May 30, 2010
	LOR	Unit				
Polycyclic Aromatic Hydrocarbons	0.5		0.5	0.5	0.5	0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	1.0	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	8.7	< 0.5
2-Fluorobiphenyl (surr.)	1	%	104	93	96	97
p-Terphenyl-d14 (surr.)	11	%	104	102	111	90
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	< 0.1	-
4.4'-DDD	0.05	mg/kg	< 0.05	-	< 0.05	-
4.4'-DDE	0.05	mg/kg	< 0.05	-	< 0.05	-
4.4'-DDT	0.05	mg/kg	< 0.05	-	< 0.05	-
a-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Aldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
b-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
d-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Dieldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan I	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan II	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin ketone	0.05	mg/kg	< 0.05	-	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	< 0.05	-
Methoxychlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Toxaphene	1	mg/kg	< 1	-	< 1	-
Dibutylchlorendate (surr.)	1	%	102	-	144	-
Tetrachloro-m-xylene (surr.)	1	%	122	-	98	-
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1221	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1232	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1242	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1248	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1254	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1260	0.1	mg/kg	< 0.1	-	< 0.1	-
Total PCB*	0.1	mg/kg	< 0.1	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	102	-	144	-
Tetrachloro-m-xylene (surr.)	1	%	122	-	98	-
Total Recoverable Hydrocarbons - 2013 NEP	M Fractions					
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	180	< 100	180	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100



Client Sample ID Sample Matrix			A1_TP13_0.0 Soil	A1_TP13_0.4 Soil	A1_TP16_0.0 Soil	A1_TP16_1.0 Soil
Eurofins mgt Sample No.			S16-Jn01280	S16-Jn01281	S16-Jn01282	S16-Jn01283
Date Sampled			May 30, 2016	May 30, 2016	May 30, 2016	May 30, 2016
Test/Reference	LOR	Unit				
PFOS/PFOA/6:2FTS	•					
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	N090.030	-	N090.012	-
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	< 0.005	-	< 0.005	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	< 0.01	-	< 0.01	-
13C-PFHxA (surr.)	1	%	97	-	100	-
13C8-PFOS (surr.)	1	%	107	-	108	-
Heavy Metals						
Arsenic	2	mg/kg	4.0	< 2	4.4	8.7
Cadmium	0.4	mg/kg	6.2	0.6	< 0.4	< 0.4
Chromium	5	mg/kg	34	< 5	19	28
Copper	5	mg/kg	24	< 5	24	14
Lead	5	mg/kg	34	< 5	30	10
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	8.6	< 5	22	6.4
Zinc	5	mg/kg	57	< 5	45	6.7
% Moisture	1	%	6.0	1.2	5.7	23

Client Sample ID Sample Matrix			A1_TP19_0.0 Soil	A1_TP20_0.0 Soil	A1_TP20_2.0 Soil	A1-QC01 Soil
Eurofins mgt Sample No.			S16-Jn01284	S16-Jn01286	S16-Jn01287	S16-Jn01288
Date Sampled			May 30, 2016	May 30, 2016	May 30, 2016	May 30, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM I	ractions	•				
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	51	54	58	52
Total Recoverable Hydrocarbons - 2013 NEPM I	ractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2)N01	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5



Client Sample ID Sample Matrix			A1_TP19_0.0 Soil	A1_TP20_0.0 Soil	A1_TP20_2.0	A1-QC01 Soil
•				1		
Eurofins mgt Sample No.			S16-Jn01284	S16-Jn01286	S16-Jn01287	S16-Jn01288
Date Sampled			May 30, 2016	May 30, 2016	May 30, 2016	May 30, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	90	93	92	95
p-Terphenyl-d14 (surr.)	1	%	88	99	95	96
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	< 0.1	-	-
4.4'-DDD	0.05	mg/kg	-	< 0.05	=	-
4.4'-DDE	0.05	mg/kg	-	< 0.05	-	-
4.4'-DDT	0.05	mg/kg	-	< 0.05	-	-
a-BHC	0.05	mg/kg	-	< 0.05	-	-
Aldrin	0.05	mg/kg	-	< 0.05	-	-
b-BHC	0.05	mg/kg	-	< 0.05	-	-
d-BHC	0.05	mg/kg	-	< 0.05	-	-
Dieldrin	0.05	mg/kg	-	< 0.05	-	-
Endosulfan I	0.05	mg/kg	-	< 0.05	-	-
Endosulfan II	0.05	mg/kg	-	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	-	-
Endrin	0.05	mg/kg	-	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	-	< 0.05	-	-
Endrin ketone g-BHC (Lindane)	0.05	mg/kg	-	< 0.05 < 0.05	-	-
Heptachlor	0.05	mg/kg	-	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	<u>-</u>	< 0.05		-
Methoxychlor	0.05	mg/kg mg/kg	-	< 0.05	-	-
Toxaphene	1	mg/kg	-	< 1	-	-
Dibutylchlorendate (surr.)	1	mg/kg %	-	111	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	132	-	-
Polychlorinated Biphenyls	1	/0	<u> </u>	102	<u> </u>	_
Aroclor-1016	0.1	ma/ka	_	< 0.1	-	_
Aroclor-1221	0.1	mg/kg	-	< 0.1	-	-
	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1232	0.1	mg/kg	-	< 0.1	-	
Aroclor-1242 Aroclor-1248	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1248 Aroclor-1254	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1254 Aroclor-1260	0.1	mg/kg mg/kg	-	< 0.1	-	-



Client Sample ID			A1_TP19_0.0	A1_TP20_0.0	A1_TP20_2.0	A1-QC01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Jn01284	S16-Jn01286	S16-Jn01287	S16-Jn01288
Date Sampled			May 30, 2016	May 30, 2016	May 30, 2016	May 30, 2016
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Total PCB*	0.1	mg/kg	-	< 0.1	-	-
Dibutylchlorendate (surr.)	1	%	-	111	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	132	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
PFOS/PFOA/6:2FTS						
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	-	< 0.005	-	-
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	-	< 0.005	-	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	-	< 0.01	-	-
13C-PFHxA (surr.)	1	%	-	95	-	-
13C8-PFOS (surr.)	1	%	-	108	-	-
Heavy Metals						
Arsenic	2	mg/kg	5.1	4.1	3.9	6.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	0.5
Chromium	5	mg/kg	9.9	9.4	13	12
Copper	5	mg/kg	9.7	11	10	9.1
Lead	5	mg/kg	48	15	8.2	51
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	6.3	6.6	< 5	6.0
Zinc	5	mg/kg	21	17	7.3	20
% Moisture	1	%	6.9	8.3	17	9.4

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled			A1-QC03 Soil S16-Jn01289 May 30, 2016	A1-QC05 Soil S16-Jn01290 May 30, 2016	TS160517-5 Soil S16-Jn01291 May 30, 2016	TB160517-5 Soil S16-Jn01293 May 30, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions					
TRH C6-C9	20	mg/kg	< 20	< 20	-	-
TRH C10-C14	20	mg/kg	< 20	< 20	=	-
TRH C15-C28	50	mg/kg	< 50	< 50	-	-
TRH C29-C36	50	mg/kg	52	< 50	-	-
TRH C10-36 (Total)	50	mg/kg	52	< 50	-	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	107%	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	123%	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	123%	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	121%	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	122%	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	121%	< 0.3
4-Bromofluorobenzene (surr.)	1	%	69	67	83	90



Client Sample ID			A1-QC03	A1-QC05	TS160517-5	TB160517-5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Jn01289	S16-Jn01290	S16-Jn01291	S16-Jn01293
Date Sampled			May 30, 2016	May 30, 2016	May 30, 2016	May 30, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Frac						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	_	-
TRH C6-C10	20	mg/kg	< 20	< 20	-	-
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	-	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	-	-
Polycyclic Aromatic Hydrocarbons		199				
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	_	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	_	_
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	_	_
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	-	-
Anthracene	0.5	mg/kg	< 0.5	< 0.5	_	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	_	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	_	_
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	_	_
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	_	_
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	_	_
Chrysene	0.5	mg/kg	< 0.5	< 0.5	_	_
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	_	_
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	_	_
Fluorene	0.5	mg/kg	< 0.5	< 0.5	_	_
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	_	_
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	_	_
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	_	_
Pyrene	0.5	mg/kg	< 0.5	< 0.5	_	_
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	_	_
2-Fluorobiphenyl (surr.)	1	%	94	86	_	_
p-Terphenyl-d14 (surr.)	1	%	89	88	_	_
Total Recoverable Hydrocarbons - 2013 NEPM Frac		1 70	- 55			
TRH >C10-C16	50	mg/kg	< 50	< 50	_	-
TRH >C16-C34	100	ma/ka	< 100	< 100	_	_
TRH >C34-C40	100	mg/kg	< 100	< 100	_	-
Heavy Metals	1 .00	1g/.\g	1100	1 100		
Arsenic	2	mg/kg	7.3	< 2	-	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	-	-
Chromium	5	mg/kg	20	< 5	-	-
Copper	5	mg/kg	25	< 5	-	-
Lead	5	mg/kg	25	< 5	-	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	-	-
Nickel	5	mg/kg	21	< 5	-	-
Zinc	5	mg/kg	34	< 5	-	-
ZIIIO	1 5	i ilig/kg	34		-	_
% Moisture	1	%	17	3.1	-	
/U INICIDIUIE		70		3.1		



Sample History

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

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

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

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B7			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Jun 02, 2016	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Sydney	Jun 02, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Jun 02, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Jun 02, 2016	14 Day
- Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Jun 02, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Melbourne	Jun 02, 2016	28 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
Eurofins mgt Suite B13			
Organochlorine Pesticides	Melbourne	Jun 02, 2016	14 Day
- Method: USEPA 8081 Organochlorine Pesticides			
Polychlorinated Biphenyls	Melbourne	Jun 02, 2016	28 Day
- Method: USEPA 8082 Polychlorinated Biphenyls			
PFOS/PFOA/6:2FTS	Brisbane	Jun 06, 2016	14 Day
- Method: LTM-ORG-2100 Analysis of PFCs in environmental samples by LC-MS/MS			
% Moisture	Melbourne	Jun 01, 2016	14 Day

⁻ Method: LTM-GEN-7080 Moisture

Report Number: 502800-S



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Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: Jun 1, 2016 3:45 PM

 Address:
 Level 4, 100 Christie St
 Report #:
 502800
 Due:
 Jun 8, 2016

 St Leonards
 Phone:
 02 9928 2100
 Priority:
 5 Day

NSW 2065 Fax: 02 9928 2504 Contact Name: Blair Cummings

Project Name: BANKSTOWN AIRPORT - SITE 1

Project ID: IA110700

		Sa	mple Detail			Asbestos - WA guidelines	HOLD	ВТЕХ	Eurofins mgt Suite B13	PFOS/PFOA/6:2FTS	Moisture Set	Eurofins mgt Suite B7
Melb	ourne Laborato	ory - NATA Site	# 1254 & 142	271			Х		Х		Х	Х
Sydi	ney Laboratory	- NATA Site # 1	8217			Х		Χ				Х
Bris	bane Laborator	y - NATA Site #	20794							Х		
Exte	rnal Laboratory	,										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID							
1	A1_TP13_0.0	May 30, 2016		Soil	S16-Jn01280	Х			Х	Х	Х	Х
2	A1_TP13_0.4	May 30, 2016		Soil	S16-Jn01281						Х	Х
3	A1_TP16_0.0	May 30, 2016		Soil	S16-Jn01282	Х			Х	Х	Х	Х
4	A1_TP16_1.0	May 30, 2016		Soil	S16-Jn01283						Х	Х
5	A1_TP19_0.0	May 30, 2016		Soil	S16-Jn01284						Х	Х
6	A1_TP19_0.3	May 30, 2016		Soil	S16-Jn01285	Х						
7	A1_TP20_0.0	May 30, 2016		Soil	S16-Jn01286				Х	Х	Х	Х
8	A1_TP20_2.0	May 30, 2016		Soil	S16-Jn01287						Х	Х
9	A1-QC01	May 30, 2016		Soil	S16-Jn01288						Х	Х
10	A1-QC03	May 30, 2016		Soil	S16-Jn01289						Х	Χ

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IA110700

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Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: Jun 1, 2016 3:45 PM

Address: Level 4, 100 Christie St Report #: 502800 Due: Jun 8, 2016 St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 **Contact Name: Blair Cummings**

Project Name: **BANKSTOWN AIRPORT - SITE 1**

Eurofins | mgt Analytical Services Manager : Andrew Black

		Sa	mple Detail			Asbestos - WA guidelines	HOLD	BTEX	Eurofins mgt Suite B13	PFOS/PFOA/6:2FTS	Moisture Set	Eurofins mgt Suite B7
Melk	ourne Laborato	ory - NATA Site	# 1254 & 142	71			Х		Х		Х	Х
Syd	ney Laboratory	- NATA Site # 1	8217			Х		Х				Х
Bris	bane Laboratory	y - NATA Site#	20794							Х		
Exte	rnal Laboratory	,										
11	A1-QC05	May 30, 2016		Soil	S16-Jn01290						Х	Х
12	TS160517-5	May 30, 2016		Soil	S16-Jn01291			Х				
13	TSLAB160517 -5	May 30, 2016		Soil	S16-Jn01292			Х				
14	TB160517-5	May 30, 2016		Soil	S16-Jn01293			Х				
15	A1_TP13_1.0	May 30, 2016		Soil	S16-Jn01294		Х					
16	A1_TP13_2.0	May 30, 2016		Soil	S16-Jn01295		Х					
17	A1_TP13_2.5	May 30, 2016		Soil	S16-Jn01296		Χ					
18	A1_TP16_0.5	May 30, 2016		Soil	S16-Jn01297		Χ					
19	A1_TP16_0.8	May 30, 2016		Soil	S16-Jn01298		Х					
20	A1_TP16_2.0	May 30, 2016		Soil	S16-Jn01299		Х					
21	A1_TP16_2.5	May 30, 2016		Soil	S16-Jn01300		Χ					



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Eurofins | mgt Analytical Services Manager : Andrew Black

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St Leonards Phone: 02 9928 2100 Priority: 5 Day NSW 2065 Fax: 02 9928 2504 **Contact Name: Blair Cummings**

BANKSTOWN AIRPORT - SITE 1 Project Name: Project ID: IA110700

		Sa	mple Detail			Asbestos - WA guidelines	HOLD	втех	Eurofins mgt Suite B13	PFOS/PFOA/6:2FTS	Moisture Set	Eurofins mgt Suite B7
Mell	oourne Laborato	ory - NATA Site	# 1254 & 142	71			Х		Х		Х	Х
	ney Laboratory					Х		Х				Х
	bane Laborator		20794							Х		
Exte	rnal Laboratory			1								
22	A1_TP19_0.5			Soil	S16-Jn01301		Х					
23	A1_TP19_1.0	May 30, 2016		Soil	S16-Jn01302		Х	ļ	ļ			
24	A1_TP19_2.0	May 30, 2016		Soil	S16-Jn01303		Х					
25	A1_TP19_2.5	May 30, 2016		Soil	S16-Jn01304		Х					
26	A1_TP20_0.5	May 30, 2016		Soil	S16-Jn01305		Х					
27		May 30, 2016		Soil	S16-Jn01306		Х					
28	A1_TP20_1.1	May 30, 2016		Soil	S16-Jn01307		Х					
29	A1_TP20_2.5	May 30, 2016		Soil	S16-Jn01308		Х					
Test	Counts					3	15	3	3	3	10	10



Internal Quality Control Review and Glossary

General

- 1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 4. Results are uncorrected for matrix spikes or surrogate recoveries.
- 5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise
- 6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

Units

 mg/kg: milligrams per Kilogram
 mg/l: milligrams per litre

 ug/l: micrograms per litre
 ppm: Parts per million

 ppb: Parts per billion
 %: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry Where a moisture has been determined on a solid sample the result is expressed on a dry basis.

LOR Limit of Reporting.

SPIKE Addition of the analyte to the sample and reported as percentage recovery.

RPD Relative Percent Difference between two Duplicate pieces of analysis.

LCS Laboratory Control Sample - reported as percent recovery
CRM Certified Reference Material - reported as percent recovery

Method Blank In the case of solid samples these are performed on laboratory certified clean sands

In the case of water samples these are performed on de-ionised water.

Surr - Surrogate The addition of a like compound to the analyte target and reported as percentage recovery.

Duplicate A second piece of analysis from the same sample and reported in the same units as the result to show comparison.

Batch Duplicate

A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.

Batch SPIKE

Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.

USEPA United States Environmental Protection Agency

APHA American Public Health Association
TCLP Toxicity Characteristic Leaching Procedure

COC Chain of Custody
SRA Sample Receipt Advice

CP Client Parent - QC was performed on samples pertaining to this report

NCP Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within

TEQ Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

QC Data General Comments

- 1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported
 in the C10-C14 cell of the Report.
- 6. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time.

 Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- 8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- 9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Report Number: 502800-S



Quality Control Results

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Method Blank				<u>'</u>	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	;				
TRH C6-C9	mg/kg	< 20	20	Pass	
TRH C10-C14	mg/kg	< 20	20	Pass	
TRH C15-C28	mg/kg	< 50	50	Pass	
TRH C29-C36	mg/kg	< 50	50	Pass	
Method Blank			· · · · · · · · · · · · · · · · · · ·		
втех					
Benzene	mg/kg	< 0.1	0.1	Pass	
Toluene	mg/kg	< 0.1	0.1	Pass	
Ethylbenzene	mg/kg	< 0.1	0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2	0.2	Pass	
o-Xylene	mg/kg	< 0.1	0.1	Pass	
Xylenes - Total	mg/kg	< 0.3	0.3	Pass	
Method Blank	1 3 3			,	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	i				
Naphthalene	mg/kg	< 0.5	0.5	Pass	
TRH C6-C10	mg/kg	< 20	20	Pass	
Method Blank	1			1 2 2 2	
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	mg/kg	< 0.5	0.5	Pass	
Acenaphthylene	mg/kg	< 0.5	0.5	Pass	
Anthracene	mg/kg	< 0.5	0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5	0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5	0.5	Pass	
Benzo(b&i)fluoranthene	mg/kg	< 0.5	0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5	0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5	0.5	Pass	
Chrysene	mg/kg	< 0.5	0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5	0.5	Pass	
Fluoranthene	mg/kg	< 0.5	0.5	Pass	
	mg/kg	< 0.5	0.5	Pass	
Fluorene Indeno(1.2.3-cd)pyrene		< 0.5	0.5	Pass	
· · · · · · · · · · · · · · · · · · ·	mg/kg				
Naphthalene	mg/kg	< 0.5 < 0.5	0.5	Pass Pass	
Phenanthrene	mg/kg				
Pyrene Method Blank	mg/kg	< 0.5	0.5	Pass	
Organochlorine Pesticides				1	
	ma/ka	-01	0.1	Door	
Chlordanes - Total 4.4'-DDD	mg/kg	< 0.1	0.1	Pass	
	mg/kg	< 0.05	0.05	Pass	
4.4'-DDE	mg/kg	< 0.05	0.05	Pass	
4.4'-DDT	mg/kg	< 0.05	0.05	Pass	
a-BHC	mg/kg	< 0.05	0.05	Pass	
Aldrin	mg/kg	< 0.05	0.05	Pass	
b-BHC	mg/kg	< 0.05	0.05	Pass	
d-BHC	mg/kg	< 0.05	0.05	Pass	
Dieldrin Fadagulfen I	mg/kg	< 0.05	0.05	Pass	
Endosulfan I	mg/kg	< 0.05	0.05	Pass	
Endosulfan II	mg/kg	< 0.05	0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05	0.05	Pass	
Endrin	mg/kg	< 0.05	0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05	0.05	Pass	



Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Endrin ketone	mg/kg	< 0.05	0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05	0.05	Pass	
Heptachlor	mg/kg	< 0.05	0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05	0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05	0.05	Pass	
Methoxychlor	mg/kg	< 0.05	0.05	Pass	
Toxaphene	mg/kg	< 1	1	Pass	
Method Blank	<u>, , , , , , , , , , , , , , , , , , , </u>	•			
Polychlorinated Biphenyls				Τ	
Aroclor-1016	mg/kg	< 0.1	0.1	Pass	
Aroclor-1221	mg/kg	< 0.1	0.1	Pass	
Aroclor-1232	mg/kg	< 0.1	0.1	Pass	
Aroclor-1242	mg/kg	< 0.1	0.1	Pass	
Aroclor-1248	mg/kg	< 0.1	0.1	Pass	
Aroclor-1254		< 0.1	0.1	Pass	
Aroclor-1260	mg/kg	< 0.1	0.1	Pass	
Total PCB*	mg/kg	< 0.1	0.1	Pass	
	mg/kg	< 0.1	0.1	Pass	
Method Blank Total Resource black diverger hand 2013 NERM Freetiers		I		Τ	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions		50		D	
TRH >C10-C16	mg/kg	< 50	50	Pass	
TRH >C16-C34	mg/kg	< 100	100	Pass	
TRH >C34-C40	mg/kg	< 100	100	Pass	
Method Blank		1		T	
PFOS/PFOA/6:2FTS	1				
Perfluorooctanesulfonic acid (PFOS)	mg/kg	< 0.005	0.005	Pass	
Perfluorooctanoic acid (PFOA)	mg/kg	< 0.005	0.005	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	mg/kg	< 0.01	0.01	Pass	
Method Blank		1		1	
Heavy Metals	1				
Arsenic	mg/kg	< 2	2	Pass	
Cadmium	mg/kg	< 0.4	0.4	Pass	
Chromium	mg/kg	< 5	5	Pass	
Copper	mg/kg	< 5	5	Pass	
Lead	mg/kg	< 5	5	Pass	
Mercury	mg/kg	< 0.1	0.1	Pass	
Nickel	mg/kg	< 5	5	Pass	
Zinc	mg/kg	< 5	5	Pass	
LCS - % Recovery					
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	%	98	70-130	Pass	
TRH C10-C14	%	114	70-130	Pass	
LCS - % Recovery					
BTEX					
Benzene	%	84	70-130	Pass	
Toluene	%	85	70-130	Pass	
Ethylbenzene	%	83	70-130	Pass	
m&p-Xylenes	%	84	70-130	Pass	
Xylenes - Total	%	84	70-130	Pass	
LCS - % Recovery	, ,,,	J	10 130	1 433	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene	%	80	70 120	Pass	
riaphinalene		1	70-130		
TDH C6 C10	0/	()')	1 70 400		
TRH C6-C10 LCS - % Recovery	%	92	70-130	Pass	



Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Acenaphthene	%	92	70-130	Pass	
Acenaphthylene	%	93	70-130	Pass	
Anthracene	%	95	70-130	Pass	
Benz(a)anthracene	%	85	70-130	Pass	
Benzo(a)pyrene	%	90	70-130	Pass	
Benzo(b&j)fluoranthene	%	89	70-130	Pass	
Benzo(g.h.i)perylene	%	76	70-130	Pass	
Benzo(k)fluoranthene	%	97	70-130	Pass	
Chrysene	%	98	70-130	Pass	
Dibenz(a.h)anthracene	%	96	70-130	Pass	
Fluoranthene	%	83	70-130	Pass	
Fluorene	%	95	70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	82	70-130	Pass	
Naphthalene	%	90	70-130	Pass	
Phenanthrene	%	95	70-130	Pass	
Pyrene	%	82	70-130	Pass	
LCS - % Recovery		<u> </u>	1 70-100	1 433	
Organochlorine Pesticides					
4.4'-DDD	%	110	70-130	Pass	
4.4'-DDE	%	102	70-130	Pass	
4.4'-DDT	%	89	70-130	Pass	+
a-BHC	%	117	70-130	Pass	
		116			
Aldrin	%		70-130	Pass	
b-BHC	%	106	70-130	Pass	
d-BHC	%	107	70-130	Pass	
Dieldrin	%	116	70-130	Pass	
Endosulfan I	%	116	70-130	Pass	
Endosulfan II	%	109	70-130	Pass	
Endosulfan sulphate	%	105	70-130	Pass	
Endrin	%	85	70-130	Pass	
Endrin aldehyde	%	107	70-130	Pass	
Endrin ketone	%	121	70-130	Pass	
g-BHC (Lindane)	%	120	70-130	Pass	
Heptachlor	%	119	70-130	Pass	
Heptachlor epoxide	%	114	70-130	Pass	
Hexachlorobenzene	%	109	70-130	Pass	
Methoxychlor	%	95	70-130	Pass	
LCS - % Recovery		1		Г	
Polychlorinated Biphenyls					
Aroclor-1260	%	110	70-130	Pass	
LCS - % Recovery				T	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH >C10-C16	%	110	70-130	Pass	
LCS - % Recovery		,			
PFOS/PFOA/6:2FTS					
Perfluorooctanesulfonic acid (PFOS)	%	111	50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	110	50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	%	110	50-150	Pass	
LCS - % Recovery					
Heavy Metals					
Arsenic	%	101	80-120	Pass	
Cadmium	%	105	80-120	Pass	
Chromium	%	109	80-120	Pass	
Copper	%	112	80-120	Pass	



Test			Units	Result 1	Acceptanc Limits	e Pass Limits	Qualifying Code
Lead			%	107	80-120	Pass	
Mercury			%	111	75-125	Pass	
Nickel			%	106	80-120	Pass	
Zinc			%	112	80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptanc Limits	e Pass Limits	Qualifying Code
Spike - % Recovery		<u> </u>		<u> </u>			
Total Recoverable Hydrocarbons	- 1999 NEPM Fract	ions		Result 1			
TRH C6-C9	S16-Jn01914	NCP	%	83	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbons	- 2013 NEPM Fract	ions		Result 1			
Naphthalene	S16-Jn01914	NCP	%	83	70-130	Pass	
TRH C6-C10	S16-Jn01914	NCP	%	75	70-130	Pass	
Spike - % Recovery							
Organochlorine Pesticides				Result 1			
4.4'-DDD	B16-Jn00475	NCP	%	127	70-130	Pass	
4.4'-DDE	B16-Jn00475	NCP	%	107	70-130	Pass	
4.4'-DDT	B16-Jn00475	NCP	%	89	70-130	Pass	
a-BHC	B16-Jn00475	NCP	%	115	70-130	Pass	
Aldrin	B16-Jn00475	NCP	%	123	70-130	Pass	
b-BHC	B16-Jn00475	NCP	%	122	70-130	Pass	
d-BHC	B16-Jn00475	NCP	%	108	70-130	Pass	
Dieldrin	B16-Jn00475	NCP	%	123	70-130	Pass	
Endosulfan I	B16-Jn00475	NCP	%	118	70-130	Pass	
Endosulfan II	B16-Jn00475	NCP	%	113	70-130	Pass	
Endosulfan sulphate	B16-Jn00475	NCP	%	105	70-130	Pass	
Endrin	B16-Jn00475	NCP	%	81	70-130	Pass	
Endrin aldehyde	B16-Jn00475	NCP	%	110	70-130	Pass	
Endrin ketone	B16-Jn00475	NCP	%	128	70-130	Pass	
g-BHC (Lindane)	B16-Jn00475	NCP	%	116	70-130	Pass	
Heptachlor	B16-Jn00475	NCP	%	119	70-130	Pass	
Heptachlor epoxide	B16-Jn00475	NCP	%	119	70-130	Pass	
Hexachlorobenzene	B16-Jn00475	NCP	%	103	70-130	Pass	
Methoxychlor	B16-Jn00475	NCP	%	86	70-130	Pass	
Spike - % Recovery							
Polychlorinated Biphenyls				Result 1			
Aroclor-1260	B16-My30645	NCP	%	103	70-130	Pass	
Spike - % Recovery							
PFOS/PFOA/6:2FTS				Result 1			
Perfluorooctanesulfonic acid (PFOS)	S16-Jn01232	NCP	%	129	50-150	Pass	
Perfluorooctanoic acid (PFOA)	S16-Jn01232	NCP	%	114	50-150	Pass	
1H.1H.2H.2H- perfluorooctanesulfonic acid (6:2 FTS)	S16-Jn01232	NCP	%	108	50-150	Pass	
Spike - % Recovery							
Polycyclic Aromatic Hydrocarbon	s			Result 1			
Acenaphthene	S16-Jn01283	СР	%	103	70-130	Pass	
Acenaphthylene	S16-Jn01283	СР	%	102	70-130	Pass	
Anthracene	S16-Jn01283	СР	%	109	70-130	Pass	
Benz(a)anthracene	S16-Jn01283	СР	%	87	70-130	Pass	
Benzo(a)pyrene	S16-Jn01283	CP	%	99	70-130	Pass	
Benzo(b&j)fluoranthene	S16-Jn01283	СР	%	105	70-130	Pass	
Benzo(g.h.i)perylene	S16-Jn01283	СР	%	82	70-130	Pass	
Benzo(k)fluoranthene	S16-Jn01283	CP	%	128	70-130	Pass	
Chrysene	S16-Jn01283	CP	%	114	70-130	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Dibenz(a.h)anthracene	S16-Jn01283	СР	%	93			70-130	Pass	
Fluoranthene	S16-Jn01283	СР	%	90			70-130	Pass	
Fluorene	S16-Jn01283	СР	%	101			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S16-Jn01283	СР	%	75			70-130	Pass	
Naphthalene	S16-Jn01283	СР	%	99			70-130	Pass	
Phenanthrene	S16-Jn01283	СР	%	99			70-130	Pass	
Pyrene	S16-Jn01283	CP	%	90			70-130	Pass	
Spike - % Recovery			,,,				12.122		
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1					
TRH C10-C14	S16-Jn01284	CP	%	122			70-130	Pass	
Spike - % Recovery	010 01101204	<u> </u>	70	122			70 100	1 455	
Total Recoverable Hydrocarbons -	2013 NEDM Fract	ione		Result 1					
TRH >C10-C16	S16-Jn01284	CP	%	115			70-130	Pass	
	310-31101264	CP	%	115			70-130	Pass	
Spike - % Recovery				Daguit 4	П				
Heavy Metals	040 1:04004	0.0	0/	Result 1			75.405	D	
Arsenic	S16-Jn01284	CP	%	95			75-125	Pass	
Cadmium	S16-Jn01284	CP	%	94			75-125	Pass	
Chromium	S16-Jn01284	CP	%	103			75-125	Pass	
Copper	S16-Jn01284	CP	%	90			75-125	Pass	
Lead	S16-Jn01284	CP	%	101			75-125	Pass	
Mercury	S16-Jn01284	CP	%	77			70-130	Pass	
Nickel	S16-Jn01284	CP	%	90			75-125	Pass	
Zinc	S16-Jn01284	CP	%	99			75-125	Pass	
Spike - % Recovery				T	1 1				
BTEX	1	1		Result 1					
Benzene	S16-My30327	NCP	%	85			70-130	Pass	
Toluene	S16-My30327	NCP	%	85			70-130	Pass	
Ethylbenzene	S16-My30327	NCP	%	82			70-130	Pass	
m&p-Xylenes	S16-My30327	NCP	%	83			70-130	Pass	
o-Xylene	S16-My30327	NCP	%	83			70-130	Pass	
Xylenes - Total	S16-My30327	NCP	%	83			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C6-C9	M16-Jn02075	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate				•			•		
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1	Result 2	RPD			
Naphthalene	M16-Jn02075	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M16-Jn02075	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate							22.2	1 3.00	
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	M16-Jn00082	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	M16-Jn00082	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	M16-Jn00082	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	M16-Jn00082	NCP	mg/kg	< 0.05	< 0.05	<u><1</u> <1	30%	Pass	
a-BHC		NCP		< 0.05	< 0.05	<u><1</u> <1			
	M16-Jn00082		mg/kg	1	1		30%	Pass	
Aldrin	M16-Jn00082	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	M16-Jn00082	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	M16-Jn00082	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	M16-Jn00082	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	M16-Jn00082	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	M16-Jn00082	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	M16-Jn00082	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	M16-Jn00082	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	1



Duplicate									
Organochlorine Pesticides				Dogult 1	Poorle 0	RPD			
	M40 I=00000	NOD		Result 1	Result 2		200/	Desa	
Endrin aldehyde Endrin ketone	M16-Jn00082 M16-Jn00082	NCP NCP	mg/kg mg/kg	< 0.05 < 0.05	< 0.05 < 0.05	<1 <1	30% 30%	Pass Pass	
g-BHC (Lindane)	M16-Jn00082	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	M16-Jn00082	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	M16-Jn00082	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	M16-Jn00082	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	M16-Jn00082	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	M16-Jn00082	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate	1 10110 01100002	1101	i iiig/kg				0070	1 433	
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	M16-Jn00082	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	M16-Jn00082	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	M16-Jn00082	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	M16-Jn00082	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	M16-Jn00082	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	M16-Jn00082	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1260	M16-Jn00082	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	M16-Jn00082	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate			<u> </u>	_					
PFOS/PFOA/6:2FTS				Result 1	Result 2	RPD			
Perfluorooctanesulfonic acid									
(PFOS)	S16-Jn01229	NCP	mg/kg	0.035	0.034	5.0	30%	Pass	
Perfluorooctanoic acid (PFOA)	S16-Jn01229	NCP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
1H.1H.2H.2H- perfluorooctanesulfonic acid (6:2 FTS)	S16-Jn01229	NCP	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Mercury	M16-Jn05850	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M16-Jn01089	NCP	%	25	25	2.0	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbon	s			Result 1	Result 2	RPD			
Acenaphthene	S16-Jn01282	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S16-Jn01282	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S16-Jn01282	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S16-Jn01282	CP	mg/kg	0.6	0.7	26	30%	Pass	
Benzo(a)pyrene	S16-Jn01282	CP	mg/kg	1.2	1.5	23	30%	Pass	
Benzo(b&j)fluoranthene	S16-Jn01282	CP	mg/kg	1.2	1.4	16	30%	Pass	
Benzo(g.h.i)perylene	S16-Jn01282	CP	mg/kg	1.1	1.2	6.0	30%	Pass	
Benzo(k)fluoranthene	S16-Jn01282	CP	mg/kg	0.9	1.1	17	30%	Pass	
Chrysene	S16-Jn01282	CP	mg/kg	0.8	0.9	13	30%	Pass	
Dibenz(a.h)anthracene	S16-Jn01282	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S16-Jn01282	CP	mg/kg	1.0	1.2	25	30%	Pass	
Fluorene	S16-Jn01282	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S16-Jn01282	CP	mg/kg	0.9	1.0	9.0	30%	Pass	
Naphthalene	S16-Jn01282	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S16-Jn01282	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S16-Jn01282	CP	mg/kg	1.0	1.3	23	30%	Pass	
Duplicate	4000 NETT				D 1. 4	200			
Total Recoverable Hydrocarbons			"	Result 1	Result 2	RPD	2001	++	
TRH C10-C14	S16-Jn01283	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S16-Jn01283	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S16-Jn01283	CP	mg/kg	< 50	< 50	<1	30%	Pass	



Duplicate									
Total Recoverable Hydroc	arbons - 2013 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH >C10-C16	S16-Jn01283	СР	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S16-Jn01283	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S16-Jn01283	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-Jn01283	CP	mg/kg	8.7	8.1	7.0	30%	Pass	
Cadmium	S16-Jn01283	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S16-Jn01283	CP	mg/kg	28	28	<1	30%	Pass	
Copper	S16-Jn01283	CP	mg/kg	14	14	1.0	30%	Pass	
Lead	S16-Jn01283	CP	mg/kg	10	7.0	36	30%	Fail	Q15
Nickel	S16-Jn01283	CP	mg/kg	6.4	5.6	14	30%	Pass	
Zinc	S16-Jn01283	CP	mg/kg	6.7	5.4	21	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-Jn01284	CP	mg/kg	5.1	3.9	26	30%	Pass	
Cadmium	S16-Jn01284	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S16-Jn01284	CP	mg/kg	9.9	9.7	2.0	30%	Pass	
Copper	S16-Jn01284	CP	mg/kg	9.7	9.7	<1	30%	Pass	
Lead	S16-Jn01284	CP	mg/kg	48	49	1.0	30%	Pass	
Nickel	S16-Jn01284	CP	mg/kg	6.3	6.0	5.0	30%	Pass	
Zinc	S16-Jn01284	CP	mg/kg	21	20	1.0	30%	Pass	
Duplicate									
BTEX	<u>, </u>			Result 1	Result 2	RPD			
Benzene	S16-My30326	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S16-My30326	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S16-My30326	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S16-My30326	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S16-My30326	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S16-My30326	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	



Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description

F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis). N01

Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.

Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear standard.

N02

F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes. N04

Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs N07

The RPD reported passes Eurofins I mot's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report. Q15

Authorised By

N09

Andrew Black Analytical Services Manager Emily Rosenberg Senior Analyst-Metal (VIC) Harry Bacalis Senior Analyst-Volatile (VIC) Huong Le Senior Analyst-Inorganic (VIC) Mele Singh Senior Analyst-Organic (VIC) Rhys Thomas Senior Analyst-Asbestos (NSW) Richard Corner Senior Analyst-Organic (QLD) Ryan Hamilton Senior Analyst-Volatile (NSW)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

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

Uncertainty data is available on request

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Certificate of Analysis





NATA Accredited Accreditation Number 1261 Site Number 18217

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

Jacobs Group (Australia) P/L NSW Level 4, 100 Christie St St Leonards NSW 2065

Attention: Blair Cummings Report 502800-AID

Project Name BANKSTOWN AIRPORT - SITE 1

Project ID IA110700

Received Date Jun 01, 2016

Date Reported Jun 08, 2016

Methodology:

Asbestos ID

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

Subsampling Soil Samples

The whole sample submitted is first dried and then sieved through a 10mm sieve followed by a 2mm sieve. All fibrous matter viz greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) Iron ores - Sampling and Sample preparation procedures is employed. Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis in accordance with AS 4964-2004.

Bonded asbestoscontaining material (ACM) The material is first examined and any fibres isolated and where required interfering organic fibres or matter may be removed by treating the sample for several hours at a temperature not exceeding 400 ± 30 °C. The resultant material is then ground and examined in accordance with AS 4964-2004.

Limit of Reporting

The nominal detection limit of the AS4964 method is around 0.01%. The examination of large sample sizes (at least 500 ml is recommended) may improve the likelihood of identifying asbestos material in the greater than 2 mm fraction. The NEPM screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. NOTE: NATA News, September 2011 – page 34, states, "Weighing of fibres is problematic and can lead to loss of fibres and potential exposure for laboratory analysts. To request laboratories to report information which is outside the scope of AS 4964-2004 and the scope of their accreditation is misleading and is most unwise" therefore such values reported are outside the scope of Eurofins | mgt NATA accreditation as designated by an asterisk.







NATA Accredited Accreditation Number 1261 Site Number 18217

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

Project Name BANKSTOWN AIRPORT - SITE 1

 Project ID
 IA110700

 Date Sampled
 May 30, 2016

 Report
 502800-AID

Client Sample ID	Eurofins mgt Sample No.	Date Sampled	Sample Description	Result
A1_TP13_0.0	16-Jn01280	May 30, 2016	Approximate Sample 910g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}
A1_TP16_0.0	16-Jn01282	May 30, 2016	Approximate Sample 1019g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}
A1_TP19_0.3	16-Jn01285	May 30, 2016	Approximate Sample 1164g Sample consisted of: Pale grey fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}



Sample History

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

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

DescriptionTesting SiteExtractedHolding TimeAsbestos - LTM-ASB-8020SydneyJun 01, 2016Indefinite



Company Name:

Project Name:

Address:

mgt

Jacobs Group (Australia) P/L NSW

BANKSTOWN AIRPORT - SITE 1

Level 4, 100 Christie St

St Leonards

NSW 2065

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

Unit F3. Building F

16 Mars Road

Sydney

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

Order No.: IA110700 Received: Jun 1, 2016 3:45 PM

 Report #:
 502800
 Due:
 Jun 8, 2016

 Phone:
 02 9928 2100
 Priority:
 5 Day

Site # 1254 & 14271

Fax: 02 9928 2504 Contact Name: Blair Cummings

Eurofins | mgt Analytical Services Manager : Andrew Black

Pro	ject ID:	IA110700											
	Sample Detail								Eurofins mgt Suite B13	PFOS/PFOA/6:2FTS	Moisture Set	Eurofins mgt Suite B7	
Melb	ourne Laborato	ory - NATA Site	# 1254 & 142	71			Х		Х		Х	Х	
Sydr	ney Laboratory	- NATA Site # 1	8217			Х		Х				Х	
Brisl	oane Laborator	y - NATA Site #	20794							Х			
Exte	rnal Laboratory	,											
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID								
1	A1_TP13_0.0	May 30, 2016		Soil	S16-Jn01280	Х			Х	Х	Х	Х	
2	A1_TP13_0.4	May 30, 2016		Soil	S16-Jn01281						Х	Х	
3	A1_TP16_0.0	May 30, 2016		Soil	S16-Jn01282	Х			Х	Х	Х	Х	
4	A1_TP16_1.0	May 30, 2016		Soil	S16-Jn01283						Х	Х	
1													

Soil

Soil

Soil

Soil

Soil

Soil

S16-Jn01284

S16-Jn01285

S16-Jn01286

S16-Jn01287

S16-Jn01288

S16-Jn01289

Χ

 $X \mid X \mid X \mid X$

Х

 $X \mid X$

 $X \mid X$

Χ

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A1_TP20_0.0

A1_TP20_2.0

A1-QC01

A1-QC03

10

A1_TP19_0.0 May 30, 2016

A1_TP19_0.3 | May 30, 2016

May 30, 2016

May 30, 2016

May 30, 2016

May 30, 2016



Company Name:

Project Name:

Address:

mgt

Jacobs Group (Australia) P/L NSW

BANKSTOWN AIRPORT - SITE 1

Level 4. 100 Christie St

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NATA # 1261 Site # 18217

Eurofins | mgt Analytical Services Manager : Andrew Black

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

Brisbane

Order No.: IA110700 Received: Jun 1, 2016 3:45 PM

Report #: 502800 Due: Jun 8, 2016 Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 **Contact Name: Blair Cummings**

Project ID: IA110700

	Sample Detail								Eurofins mgt Suite B13	PFOS/PFOA/6:2FTS	Moisture Set	Eurofins mgt Suite B7
Mell	ourne Laborato	ory - NATA Site	# 1254 & 142	71			Х		Х		Х	Χ
Syd	ney Laboratory	- NATA Site # 1	8217			Х		Χ				Х
Bris	bane Laborator	y - NATA Site #	20794							Х		
Exte	rnal Laboratory	<u>'</u>										
11	A1-QC05	May 30, 2016		Soil	S16-Jn01290						Х	Х
12	TS160517-5	May 30, 2016		Soil	S16-Jn01291			Х				
13	TB160517-5	May 30, 2016		Soil	S16-Jn01293			Х				
14	A1_TP13_1.0	May 30, 2016		Soil	S16-Jn01294		Χ					
15	A1_TP13_2.0	May 30, 2016		Soil	S16-Jn01295		Χ					
16	A1_TP13_2.5	May 30, 2016		Soil	S16-Jn01296		Χ					
17	A1_TP16_0.5	May 30, 2016		Soil	S16-Jn01297		Х					
18	A1_TP16_0.8	May 30, 2016		Soil	S16-Jn01298		Χ					
19	A1_TP16_2.0	May 30, 2016		Soil	S16-Jn01299		Х					
20	A1_TP16_2.5	May 30, 2016		Soil	S16-Jn01300		Χ					
21	A1_TP19_0.5	May 30, 2016		Soil	S16-Jn01301		Χ					

Page 5 of 8



Company Name:

mgt

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Melbourne

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NATA # 1261 Site # 18217

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Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: Jun 1, 2016 3:45 PM

Address: Level 4. 100 Christie St Report #: 502800 Due: Jun 8, 2016 St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 **Contact Name: Blair Cummings**

Project Name: **BANKSTOWN AIRPORT - SITE 1**

Project ID: IA110700 **Eurofins | mgt Analytical Services Manager : Andrew Black**

	Sample Detail							ВТЕХ	Eurofins mgt Suite B13	PFOS/PFOA/6:2FTS	Moisture Set	Eurofins mgt Suite B7
Melk	ourne Laborato	ory - NATA Site	# 1254 & 1427	71			Х		Х		Х	Х
Sydı	ney Laboratory	- NATA Site # 1	8217			Х		Х				Χ
Bris	bane Laborator	y - NATA Site #	20794							Х		
Exte	rnal Laboratory	,										
22	A1_TP19_1.0	May 30, 2016	:	Soil	S16-Jn01302		Х					
23	A1_TP19_2.0	May 30, 2016	:	Soil	S16-Jn01303		Х					
24	A1_TP19_2.5	May 30, 2016	:	Soil	S16-Jn01304		Х					
25	A1_TP20_0.5	May 30, 2016	:	Soil	S16-Jn01305		Х					
26	A1_TP20_0.8	May 30, 2016	:	Soil	S16-Jn01306		Х					
27	A1_TP20_1.1	May 30, 2016	:	Soil	S16-Jn01307		Х					
28	A1_TP20_2.5	May 30, 2016	:	Soil	S16-Jn01308		Х					
Test	Counts					3	15	2	3	3	10	10



Internal Quality Control Review and Glossary

General

- 1. QC data may be available on request.
- 2. All soil results are reported on a dry basis, unless otherwise stated
- 3. Samples were analysed on an 'as received' basis.
- 4. This report replaces any interim results previously issued.

Holding Times

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

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

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w: weight for weight basis grams per kilogram
Filter loading: fibres/100 graticule areas

Reported Concentration: fibres/mL Flowrate: L/min

Terms

ΑF

Date Reported: Jun 08, 2016

Dry Where a moisture has been determined on a solid sample the result is expressed on a dry basis.

LOR Limit of Reporting.
COC Chain of custody
SRA Sample Receipt Advice

ISO International Stardards Organisation

AS Australian Standards

WA DOH Western Australia Department of Health

NOHSC National Occupational Health and Safety Commission

ACM Bonded asbestos-containing material means any material containing more than 1% asbestos and comprises asbestos-containing-material which is in sound condition,

although possibly broken or fragmented, and where the asbestos is bound in a matrix such as cement or resin. Common examples of ACM include but are not limited to: pipe and boiler insulation, sprayed-on fireproofing, troweled-on acoustical plaster, floor tile and mastic, floor linoleum, transite shingles, roofing materials, wall and ceiling plaster, ceiling tiles, and gasket materials. This term is restricted to material that cannot pass a 7 mm x 7 mm sieve. This sieve size is selected because it approximates the thickness of common asbestos cement sheeting and for fragments to be smaller than this would imply a high degree of damage and hence potential

for fibre release.

FA FA comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. This type of friable asbestos

is defined here as asbestos material that is in a degraded condition such that it can be broken or crumbled by hand pressure. This material is typically unbonded or

was previously bonded and is now significantly degraded (crumbling).

PACM Presumed Asbestos-Containing Material means thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later

than 1980 that are assumed to contain greater than one percent asbestos but have not been sampled or analyzed to verify or negate the presence of asbestos.

Asbestos fines (AF) are defined as free fibres, or fibre bundles, smaller than 7mm. It is the free fibres which present the greatest risk to human health, although very

small fibres (< 5 microns in length) are not considered to be such a risk. AF also includes small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve.

(Note that for bonded ACM fragments to pass through a 7 mm x 7 mm sieve implies a substantial degree of damage which increases the potential for fibre release.)

AC Asbestos cement means a mixture of cement and asbestos fibres (typically 90:10 ratios).

Page 7 of 8

Report Number: 502800-AID



Comments

Sample Integrity

	•	
Custody Seals Intact	t (if used)	N/A
Attempt to Chill was e	evident	Yes
Sample correctly pres	served	Yes
Appropriate sample c	containers have been used	Yes
Sample containers for	or volatile analysis received with minimal headspace	Yes
Samples received wit	ithin HoldingTime	Yes
Some samples have I	been subcontracted	No

Qualifier Codes/Comments

Code Description N/A Not applicable

M11 NATA accreditation does not cover the performance of this service.

Authorised by:

Rhys Thomas Senior Analyst-Asbestos (NSW)

Glenn Jackson

National Operations Manager

Final Report - this report replaces any previously issued Report

- Indicates Not Requested

Date Reported: Jun 08, 2016

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

Uncertainty data is available on request

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



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Melbourne 3-5 Kingston Town Close Oakleigh Vic 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400 NATA # 1261 Site # 18217 Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Sample Receipt Advice

Company name: Jacobs Group (Australia) P/L NSW

Contact name: Blair Cummings

Project name: BANKSTOWN AIRPORT - SITE 1

Project ID: IA110700 COC number: Not provided

Turn around time: 5 Day

Date/Time received: Jun 1, 2016 3:45 PM

Eurofins | mgt reference: 502800

Sample information

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

Notes

A1-QC02, A1-QC04, A1-QC06 forwarded to ALS.

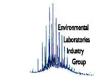
Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone: (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Blair Cummings - Blair.Cummings@jacobs.com.





*	ABN 50005 085 521		7			F Frivito			_				Δı	1	^		P	0 11	1
Company	Jacobs		Purchase	Order		JA	110700				Project M	anager	Bla		Cumm				un Airport - Site!
	Level 4 100 Christie Stree	t	Eurofins m	igt Ouote			160413	JACN			Projec	it No		IA	111070	D	Electronic Results Format	ESdat	
Address	St Leonards NSW 2065		llerd"		ž Š		ic acid	(M/M%)					ď Ž	ivel	tic acid		Email for Results	Michae	el.Stacey@jacobs.c
Contact Name	Michael Stacey		Total or The		Ç, Ç,	m	esulfon 2 FTS)	(0.001					ල් 5	race Le	esulfor 2 FTS)			om, Bl	air, Cumming @ jacol
Contact Phone Ne	02 9032 1467		l lies		F As,	PC PC	rooctan nate (6:2	titative		(CEC)			s, Cd, (Æ. T	rooctar nate (6:		Turn Around	1DAY"	2DAY 3DAY
18			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		¥ ₽	13 00	suffor	Oran	(2)	pacity	itent		X	ons (P	Perfluc r sulfo		IV.	5DAY(SId)	Othert
Special Direction				Soil	Pb, Zn, Hg	Duite: E	OA) / F	elines	pH (CaCl2)	nge C	% Clay content	Water	√ BTE> Zn, Hg	irocarb	*OA) /		Continues	s	Method of Shipment
Relinquished by	B. Cumming		Andlyck Michigan metalene		Eurolins mgt Suite: B7 TRH/ BTEXN/ PAH/ As, Cd. Pb, Zn, Hg	Eurofins mgt Suite: B13 OCP/ PCB	Periluorooctanoic acid (PFOA) / Periluorooctanesulfonic acid (PFOS) / 6.2 fluorotelomer sulfonate (6.2 FTS)	Asbestos - WA/NEPM Guidelines - Cuantkative (0.001% w/w)	4	Cation Exchange Capacity (CEC)	%		Eurofins mgt Suite: B6 TRH/ BTEXN/ As, Cd, Zn, Hg	Polycyclic Aromatic Hydrocarbons (PAH) - Trace Level	Perfluorooctanoic acid (PFOA) / Perfluorooctanesulfonic acid (PFCS) / 6:2 fluorotelones sulfonate (6:2 FTS)	DIEX DIEX	2 4 9	lazz	Courier
(Signature)	12	- Or	POS HAL		t Suite.	Euro	ctanoic	WAN		Cati			of Suit	lic Aroi	ctanoi		11 Phartic 250m. Plantic 125m. Plantic 288m. Ambor Glaza 40m. Unial	125mL Ambor Gless Jee	Hand Delivered
(Time / Date)	17:10 20	061 16	\ Eg		ns mg		P. P.	stos -					fins m	otycyc	fluoro		11 1250-7250-1250-1250-1250-1250-1250-1250-1250-1	125mL	Postal
Ne	Client Sample ID	Date	Matrix		Eurof		Ped	Asbe					Euro	n.	Q.				Sample Comments / DG Hazard Warning
1	Al-GWI	20/06/16	Water										X	X	X				
2	AI-GWZ		-										X	X	×			1	
3	AI-GW3												X	X	×				
4	A1- 2007												X	X	X				
5	TS160614 - 15	¥	+													×			
6	TB160614 - 15	20/08/16	Water													×			
7																			
8												(S							
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11																			
12									1							Ü	N L		

Date

Time

Signature

Reput No

Received By

Received By

Laboratory Use Only



Jacobs Group (Australia) P/L NSW Level 4, 100 Christie St St Leonards NSW 2065 IAC-MRA



Certificate of Analysis

NATA Accredited Accreditation Number 1261 Site Number 18217

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

Attention: Blair Cummings

Report 505193-W

Project name BANKSTOWN AIRPORT - SITE 1

Project ID IA110700
Received Date Jun 21, 2016

Client Sample ID			A1 - GW1	A1 - GW2	A1 - GW3	A1 - QC07
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S16-Jn19461	S16-Jn19462	S16-Jn19463	S16-Jn19464
Date Sampled			Jun 20, 2016	Jun 20, 2016	Jun 20, 2016	Jun 20, 2016
Test/Reference	LOR	Unit	,	,	,	,
Total Recoverable Hydrocarbons - 1999 NEPM Frac		Orne				
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	0.10	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	94	91	92	95
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1)N04	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
PFOS/PFOA/6:2FTS						
Perfluorooctanesulfonic acid (PFOS)	0.00001	mg/L	< 0.00001	0.00002	0.00001	< 0.00001
Perfluorooctanoic acid (PFOA)	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	< 0.00001
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	< 0.00005
13C-PFHxA (surr.)	1	%	121	115	120	117
13C8-PFOS (surr.)	1	%	29	24	24	27
Heavy Metals	•					
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Cadmium (filtered)	0.0001	mg/L	0.0001	< 0.001	< 0.001	0.0001
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Mercury (filtered)	0.0001	mg/L	< 0.0001	0.0002	< 0.0001	< 0.0001



Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference Heavy Metals	LOR	Unit	A1 - GW1 Water S16-Jn19461 Jun 20, 2016	A1 - GW2 Water S16-Jn19462 Jun 20, 2016	A1 - GW3 Water S16-Jn19463 Jun 20, 2016	A1 - QC07 Water S16-Jn19464 Jun 20, 2016
Nickel (filtered)	0.001	mg/L	0.003	0.003	0.062	0.003
Zinc (filtered)	0.005	mg/L	0.008	0.013	0.057	0.008

Client Sample ID			TS160614 - 15	TB160614 - 15	A1 - GW1	A1 - GW2
Sample Matrix			Water	Water	Water (Trace)	Water (Trace)
Eurofins mgt Sample No.			S16-Jn19465	S16-Jn19466	S16-Jn19467	S16-Jn19468
Date Sampled			Jun 20, 2016	Jun 20, 2016	Jun 20, 2016	Jun 20, 2016
Test/Reference	LOR	Unit				
ВТЕХ						
Benzene	0.001	mg/L	104%	< 0.001	-	-
Toluene	0.001	mg/L	99%	< 0.001	-	-
Ethylbenzene	0.001	mg/L	96%	< 0.001	-	-
m&p-Xylenes	0.002	mg/L	97%	< 0.002	-	-
o-Xylene	0.001	mg/L	99%	< 0.001	-	-
Xylenes - Total	0.003	mg/L	97%	< 0.003	-	-
4-Bromofluorobenzene (surr.)	1	%	103	92	-	-
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Acenaphthylene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Anthracene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Benz(a)anthracene	0.00001	mg/L	=	=	< 0.00001	< 0.00001
Benzo(a)pyrene	0.00001	mg/L	=	=	< 0.00001	< 0.00001
Benzo(b&j)fluorantheneN07	0.00001	mg/L	=	=	< 0.00001	< 0.00001
Benzo(g.h.i)perylene	0.00001	mg/L	=	-	< 0.00001	< 0.00001
Benzo(k)fluoranthene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Chrysene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Dibenz(a.h)anthracene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Fluoranthene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Fluorene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Indeno(1.2.3-cd)pyrene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Naphthalene	0.00001	mg/L	-	-	< 0.00001	0.00010
Phenanthrene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Pyrene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Total PAH*	0.00001	mg/L	-	-	< 0.00005	0.0001
2-Fluorobiphenyl (surr.)	1	%	-	-	106	96
p-Terphenyl-d14 (surr.)	1	%	-	-	123	114



Client Sample ID Sample Matrix			A1 - GW3 Water (Trace)	A1 - QC07 Water (Trace)
Eurofins mgt Sample No.			S16-Jn19469	S16-Jn19470
Date Sampled			Jun 20, 2016	Jun 20, 2016
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons	·			
Acenaphthene	0.00001	mg/L	< 0.00001	< 0.00001
Acenaphthylene	0.00001	mg/L	< 0.00001	< 0.00001
Anthracene	0.00001	mg/L	< 0.00001	< 0.00001
Benz(a)anthracene	0.00001	mg/L	< 0.00001	< 0.00001
Benzo(a)pyrene	0.00001	mg/L	< 0.00001	< 0.00001
Benzo(b&j)fluoranthene ^{N07}	0.00001	mg/L	< 0.00001	< 0.00001
Benzo(g.h.i)perylene	0.00001	mg/L	< 0.00001	< 0.00001
Benzo(k)fluoranthene	0.00001	mg/L	< 0.00001	< 0.00001
Chrysene	0.00001	mg/L	< 0.00001	< 0.00001
Dibenz(a.h)anthracene	0.00001	mg/L	< 0.00001	< 0.00001
Fluoranthene	0.00001	mg/L	< 0.00001	< 0.00001
Fluorene	0.00001	mg/L	< 0.00001	< 0.00001
Indeno(1.2.3-cd)pyrene	0.00001	mg/L	< 0.00001	< 0.00001
Naphthalene	0.00001	mg/L	< 0.00001	< 0.00001
Phenanthrene	0.00001	mg/L	< 0.00001	< 0.00001
Pyrene	0.00001	mg/L	< 0.00001	< 0.00001
Total PAH*	0.00001	mg/L	< 0.00005	< 0.00005
2-Fluorobiphenyl (surr.)	1	%	97	83
p-Terphenyl-d14 (surr.)	1	%	114	94

Report Number: 505193-W



Sample History

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

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

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

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B6 (filtered metals)			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Jun 22, 2016	7 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Sydney	Jun 21, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Jun 21, 2016	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Jun 22, 2016	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8 filtered	Sydney	Jun 21, 2016	28 Day
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			
Polycyclic Aromatic Hydrocarbons	Sydney	Jun 22, 2016	7 Day
- Method: E007 Polyaromatic Hydrocarbons (PAH)			
PFOS/PFOA/6:2FTS	Brisbane	Jun 21, 2016	14 Day

⁻ Method: LTM-ORG-2100 Analysis of PFCs in environmental samples by LC-MS/MS

Report Number: 505193-W



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Site # 1254 & 14271

Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400 NATA # 1261 Site # 18217

Eurofins | mgt Analytical Services Manager : Andrew Black

Brisbane1/21 Smallwood Place
Murarrie QLD 4172
Phone: +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: Jun 21, 2016 6:00 PM

 Address:
 Level 4, 100 Christie St
 Report #:
 505193
 Due:
 Jun 29, 2016

St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 Contact Name: Blair Cummings

Project Name: BANKSTOWN AIRPORT - SITE 1
Project ID: IA110700

BTEX Eurofins | mgt Suite B6 Polycyclic Aromatic Hydrocarbons PFOS/PFOA/6:2FTS Sample Detail (filtered metals) Melbourne Laboratory - NATA Site # 1254 & 14271 Sydney Laboratory - NATA Site # 18217 Χ Χ Χ Χ Brisbane Laboratory - NATA Site # 20794 **External Laboratory** No Sample ID Sample Date Sampling **Matrix** LAB ID Time A1 - GW1 Jun 20, 2016 Water Χ Χ S16-Jn19461 A1 - GW2 Х Х Jun 20, 2016 Water S16-Jn19462 A1 - GW3 Jun 20, 2016 Water S16-Jn19463 Χ Χ A1 - QC07 Jun 20, 2016 Water S16-Jn19464 Х Χ TS160614 - 15 Jun 20, 2016 S16-Jn19465 Χ Water Χ TB160614 - 15 Jun 20, 2016 Water S16-Jn19466 S16-Jn19467 Χ A1 - GW1 Jun 20, 2016 Water (Trace) A1 - GW2 Jun 20, 2016 Water (Trace) S16-Jn19468 Х A1 - GW3 Х Jun 20, 2016 Water (Trace) S16-Jn19469 10 A1 - QC07 Jun 20, 2016 Water (Trace) S16-Jn19470

> Eurofins | mgt Unit F3, Building F, 16 Mars Road, Lane Cove West, NSW, Australia, 2066 ABN: 50 005 085 521 Telephone: +61 2 9900 8400 Facsimile: +61 2 9420 2977

Date Reported:Jun 29, 2016



IA110700

Project ID:

ABN - 50 005 085 521

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Eurofins | mgt Analytical Services Manager : Andrew Black

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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: Jun 21, 2016 6:00 PM

 Address:
 Level 4, 100 Christie St
 Report #:
 505193
 Due:
 Jun 29, 2016

St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 Contact Name: Blair Cummings

Project Name: BANKSTOWN AIRPORT - SITE 1

втех Polycyclic Aromatic Hydrocarbons PFOS/PFOA/6:2FTS Eurofins | mgt Suite B6 (filtered metals) Sample Detail Melbourne Laboratory - NATA Site # 1254 & 14271 Χ Sydney Laboratory - NATA Site # 18217 Χ Χ Brisbane Laboratory - NATA Site # 20794 Χ **External Laboratory** 4 2 **Test Counts**



Internal Quality Control Review and Glossary

General

- 1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 4. Results are uncorrected for matrix spikes or surrogate recoveries.
- 5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise
- 6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

Units

 mg/kg: milligrams per Kilogram
 mg/l: milligrams per litre

 ug/l: micrograms per litre
 ppm: Parts per million

 ppb: Parts per billion
 %: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry Where a moisture has been determined on a solid sample the result is expressed on a dry basis.

LOR Limit of Reporting.

SPIKE Addition of the analyte to the sample and reported as percentage recovery.

RPD Relative Percent Difference between two Duplicate pieces of analysis.

LCS Laboratory Control Sample - reported as percent recovery
CRM Certified Reference Material - reported as percent recovery

Method Blank In the case of solid samples these are performed on laboratory certified clean sands

In the case of water samples these are performed on de-ionised water.

Surr - Surrogate The addition of a like compound to the analyte target and reported as percentage recovery.

DuplicateA second piece of analysis from the same sample and reported in the same units as the result to show comparison.

Batch Duplicate A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.

Batch SPIKE Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.

USEPA United States Environmental Protection Agency

APHA American Public Health Association

TCLP Toxicity Characteristic Leaching Procedure

COC Chain of Custody

SRA Sample Receipt Advice

CP Client Parent - QC was performed on samples pertaining to this report

NCP Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within

TEQ Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

QC Data General Comments

- 1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxaphene is not added to the Spike.
- 5. Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- 6. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time.

 Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- 8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- 9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.



Quality Control Results

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Method Blank					
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	mg/L	< 0.02	0.02	Pass	
TRH C10-C14	mg/L	< 0.05	0.05	Pass	
TRH C15-C28	mg/L	< 0.1	0.1	Pass	
TRH C29-C36	mg/L	< 0.1	0.1	Pass	
Method Blank					
BTEX					
Benzene	mg/L	< 0.001	0.001	Pass	
Toluene	mg/L	< 0.001	0.001	Pass	
Ethylbenzene	mg/L	< 0.001	0.001	Pass	
m&p-Xylenes	mg/L	< 0.002	0.002	Pass	
o-Xylene	mg/L	< 0.001	0.001	Pass	
Xylenes - Total	mg/L	< 0.003	0.003	Pass	
Method Blank	<u> </u>				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene	mg/L	< 0.01	0.01	Pass	
TRH C6-C10	mg/L	< 0.02	0.02	Pass	
Method Blank	,g/ =	1 0.02	0.02	1 400	
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	mg/L	< 0.00001	0.00001	Pass	
Acenaphthylene	mg/L	< 0.00001	0.00001	Pass	
Anthracene	mg/L	< 0.00001	0.00001	Pass	
		< 0.00001	0.00001	Pass	
Benzo(a)anthracene Benzo(a)pyrene	mg/L	< 0.00001	0.00001	Pass	
` '12	mg/L				
Benzo(b&j)fluoranthene	mg/L	< 0.00001	0.00001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.00001	0.00001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.00001	0.00001	Pass	
Chrysene Chrysene	mg/L	< 0.00001	0.00001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.00001	0.00001	Pass	
Fluoranthene	mg/L	< 0.00001	0.00001	Pass	
Fluorene	mg/L	< 0.00001	0.00001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.00001	0.00001	Pass	
Naphthalene	mg/L	< 0.00001	0.00001	Pass	
Phenanthrene	mg/L	< 0.00001	0.00001	Pass	
Pyrene	mg/L	< 0.00001	0.00001	Pass	
Method Blank		1		ı	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH >C10-C16	mg/L	< 0.05	0.05	Pass	
TRH >C16-C34	mg/L	< 0.1	0.1	Pass	
TRH >C34-C40	mg/L	< 0.1	0.1	Pass	
Method Blank					
PFOS/PFOA/6:2FTS					
Perfluorooctanesulfonic acid (PFOS)	mg/L	< 0.00001	0.00001	Pass	
Perfluorooctanoic acid (PFOA)	mg/L	< 0.00001	0.00001	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	mg/L	< 0.00005	0.00005	Pass	
Method Blank					
Heavy Metals					
Arsenic (filtered)	mg/L	< 0.001	0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0001	0.0001	Pass	
Chromium (filtered)	mg/L	< 0.001	0.001	Pass	
Copper (filtered)	mg/L	< 0.001	0.001	Pass	



Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Lead (filtered)	mg/L	< 0.001	0.001	Pass	
Mercury (filtered)	mg/L	< 0.0001	0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001	0.001	Pass	
Zinc (filtered)	mg/L	< 0.005	0.005	Pass	
LCS - % Recovery			· · · · · ·		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	%	89	70-130	Pass	
TRH C10-C14	%	95	70-130	Pass	
LCS - % Recovery					
BTEX					
Benzene	%	96	70-130	Pass	
Toluene	%	96	70-130	Pass	
Ethylbenzene	%	96	70-130	Pass	
m&p-Xylenes	%	97	70-130	Pass	
o-Xylene	%	98	70-130	Pass	
Xylenes - Total	%	97	70-130	Pass	
LCS - % Recovery					
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene	%	94	70-130	Pass	
TRH C6-C10	%	99	70-130	Pass	
LCS - % Recovery					
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	%	96	70-130	Pass	
Acenaphthylene	%	79	70-130	Pass	
Anthracene	%	109	70-130	Pass	
Benz(a)anthracene	%	105	70-130	Pass	
Benzo(a)pyrene	%	101	70-130	Pass	
Benzo(b&j)fluoranthene	%	116	70-130	Pass	
Benzo(g.h.i)perylene	%	108	70-130	Pass	
Benzo(k)fluoranthene	%	117	70-130	Pass	
Chrysene	%	117	70-130	Pass	
Dibenz(a.h)anthracene	%	99	70-130	Pass	
Fluoranthene	%	115	70-130	Pass	
Fluorene	%	93	70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	101	70-130	Pass	
Naphthalene	%	119	70-130	Pass	
Phenanthrene	%	103	70-130	Pass	
Pyrene	%	118	70-130	Pass	
LCS - % Recovery		1			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	1				
TRH >C10-C16	%	101	70-130	Pass	
LCS - % Recovery					
PFOS/PFOA/6:2FTS					<u> </u>
Perfluorooctanesulfonic acid (PFOS)	%	85	50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	91	50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	%	84	50-150	Pass	
LCS - % Recovery					-
Heavy Metals				_	-
Arsenic (filtered)	%	88	70-130	Pass	
Cadmium (filtered)	%	90	70-130	Pass	
Chromium (filtered)	%	95	70-130	Pass	
Copper (filtered)	%	94	70-130	Pass	
Lead (filtered)	%	93	70-130	Pass	
Mercury (filtered)	%	92	70-130	Pass	L

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Te	est		Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Nickel (filtered)			%	91	70-130	Pass	
Zinc (filtered)			%	91	70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery						1	
Total Recoverable Hydrocarbo	ons - 1999 NEPM Fract			Result 1			
TRH C10-C14	S16-Jn19637	NCP	%	97	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbo				Result 1			
TRH >C10-C16	S16-Jn19637	NCP	%	102	70-130	Pass	
Spike - % Recovery				1		T	
Heavy Metals		I		Result 1			
Arsenic (filtered)	S16-Jn24981	NCP	%	116	70-130	Pass	
Cadmium (filtered)	S16-Jn24981	NCP	%	86	70-130	Pass	
Chromium (filtered)	S16-Jn24981	NCP	%	91	70-130	Pass	
Copper (filtered)	S16-Jn24981	NCP	%	76	70-130	Pass	
Lead (filtered)	S16-Jn24981	NCP	%	76	70-130	Pass	
Mercury (filtered)	S16-Jn24981	NCP	%	79	70-130	Pass	
Nickel (filtered)	S16-Jn24981	NCP	%	76	70-130	Pass	
Zinc (filtered)	S16-Jn24981	NCP	%	75	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbo	ons - 1999 NEPM Fract	ions		Result 1			
TRH C6-C9	S16-Jn19463	CP	%	83	70-130	Pass	
Spike - % Recovery							
BTEX				Result 1			
Benzene	S16-Jn19463	CP	%	97	70-130	Pass	
Toluene	S16-Jn19463	CP	%	97	70-130	Pass	
Ethylbenzene	S16-Jn19463	CP	%	97	70-130	Pass	
m&p-Xylenes	S16-Jn19463	CP	%	98	70-130	Pass	
o-Xylene	S16-Jn19463	CP	%	99	70-130	Pass	
Xylenes - Total	S16-Jn19463	CP	%	98	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbo	ons - 2013 NEPM Fract	ions		Result 1			
Naphthalene	S16-Jn19463	CP	%	104	70-130	Pass	
TRH C6-C10	S16-Jn19463	СР	%	91	70-130	Pass	
Spike - % Recovery							
Polycyclic Aromatic Hydrocar	bons			Result 1			
Acenaphthene	S16-Jn19642	NCP	%	88	70-130	Pass	
Acenaphthylene	S16-Jn19642	NCP	%	83	70-130	Pass	
Anthracene	S16-Jn19642	NCP	%	99	70-130	Pass	
Benz(a)anthracene	S16-Jn19642	NCP	%	109	70-130	Pass	
Benzo(a)pyrene	S16-Jn19642	NCP	%	122	70-130	Pass	
Benzo(b&j)fluoranthene	S16-Jn19642	NCP	%	121	70-130	Pass	
Benzo(g.h.i)perylene	S16-Jn19642	NCP	%	96	70-130	Pass	
Benzo(k)fluoranthene	S16-Jn19642	NCP	%	116	70-130	Pass	
Chrysene	S16-Jn19642	NCP	%	108	70-130	Pass	
Dibenz(a.h)anthracene	S16-Jn19642	NCP	%	90	70-130	Pass	
Fluoranthene	S16-Jn19642	NCP	%	110	70-130	Pass	
Fluorene	S16-Jn19642	NCP	%	89	70-130	Pass	
Indeno(1.2.3-cd)pyrene	S16-Jn19642	NCP	%	94	70-130	Pass	
Naphthalene	S16-Jn19642	NCP	%	105	70-130	Pass	
Phenanthrene	S16-Jn19642	NCP	%	93	70-130	Pass	
Pyrene	S16-Jn19642	NCP	%	112	70-130	Pass	



Test	Lab Sample ID	QA	Units	Result 1			Acceptance	Pass	Qualifying
	Lab Gampie 15	Source	Onico	Tresuit 1			Limits	Limits	Code
Duplicate	4000 NEDM Front	iono		Dogult 1	Dogult 2	DDD			
Total Recoverable Hydrocarbons -			ma/l	Result 1	Result 2 < 0.05	RPD	200/	Pass	
TRH C10-C14	S16-Jn19635	NCP	mg/L	< 0.05		<1	30%		
TRH C15-C28	S16-Jn19635	NCP	mg/L	< 0.1	< 0.1	<1 <1	30%	Pass	
TRH C29-C36	S16-Jn19635	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate Total Recoverable Hydrocarbons -	2012 NEDM Front	ione		Result 1	Result 2	RPD			
TRH >C10-C16	S16-Jn19635	NCP	ma/l		< 0.05		200/	Pass	
TRH >C10-C16			mg/L	< 0.05		<1	30%		
	S16-Jn19635	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	S16-Jn19635	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate PFOS/PFOA/6:2FTS				Popult 1	Popult 2	RPD	T		
Perfluorooctanesulfonic acid				Result 1	Result 2	KFD			
(PFOS)	S16-Jn21311	NCP	mg/L	0.00002	0.00001	14	30%	Pass	
Perfluorooctanoic acid (PFOA)	S16-Jn21311	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
1H.1H.2H.2H- perfluorooctanesulfonic acid (6:2 FTS)	S16-Jn21311	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Duplicate	•		J		,				
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S16-Jn24980	NCP	mg/L	0.001	0.001	5.0	30%	Pass	
Cadmium (filtered)	S16-Jn20149	NCP	mg/L	0.021	0.021	1.0	30%	Pass	
Chromium (filtered)	S16-Jn24980	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S16-Jn24980	NCP	mg/L	0.001	0.001	3.0	30%	Pass	
Lead (filtered)	S16-Jn20149	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S16-Jn20149	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S16-Jn24980	NCP	mg/L	0.002	0.002	2.0	30%	Pass	
Zinc (filtered)	S16-Jn24980	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C6-C9	S16-Jn19462	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
ВТЕХ				Result 1	Result 2	RPD			
Benzene	S16-Jn19462	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S16-Jn19462	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S16-Jn19462	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S16-Jn19462	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S16-Jn19462	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	S16-Jn19462	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1	Result 2	RPD			
Naphthalene	S16-Jn19462	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	S16-Jn19462	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons	s			Result 1	Result 2	RPD			
Acenaphthene	S16-Jn19641	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Acenaphthylene	S16-Jn19641	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Anthracene	S16-Jn19641	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Benz(a)anthracene	S16-Jn19641	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Benzo(a)pyrene	S16-Jn19641	NCP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(b&j)fluoranthene	S16-Jn19641	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Benzo(g.h.i)perylene	S16-Jn19641	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Benzo(k)fluoranthene	S16-Jn19641	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Chrysene	S16-Jn19641	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Dibenz(a.h)anthracene	S16-Jn19641	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	



Duplicate												
Polycyclic Aromatic Hydrocar	bons	Result 1	Result 2	RPD								
Fluoranthene	S16-Jn19641	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass				
Fluorene	S16-Jn19641	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass				
Indeno(1.2.3-cd)pyrene	S16-Jn19641	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass				
Naphthalene	S16-Jn19641	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass				
Phenanthrene	S16-Jn19641	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass				
Pyrene	S16-Jn19641	NCP	mg/L	< 0.00005	< 0.00005	<1	30%	Pass				

Report Number: 505193-W



Comments

Sample Integrity

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

Qualifier Codes/Comments

Code Description

F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).

N01

Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.

F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes. N04

Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs N07

Authorised By

N02

Andrew Black Analytical Services Manager Ivan Taylor Senior Analyst-Metal (NSW) Jonathon Angell Senior Analyst-Organic (QLD) Ryan Hamilton Senior Analyst-Organic (NSW) Ryan Hamilton Senior Analyst-Volatile (NSW)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

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

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

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Sample Receipt Advice

Company name: Jacobs Group (Australia) P/L NSW

Contact name: Blair Cummings

Project name: BANKSTOWN AIRPORT - SITE 1

Project ID: IA110700 COC number: Not provided

Turn around time: 5 Day

Date/Time received: Jun 21, 2016 6:00 PM

Eurofins | mgt reference: 505193

Sample information

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

Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone: (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Blair Cummings - Blair.Cummings@jacobs.com.





*	ABN 50005085521 Jacobs		7	Unit 73Building 7 % Mars Rd Tane Cove West MS W 2006 P + 612 99008-100 F Enviros ample DSW@eurofins.com au								EnviroSampleQLD leurolinscom au				P	E EnviroSampleVic@euroLins.com au		
Company			Purchase	IA110700					Project Manager		Blass Cumming				Project Name	Bankstown Aigist - Site!			
	st Leonards NSW 2003 stact Phone 02 9032 1467 No 1al Direction		Eurofins m	igt Ouote	160413JACN				Project No		IA110700			D	Electronic Results Format	ESdat			
Address			1.		₹ ð	Eurofins mgt Suite: B13 OCP/ PCB	Perfluorocctanoic acid (PFOA) / Perfluorocctanesuffonic acid (PFOS) / 6:2 fluorotelomer sulfonate (6:2 FTS)	Asbestos - WA/NEPM Guidelinss - Quantitative (0.001% w/w)	pH (CeCl2)	6			XN/ As, Cd, Cr, Cu, Ni, Pb.	ivel	tic acid		Email for Results	Michae	el.Stacey@jacobs.c
Contact Name			Total Tear		Eurolins mgt Suite: B7 TRH BTEXNI PAH As, Cd, Cr, Pb, Zn, Hg					Cation Exchange Capacity (CEC)	% Clay content Water			Polycyclic Aromatic Hydrocarbons (PAH) - Trace Level	esulfor 2 FTS)			om, Blair, Cumming Gjacols [1DAY	
Contact Phone Ne			l l												Perfluorooctanoic acid (PFOA) / Perfluorooctanes ulfonic acid (PFOS) / 6:2 fluorotelomer sulfonate (6:2 FTS)		Turn Around		
18			oled, pleas														requirement a	SDAY(SId) Others	
Special Direction				Soil	Hy BTEXN Pb, Zn, Hg							Water	√ BTE) Zn, Hg				Conteiners		Method of Shipment
Relinquished by	B. Cumming		felm se avlat		B7 TRH	fins mgt	acid (PF 6:2 fluoro	FPM Guio	4	on Excha	%		e: B6 TR	natic Hy	c acid (PR 6:2 fluore	DEX DEX	3	200	Courier
(Signature)	B. Cumming 17: 10 20106116		Analysis Ithiostion and during		ns mgt Suite:	Eurol	luorooctanoic (PFOS) / (stos - WA/NE		Cati			Eurofins mgt Suite: B6 TRI-V BTEXIV As, Cd, Zn, Hg	otycyclic Aron	fluorooctanoi (PFOS) /		11 Plartic 250m.L Plartic 125m.L Plartic 125m.L Ambor Glazz	40mLviei 125mL Amber Glass	Hand Delivered
(Time / Date)	17:10 20:06:16										1						11 256r 125r	125mL	Postal
Ne	Client Sample ID	Date	Matrix		Eurof		Ped	Asbe					Euro	n.	Q.				Sample Comments / DG Hazard Warning
1	Al-GWI	20/06/16	Water										X	X	X				
2	AI-GWZ		- 1										X	X	×			1	
3	AI-GW3												X	X	×				
4	A1- 2007												X	X	X			113	
5	TS160614 - 15	¥	+													×			
6	TB160614 - 15	20/08/16	Water													×		111	
7																			
8												(S					<u> </u>	*	
9																			
10																			
11																18			
12			1						1								N I		

Date

Time

Signature

Reput No

Received By

Received By

Laboratory Use Only



Certificate of Analysis





NATA Accredited Accreditation Number 1261 Site Number 18217

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

Jacobs Group (Australia) P/L NSW Level 4, 100 Christie St St Leonards NSW 2065

Attention: Blair Cummings Report 506133-AID

Project Name ADDITIONAL: BANKSTOWN AIRPORT - SITE 1

Project ID IA110700
Received Date Jun 29, 2016
Date Reported Jun 29, 2016

Methodology:

Asbestos ID

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

Subsampling Soil Samples

The whole sample submitted is first dried and then sieved through a 10mm sieve followed by a 2mm sieve. All fibrous matter viz greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) Iron ores - Sampling and Sample preparation procedures is employed. Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis in accordance with AS 4964-2004.

Bonded asbestoscontaining material (ACM) The material is first examined and any fibres isolated and where required interfering organic fibres or matter may be removed by treating the sample for several hours at a temperature not exceeding 400 ± 30 °C. The resultant material is then ground and examined in accordance with AS 4964-2004.

Limit of Reporting

The nominal detection limit of the AS4964 method is around 0.01%. The examination of large sample sizes (at least 500 ml is recommended) may improve the likelihood of identifying asbestos material in the greater than 2 mm fraction. The NEPM screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. NOTE: NATA News, September 2011 – page 34, states, "Weighing of fibres is problematic and can lead to loss of fibres and potential exposure for laboratory analysts. To request laboratories to report information which is outside the scope of AS 4964-2004 and the scope of their accreditation is misleading and is most unwise" therefore such values reported are outside the scope of Eurofins | mgt NATA accreditation as designated by an asterisk.







NATA Accredited Accreditation Number 1261 Site Number 18217

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

Project Name ADDITIONAL: BANKSTOWN AIRPORT - SITE 1

Project ID IA110700

Date Sampled May 24, 2016

Report 506133-AID

Client Sample ID	Eurofins mgt Sample No.	Date Sampled	Sample Description	Result				
A1-TP11_ASB_0.4- WHITE	16-Jn26034	May 24, 2016	Approximate Sample 23g / 70x55x5mm Sample consisted of: Grey compressed fibre cement material	Chrysotile asbestos detected.				
A1-TP11_ASB_0.4- BROWN	16-Jn26035	May 24, 2016	Approximate Sample 25g / 70x60x5mm Sample consisted of: Grey compressed fibre cement material	Chrysotile asbestos detected.				

Page 2 of 6



Sample History

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

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

DescriptionTesting SiteExtractedHolding TimeAsbestos - LTM-ASB-8020SydneyJun 29, 2016Indefinite



Company Name:

Project Name:

Project ID:

Address:

mgt

ADDITIONAL: BANKSTOWN AIRPORT - SITE 1

Jacobs Group (Australia) P/L NSW

Level 4, 100 Christie St

St Leonards

NSW 2065

ABN - 50 005 085 521 e.mail: EnviroSales@eurofins.com web: www.eurofins.com.au

Asbestos Absence

/Presence

Melbourne

3-5 Kingston Town Close Oakleigh VIC 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400

NATA # 1261 Site # 18217

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

Order No.: Received: Jun 29, 2016 11:38 AM

 Report #:
 506133
 Due:
 Jun 29, 2016

 Phone:
 02 9928 2100
 Priority:
 Same day

 Fax:
 02 9928 2504
 Contact Name:
 Blair Cummings

IA110700 Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail

Melbourne Laboratory - NATA Site # 1254 & 14271

Sydney Laboratory - NATA Site # 18217

X

Brisbane Laboratory - NATA Site # 20794

External Laboratory

No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID	
1	A1- TP11_ASB_0. 4-WHITE	May 24, 2016		Soil	S16-Jn26034	X
2	A1- TP11_ASB_0. 4-BROWN	May 24, 2016		Soil	S16-Jn26035	Х
Test	Counts					2



Internal Quality Control Review and Glossary

General

- 1. QC data may be available on request.
- 2. All soil results are reported on a dry basis, unless otherwise stated
- 3. Samples were analysed on an 'as received' basis.
- 4. This report replaces any interim results previously issued.

Holding Times

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

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

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w: weight for weight basis grams per kilogram
Filter loading: fibres/100 graticule areas

Reported Concentration: fibres/mL Flowrate: L/min

Terms

ΑF

Date Reported: Jun 29, 2016

Dry Where a moisture has been determined on a solid sample the result is expressed on a dry basis.

LOR Limit of Reporting.
COC Chain of custody
SRA Sample Receipt Advice

ISO International Stardards Organisation

AS Australian Standards

WA DOH Western Australia Department of Health

NOHSC National Occupational Health and Safety Commission

ACM Bonded asbestos-containing material means any material containing more than 1% asbestos and comprises asbestos-containing-material which is in sound condition,

although possibly broken or fragmented, and where the asbestos is bound in a matrix such as cement or resin. Common examples of ACM include but are not limited to: pipe and boiler insulation, sprayed-on fireproofing, troweled-on acoustical plaster, floor tile and mastic, floor linoleum, transite shingles, roofing materials, wall and ceiling plaster, ceiling tiles, and gasket materials. This term is restricted to material that cannot pass a 7 mm x 7 mm sieve. This sieve size is selected because it approximates the thickness of common asbestos cement sheeting and for fragments to be smaller than this would imply a high degree of damage and hence potential

for fibre release.

FA FA comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. This type of friable asbestos

is defined here as asbestos material that is in a degraded condition such that it can be broken or crumbled by hand pressure. This material is typically unbonded or

was previously bonded and is now significantly degraded (crumbling).

PACM Presumed Asbestos-Containing Material means thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later

than 1980 that are assumed to contain greater than one percent asbestos but have not been sampled or analyzed to verify or negate the presence of asbestos.

Asbestos fines (AF) are defined as free fibres, or fibre bundles, smaller than 7mm. It is the free fibres which present the greatest risk to human health, although very

small fibres (< 5 microns in length) are not considered to be such a risk. AF also includes small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve.

(Note that for bonded ACM fragments to pass through a 7 mm x 7 mm sieve implies a substantial degree of damage which increases the potential for fibre release.)

AC Asbestos cement means a mixture of cement and asbestos fibres (typically 90:10 ratios).

Page 5 of 6

Report Number: 506133-AID



Comments

Sample Integrity

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

Qualifier Codes/Comments

Code Description N/A Not applicable

Authorised by:

Rhys Thomas Senior Analyst-Asbestos (NSW)

J. Juli

Glenn Jackson

National Operations Manager

Final Report - this report replaces any previously issued Report

- Indicates Not Requested

Date Reported: Jun 29, 2016

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

Uncertainty data is available on request

Eurofins, Img shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report, in no case shall Eurofins I mg be liable for consequential claims, but not limited to, lost profits, damages for relative to meet decidines and lost production arising from this report. This document shall be reported.

Page 6 of 6

Report Number: 506133-AID



ABN - 50 005 085 521

e.mail: EnviroSales@eurofins.com

web: www.eurofins.com.au

Melbourne 3-5 Kingston Town Close Oakleigh Vic 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400 NATA # 1261 Site # 18217 Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Sample Receipt Advice

Company name: Jacobs Group (Australia) P/L NSW

Contact name: Blair Cummings

Project name: ADDITIONAL: BANKSTOWN AIRPORT - SITE 1

Project ID: IA110700
COC number: Not provided
Turn around time: Same day

Date/Time received: Jun 29, 2016 11:38 AM

Eurofins | mgt reference: 506133

Sample information

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

Notes

Additional from 502324| Both bags indicated as ASB 0.4. We have labelled as per the colour.

Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone: (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Blair Cummings - Blair.Cummings@jacobs.com.





Sear 29/6 11:38 506/33

From: Cummings, Blair [mailto:Blair.Cummings@jacobs.com] Sent: Wednesday, 29 June 2016 11:38 AM To: Andrew Black Subject: RE: Asbestos Discrepancies Hi Andrew, That looks right, so A1-TP11_ASB_0.4 will need Asbestos ID analysis as well as an additional sample A1_TP11_ASB_0.3. Regards, **Blair Cummings** Environmental Scientist | ANZ Infrastructure and Environment | Jacobs 100 Christie Street St Leonards NSW 2065 T + 61 2 9032 1552 | F + 61 2 9928 2504 | Blair.Cummings@jacobs.com | www.jacobsskm.com



CERTIFICATE OF ANALYSIS

Work Order : EM1606429

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Contact : BLAIR CUMMINGS

Address : 100 CHRISTIE STREET P O BOX 164

ST LEONARDS NSW, AUSTRALIA 2065

Telephone : +61 02 9928 2100

Project : IA110700

Order number

C-O-C number : ---Sampler : ---

Site : Bankstown Airport - Site 1

Quote number : ---No. of samples received : 3
No. of samples analysed : 3

Page : 1 of 6

Laboratory : Environmental Division Melbourne

Contact : Carol Walsh

Address : 4 Westall Rd Springvale VIC Australia 3171

Telephone : +61-3-8549 9608

Date Samples Received : 02-Jun-2016 12:45

Date Analysis Commenced : 03-Jun-2016

Issue Date : 08-Jun-2016 12:04

NATA Accredited Laboratory 825 Accredited for compliance with ISO/IEC 17025.



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC

Page : 2 of 6 Work Order : EM1606429

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : IA110700

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) 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.



Page : 3 of 6 : EM1606429 Work Order

: JACOBS GROUP (AUSTRALIA) PTY LTD : IA110700 Client

Project

Analytical Results



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	A1-QC02	A1-QC04	A1-QC06	
·	Cli	ent sampli	ing date / time	[30-May-2016]	[30-May-2016]	[30-May-2016]	
Compound	CAS Number	LOR	Unit	EM1606429-001	EM1606429-002	EM1606429-003	
•				Result	Result	Result	
EA055: Moisture Content							
Moisture Content (dried @ 103°C)		1	%	10.8	8.9	1.4	
EG005T: Total Metals by ICP-AES							
Arsenic	7440-38-2	5	mg/kg	6	9	<5	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	13	32	<2	
Copper	7440-50-8	5	mg/kg	11	22	<5	
Lead	7439-92-1	5	mg/kg	29	56	<5	
Nickel	7440-02-0	2	mg/kg	6	26	<2	
Zinc	7440-66-6	5	mg/kg	20	48	<5	
EG035T: Total Recoverable Merc							
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	
EP075(SIM)B: Polynuclear Aroma							
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	<0.5	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	
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	<0.5	
^ Sum of polycyclic aromatic hydroc		0.5	mg/kg	<0.5	<0.5	<0.5	
^ 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	0.6	0.6	0.6	
^ Benzo(a)pyrene TEQ (LOR)		0.5	mg/kg	1.2	1.2	1.2	
EP080/071: Total Petroleum Hydr	ocarbons						
C6 - C9 Fraction		10	mg/kg	<10	<10	<10	

Page : 4 of 6 : EM1606429 Work Order

: JACOBS GROUP (AUSTRALIA) PTY LTD : IA110700 Client

Project

Analytical Results



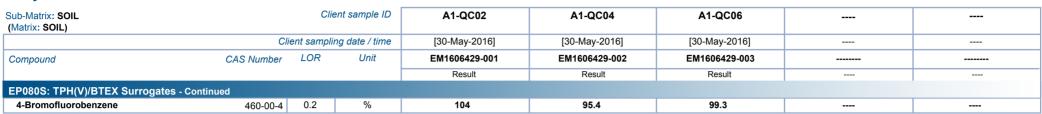
Sub-Matrix: SOIL (Matrix: SOIL)		Cli	ent sample ID	A1-QC02	A1-QC04	A1-QC06	
	Cli	ent sampli	ing date / time	[30-May-2016]	[30-May-2016]	[30-May-2016]	
Compound	CAS Number	LOR	Unit	EM1606429-001	EM1606429-002	EM1606429-003	
,				Result	Result	Result	
EP080/071: Total Petroleum Hydrocarl	bons - Continued						
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	<100	<100	
^ C10 - C36 Fraction (sum)		50	mg/kg	<50	<50	<50	
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	<100	<100	<100	
>C34 - C40 Fraction		100	mg/kg	<100	<100	<100	
^ >C10 - C40 Fraction (sum)		50	mg/kg	<50	<50	<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	
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	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	
EP075(SIM)S: Phenolic Compound Su							
Phenol-d6	13127-88-3	0.5	%	93.3	96.1	105	
2-Chlorophenol-D4	93951-73-6	0.5	%	93.2	95.6	104	
2.4.6-Tribromophenol	118-79-6	0.5	%	66.4	80.1	82.2	
EP075(SIM)T: PAH Surrogates							
2-Fluorobiphenyl	321-60-8	0.5	%	98.8	95.2	110	
Anthracene-d10	1719-06-8	0.5	%	107	109	117	
4-Terphenyl-d14	1718-51-0	0.5	%	101	111	114	
EP080S: TPH(V)/BTEX Surrogates							
1.2-Dichloroethane-D4	17060-07-0	0.2	%	103	96.3	101	
Toluene-D8	2037-26-5	0.2	%	92.0	84.4	87.0	

Page : 5 of 6
Work Order : EM1606429

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : IA110700

Analytical Results





Page : 6 of 6 : EM1606429 Work Order

: JACOBS GROUP (AUSTRALIA) PTY LTD : IA110700 Client

Project

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery	Limits (%)
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates	S		
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2.4.6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124





QUALITY CONTROL REPORT

Work Order : EM1606429

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Contact : BLAIR CUMMINGS

Address : 100 CHRISTIE STREET P O BOX 164

ST LEONARDS NSW, AUSTRALIA 2065

Telephone : +61 02 9928 2100

Project : IA110700

Order number :

C-O-C number : ---

Sampler : ---

Site : Bankstown Airport - Site 1

Quote number : ---
No. of samples received : 3

No. of samples analysed : 3

Page : 1 of 7

Laboratory : Environmental Division Melbourne

Contact : Carol Walsh

Address : 4 Westall Rd Springvale VIC Australia 3171

Telephone : +61-3-8549 9608

Date Samples Received : 02-Jun-2016

Date Analysis Commenced : 03-Jun-2016

Issue Date : 08-Jun-2016



NATA Accredited Laboratory 825 Accredited for compliance with ISO/IEC 17025.

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

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

Signatories

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

Signatories Position Accreditation Category

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Work Order : EM1606429

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : IA110700



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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						Laboratory I	Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Co	ntent (QC Lot: 474442)								
EM1606424-009	Anonymous	EA055-103: Moisture Content (dried @ 103°C)		1	%	22.2	21.2	4.83	0% - 20%
EM1606434-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)		1	%	8.1	6.7	18.8	No Limit
EA055: Moisture Co	ntent (QC Lot: 474449)								
EM1606424-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)		1	%	16.1	16.1	0.00	0% - 50%
EM1606426-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)		1	%	6.6	9.8	38.5	No Limit
EG005T: Total Metal	Is by ICP-AES (QC Lot:	474725)							
EM1606400-015	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	4	4	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	7	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	9	6	31.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	145	122	17.2	0% - 20%
EM1606400-024	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	1	1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	4	4	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	9	8	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	11	13.8	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	12	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	32	26	20.0	No Limit
EG035T: Total Reco	overable Mercury by FIM	S (QC Lot: 474726)							
EM1606400-015	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1606400-024	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit

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EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 474677) - continued EM1606429-001 A1-QC02 EP075(SIM): Naphthalene EP075(SIM): Acenaphthylene EP075(SIM): Acenaphthene EP075(SIM): Fluorene EP075(SIM): Phenanthrene EP075(SIM): Anthracene	91-20-3 208-96-8 83-32-9 86-73-7 85-01-8 120-12-7 206-44-0 129-00-0	0.5 0.5 0.5 0.5 0.5 0.5	mg/kg mg/kg mg/kg mg/kg	<0.5 <0.5 <0.5 <0.5 <0.5	<0.5 <0.5 <0.5 <0.5	0.00 0.00 0.00 0.00	No Limit No Limit
EM1606429-001 A1-QC02 EP075(SIM): Naphthalene EP075(SIM): Acenaphthylene EP075(SIM): Acenaphthene EP075(SIM): Fluorene EP075(SIM): Phenanthrene	208-96-8 83-32-9 86-73-7 85-01-8 120-12-7 206-44-0	0.5 0.5 0.5 0.5	mg/kg mg/kg mg/kg	<0.5 <0.5	<0.5 <0.5	0.00	No Limit
EP075(SIM): Acenaphthylene EP075(SIM): Acenaphthene EP075(SIM): Fluorene EP075(SIM): Phenanthrene	208-96-8 83-32-9 86-73-7 85-01-8 120-12-7 206-44-0	0.5 0.5 0.5 0.5	mg/kg mg/kg mg/kg	<0.5 <0.5	<0.5 <0.5	0.00	No Limit
EP075(SIM): Acenaphthene EP075(SIM): Fluorene EP075(SIM): Phenanthrene	83-32-9 86-73-7 85-01-8 120-12-7 206-44-0	0.5 0.5 0.5	mg/kg mg/kg	<0.5	<0.5		
EP075(SIM): Fluorene EP075(SIM): Phenanthrene	86-73-7 85-01-8 120-12-7 206-44-0	0.5 0.5	mg/kg			0.00	A1 1 1 1 11
EP075(SIM): Phenanthrene	85-01-8 120-12-7 206-44-0	0.5		<0.5		0.00	No Limit
	120-12-7 206-44-0			40.0	<0.5	0.00	No Limit
ED075(SIM): Anthracene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EF075(Silvi). Allullacelle			mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Fluoranthene	400.00.0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
	205-82-3						
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 474335)							
EM1606411-036 Anonymous EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.00	No Limit
EM1606437-005 Anonymous EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 474676)							
EM1606426-001 Anonymous EP071: C15 - C28 Fraction		100	mg/kg	<100	<100	0.00	No Limit
EP071: C29 - C36 Fraction		100	mg/kg	<100	<100	0.00	No Limit
EP071: C10 - C14 Fraction		50	mg/kg	<50	<50	0.00	No Limit
EP071: C10 - C36 Fraction (sum)		50	mg/kg	<50	<50	0.00	No Limit
EM1606429-001 A1-QC02 EP071: C15 - C28 Fraction		100	mg/kg	<100	<100	0.00	No Limit
EP071: C29 - C36 Fraction		100	mg/kg	<100	<100	0.00	No Limit
EP071: C10 - C14 Fraction		50	mg/kg	<50	<50	0.00	No Limit
EP071: C10 - C36 Fraction (sum)		50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 474335)							
EM1606411-036 Anonymous EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EM1606437-005 Anonymous EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 474676)							
EM1606426-001 Anonymous EP071: >C16 - C34 Fraction		100	mg/kg	<100	<100	0.00	No Limit
EP071: >C34 - C40 Fraction		100	mg/kg	<100	<100	0.00	No Limit
EP071: >C10 - C16 Fraction		50	mg/kg	<50	<50	0.00	No Limit
EP071: >C10 - C40 Fraction (sum)		50	mg/kg	<50	<50	0.00	No Limit
EM1606429-001 A1-QC02 EP071: >C16 - C34 Fraction		100	mg/kg	<100	<100	0.00	No Limit
EP071: >C34 - C40 Fraction		100	mg/kg	<100	<100	0.00	No Limit

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Project : IA110700



Sub-Matrix: SOIL						Laboratory I	Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Re	ecoverable Hydrocarbo	ns - NEPM 2013 Fractions (QC Lot: 474676) - cont	inued						
EM1606429-001	A1-QC02	EP071: >C10 - C16 Fraction		50	mg/kg	<50	<50	0.00	No Limit
		EP071: >C10 - C40 Fraction (sum)		50	mg/kg	<50	<50	0.00	No Limit
EP080: BTEXN (QC	Lot: 474335)								
EM1606411-036	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1606437-005	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

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Method Blank (MB) and Laboratory Control Spike (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 Spike (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	S) Report	
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 474725)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	88.4	79	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	100	87	115
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	99.8	89	113
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	99.4	90	116
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	95.9	85	107
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	101	89	111
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	99.3	89	111
EG035T: Total Recoverable Mercury by FIMS (QCL	ot: 474726)							
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	92.4	85	103
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	(QCLot: 474677)							
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	101	80	121
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	93.1	70	130
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	110	80	120
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	104	70	124
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	106	80	122
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	111	80	126
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	106	70	128
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	105	80	125
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	88.6	70	130
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	103	80	126
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	3 mg/kg	88.7	70	124
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	88.5	75	125
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	85.2	65	125
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	78.8	65	128
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	75.6	65	126
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	78.1	65	127
EP080/071: Total Petroleum Hydrocarbons (QCLot:	: 474335)							
EP080: C6 - C9 Fraction		10	mg/kg	<10	36 mg/kg	106	66	130
EP080/071: Total Petroleum Hydrocarbons(QCLot:	: 474676)							
EP071: C10 - C14 Fraction		50	mg/kg	<50	751 mg/kg	94.5	65	131
EP071: C15 - C28 Fraction		100	mg/kg	<100	3103 mg/kg	94.4	70	126
EP071: C29 - C36 Fraction		100	mg/kg	<100	1482 mg/kg	111	70	122
EP071: C10 - C36 Fraction (sum)		50	mg/kg	<50				

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Sub-Matrix: SOIL				Method Blank (MB)	Laboratory Control Spike (LCS) Report				
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High	
EP080/071: Total Recoverable Hydrocarbons - NEPI	M 2013 Fractions (QCL	ot: 474335)							
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	104	64	128	
EP080/071: Total Recoverable Hydrocarbons - NEPI	M 2013 Fractions (QCL	ot: 474676)							
EP071: >C10 - C16 Fraction		50	mg/kg	<50	1135 mg/kg	95.0	68	130	
EP071: >C16 - C34 Fraction		100	mg/kg	<100	4080 mg/kg	98.0	72	116	
EP071: >C34 - C40 Fraction		100	mg/kg	<100	162 mg/kg	106	38	132	
EP071: >C10 - C40 Fraction (sum)		50	mg/kg	<50					
EP080: BTEXN (QCLot: 474335)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	112	74	124	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	113	75	129	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	108	72	124	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4 mg/kg	113	72	132	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	113	76	130	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	110	66	132	

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.

ub-Matrix: SOIL	ix: SOIL					Matrix Spike (MS) Report					
				Spike	SpikeRecovery(%)	Recovery I	Limits (%)				
aboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High				
G005T: Total Met	als by ICP-AES (QCLot: 474725)										
EM1606400-016	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	90.9	78	124				
		EG005T: Cadmium	7440-43-9	50 mg/kg	97.8	84	116				
		EG005T: Chromium	7440-47-3	50 mg/kg	91.2	79	121				
		EG005T: Copper	7440-50-8	50 mg/kg	90.7	82	124				
		EG005T: Lead	7439-92-1	50 mg/kg	82.8	76	124				
		EG005T: Nickel	7440-02-0	50 mg/kg	86.4	78	120				
		EG005T: Zinc	7440-66-6	50 mg/kg	# Not	74	128				
					Determined						
G035T: Total Re	coverable Mercury by FIMS (QCLot: 474726)										
EM1606400-016	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	96.2	76	116				
P075(SIM)B: Poly	vnuclear Aromatic Hydrocarbons (QCLot: 474677)										
EM1606429-002	A1-QC04	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	102	67	117				
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	142	52	148				

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Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : IA110700



Sub-Matrix: SOIL					Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery Li	mits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High		
EP080/071: Total P	etroleum Hydrocarbons (QCLot: 474335) - continued								
EM1606411-040	Anonymous	EP080: C6 - C9 Fraction		28 mg/kg	79.5	42	131		
EP080/071: Total P	etroleum Hydrocarbons (QCLot: 474676)								
EM1606426-002	Anonymous	EP071: C10 - C14 Fraction		751 mg/kg	97.7	53	123		
		EP071: C15 - C28 Fraction		3103 mg/kg	95.4	70	124		
		EP071: C29 - C36 Fraction		1482 mg/kg	111	64	118		
EP080/071: Total R	ecoverable Hydrocarbons - NEPM 2013 Fractions (QCL	ot: 474335)							
EM1606411-040	Anonymous	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	73.9	39	129		
EP080/071: Total R	ecoverable Hydrocarbons - NEPM 2013 Fractions (QCL	ot: 474676)							
EM1606426-002	Anonymous	EP071: >C10 - C16 Fraction		1135 mg/kg	96.2	65	123		
		EP071: >C16 - C34 Fraction		4080 mg/kg	98.7	67	121		
		EP071: >C34 - C40 Fraction		162 mg/kg	116	44	126		
EP080: BTEXN (Q	CLot: 474335)								
EM1606411-040	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	124	50	136		
		EP080: Toluene	108-88-3	2 mg/kg	120	56	139		



QA/QC Compliance Assessment to assist with Quality Review

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Client : JACOBS GROUP (AUSTRALIA) PTY LTD Laboratory : Environmental Division Melbourne

 Contact
 : BLAIR CUMMINGS
 Telephone
 : +61-3-8549 9608

 Project
 : IA110700
 Date Samples Received
 : 02-Jun-2016

 Site
 : Bankstown Airport - Site 1
 Issue Date
 : 08-Jun-2016

Sampler :--- No. of samples received : 3
Order number : No. of samples analysed : 3

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

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

report contribute to the overall DQO assessment and reporting for guideline compliance.

Summary of Outliers

Outliers: Quality Control Samples

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

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

Outliers: Analysis Holding Time Compliance

• NO Analysis Holding Time Outliers exist.

Outliers: Frequency of Quality Control Samples

NO Quality Control Sample Frequency Outliers exist.

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Outliers: Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: SOIL

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EM1606400016	Anonymous	Zinc	7440-66-6	Not		MS recovery not determined,
					Determined		background level greater than or
							equal to 4x spike level.

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.

Matrix: **SOIL** Evaluation: ▼ = Holding time breach; ✓ = Within holding time.

Method		Sample Da	te L	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA055: Moisture Content									
Soil Glass Jar - Unpreserved (EA055-103) A1-QC02, A1-QC06	A1-QC04,	30-May-20	16			03-Jun-2016	13-Jun-2016	✓	
EG005T: Total Metals by ICP-AES									
Soil Glass Jar - Unpreserved (EG005T) A1-QC02, A1-QC06	A1-QC04,	30-May-20	16 06-Jun-2016	26-Nov-2016	✓	07-Jun-2016	26-Nov-2016	✓	
EG035T: Total Recoverable Mercury by FIMS									
Soil Glass Jar - Unpreserved (EG035T) A1-QC02, A1-QC06	A1-QC04,	30-May-20	16 06-Jun-2016	27-Jun-2016	✓	07-Jun-2016	27-Jun-2016	✓	
EP080/071: Total Petroleum Hydrocarbons									
Soil Glass Jar - Unpreserved (EP071) A1-QC02, A1-QC06	A1-QC04,	30-May-20	16 06-Jun-2016	13-Jun-2016	1	06-Jun-2016	16-Jul-2016	✓	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbon	18								
Soil Glass Jar - Unpreserved (EP075(SIM)) A1-QC02, A1-QC06	A1-QC04,	30-May-20	16 06-Jun-2016	13-Jun-2016	✓	06-Jun-2016	16-Jul-2016	✓	
EP080/071: Total Petroleum Hydrocarbons									
Soil Glass Jar - Unpreserved (EP080) A1-QC02, A1-QC06	A1-QC04,	30-May-20	16 03-Jun-2016	13-Jun-2016	✓	03-Jun-2016	13-Jun-2016	✓	

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Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : IA110700



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.

The expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: SOIL

Evaluation: x = Quality Control frequency not within specification: √ = Quality Control frequency within specification.

Matrix: SOIL				Evaluation	ii. 🔻 – Quality Co	illioi irequericy i	not within specification; \checkmark = Quality Control frequency within specification.
Quality Control Sample Type		Count			Rate (%)		Quality Control Specification
Analytical Methods	Method	OC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	4	31	12.90	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard

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Project : IA110700

ALS

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
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
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 (2013) 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 (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
PAH/Phenois (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D 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 (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
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.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1606429

Client : JACOBS GROUP (AUSTRALIA) PTY Laboratory : Environmental Division Melbourne

LTD

Contact : BLAIR CUMMINGS Contact : Carol Walsh

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Project : IA110700 Page : 1 of 2

Order number : Quote number : EP2016SINKNI0001 (EP/2013/15

WABQ)

C-O-C number : ---- QC Level : NEPM 2013 B3 & ALS QC Standard

Site : Bankstown Airport - Site 1

Sampler :

Dates

Date Samples Received : 02-Jun-2016 12:45 PM Issue Date : 02-Jun-2016 Client Requested Due : 09-Jun-2016 Scheduled Reporting Date : 09-Jun-2016

Client Requested Due : 09-Jun-2016 Scheduled Reporting Date : 09-Jun-2016

Date

Delivery Details

 Mode of Delivery
 : Carrier
 Security Seal
 : Not Available

 No. of coolers/boxes
 : 1
 Temperature
 : 6.2°C - Ice present

Receipt Detail : No. of samples received / analysed : 3 / 3

General Comments

This report contains the following information:

- Sample Container(s)/Preservation Non-Compliances
- Summary of Sample(s) and Requested Analysis
- Proactive Holding Time Report
- Requested Deliverables
- Sample(s) received in non-ALS container(s).
- Please direct any queries related to sample condition / numbering / breakages to Client Services.
- Sample Disposal Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analytical work for this work order will be conducted at ALS Springvale.
- Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.

: 02-Jun-2016 Issue Date

Page

: 2 of 2 : EM1606429 Amendment 0 Work Order

Client : JACOBS GROUP (AUSTRALIA) PTY LTD



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

• No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package. If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by OIL - S-26 metals/TRH/BTEXN/PAH the laboratory for processing purposes and will be shown bracketed without a time component. OIL - EA055-103 **Noisture Content** Matrix: SOIL Client sample ID Laboratory sample Client sampling ID date / time EM1606429-001 [30-May-2016] A1-QC02 EM1606429-002 [30-May-2016] A1-QC04 EM1606429-003 [30-May-2016] A1-QC06

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au-ap@jacobs.com
BLAIR CUMMINGS		
 *AU Certificate of Analysis - NATA (COA) 	Email	blair.cummings@jacobs.com
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	blair.cummings@jacobs.com
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	blair.cummings@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	blair.cummings@jacobs.com
- A4 - AU Tax Invoice (INV)	Email	blair.cummings@jacobs.com
- Chain of Custody (CoC) (COC)	Email	blair.cummings@jacobs.com
- EDI Format - ENMRG (ENMRG)	Email	blair.cummings@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	blair.cummings@jacobs.com
- EDI Format - XTab (XTAB)	Email	blair.cummings@jacobs.com
MICHAEL STACEY (JACOB)		
 *AU Certificate of Analysis - NATA (COA) 	Email	michael.stacey@jacobs.com
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	michael.stacey@jacobs.com
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	michael.stacey@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	michael.stacey@jacobs.com
- Chain of Custody (CoC) (COC)	Email	michael.stacey@jacobs.com
- EDI Format - ENMRG (ENMRG)	Email	michael.stacey@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	michael.stacey@jacobs.com
- EDI Format - XTab (XTAB)	Email	michael.stacey@jacobs.com

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Contamination Investigation Site 2 (Drover Road) Bankstown Airport

Bankstown Airport Limited

3 | FINAL

28 September 2016





Contamination Investigation - Site 2 (Drover Road), Bankstown Airport

Project no: IA110700

Document title: Contamination Investigation –Site 2 (Drover Road), Bankstown Airport

Document No.: 1
Revision: 3

Date: 28 September 2016

Client name: Bankstown Airport Limited

Client no:

www.jacobs.com

Project manager: Blair Cummings

Author: Blair Cummings/Michael Stacey

File name: J:\IE\Projects\04_Eastern\IA110700\21 Deliverables\Site 2\IA110700_Bankstown Airport

Contamination Investigation Site 2 - Rev3.docx

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Document history and status

Revision	Date	Description	Ву	Review	Approved
V1	07/07/16	Technical Review	вс	MS	MS
DRAFT	08/07/16	Client Review	вс	ВН	MS
Rev2	19/08/16	Client Comments	MS	MS	MS
Rev 3	28/09/16	AEO Review	MS	MS	MS

Contamination Investigation - Site 2 (Drover Road) **Bankstown Airport**



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1 Introduction

Jacobs Group (Australia) Pty Ltd (Jacobs) was commissioned by Bankstown Airport Limited (BAL) to undertake a contamination investigation of the proposed development site known as Site 2, Drover Road (referred to hereinafter as the site) located on a portion of airside land at Bankstown Airport, NSW. Based on information provided by BAL, the footprint of development at the site will occupy an area of approximately 35,000 m².

The location of the site is presented as **Figure 1-2**.

This report details the works undertaken during the contamination investigation undertaken at the site, field observations and the sampling results and analysis with an assessment against the limits listed in *Airports* (*Environment Protection*) Regulations 1997 (the Airport Regulations), Table 1 – areas of an airport generally and those guidelines endorsed by the NEPC National Environment Protection (Assessment of Site Contamination) Measure 1999 as revised in 2013 (NEPM 2013).

The investigation was undertaken in general accordance with the Jacobs *Proposal for Contamination and Geotechnical Investigations – Proposed Sites 1, 2 and 3, Bankstown Airport* dated 15 March 2016 and subsequent email for additional sampling dated 16 May 2016 and 9 August 2016.

This report has been generally prepared in general accordance with the requirements specified for a Detailed Site Investigation as detailed in the NSW EPA (1997) *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites*.

1



2 Objectives and Scope of Works

The objectives of the contamination investigation were as follows.

- Identify the nature and extent of any pre-existing potential contamination at the site that may be encountered during development
- Identify the nature and extent of potential contamination at the site that would deem the suite unsuitable for the proposed continued airport land use (i.e. commercial/industrial land use).

The scope of works undertaken to address the objectives are detailed below. Sampling locations are presented on **Figure 2-2**.

2.1 Soil Contamination Investigation

- Undertook preliminary investigations including a detailed site inspection, review of available historical aerial photographs (held by Jacobs and BAL) and interviews with BAL staff with site knowledge.
- Service locating for services by a qualified service locator and Dial Before You Dig Search.
- Excavation of 35 test pit locations (A2-TP01 to A2-TP35) across the site with aid of a backhoe. All test pits were excavated to 1.0 m below ground level (bgl), intersection with the water table or excavation method refusal (whichever was shallower). 20 test pit locations (A2-TP01, A2-TP02, A2-TP03, A2-TP04, A2-TP06, A2-TP08, A2-TP09, A2-TP10, A2-TP11, A2-TP14, A2-TP15, A2-TP16, A2-TP17, A2-TP20, A2-TP21, A2-TP22, A2-TP23, A2-TP24, A2-TP26, A2-TP28) were excavated to 2.5 m bgl, to assess the depth to groundwater (if observed) and were additionally used for the asbestos investigation (refer below)
- Drilling of 10 borehole locations (A2-BH01 to A2-BH10) across the site with the aid of a tracked drilling rig. All boreholes were drilled to 10 m bgl or excavation method refusal (whichever was shallower)
- The 35 test pit and 10 borehole locations completed as part of the contamination investigation meet the minimum sampling points required for site characterisation outlined in the NSW EPA (1995) Contaminated Sites: Sampling Design Guidelines for a site with an area of 35,000 m²
- Soil samples were collected from the test pits and boreholes with selected samples (primary and QC samples) submitted to a National Association of Testing Authorities (NATA) accredited laboratory for analysis/identification for a range of common contaminant compounds including Perfluorinated Chemicals (PFCs).

2.2 Asbestos Investigation

With the absence of assessment criteria for asbestos in soils in the Airport Regulations, an asbestos assessment was undertaken in accordance with the Western Australia Department of Health (May 2009) *Guidelines for the Assessment and Management of Asbestos-Contaminated Sites in Western Australia* (WADOH 2009). In accordance with *Table 1 – Triggers and Types of Asbestos Investigations* from the WADOH (2009) guidelines, Jacobs assumed that there was a possible likelihood of asbestos being present on the site and that the asbestos (if present) could be in any form. Based on the possible likelihood, the investigation regime comprised an assessment from 22 test pit locations excavated as part of the contamination investigation. The scope of works for the asbestos investigation is detailed below:

Contamination Investigation - Site 2 (Drover Road) Bankstown Airport



- Excavation of 22 test pit locations (A2-TP02, A2-TP04, A2-TP06, A2-TP07, A2-TP08, A2-TP10, A2-TP11, A2-TP12, A2-TP13, A2-TP15, A2-TP17, A2-TP18, A2-TP20, A2-TP21, A2-TP22, A2-TP23, A2-TP24, A2-TP26, A2-TP29, A2-TP33, A2-TP34, A2-TP35) across the site with aid of a backhoe. All test pits were excavated to a depth 2.5 m bgl
- Select material excavated from the test pits was inspected for potential asbestos containing materials (ACM)
- Soil samples were collected from the test pits with selected samples submitted to a NATA accredited laboratory for ACM, fibrous asbestos (FA) and asbestos fines (AF) identification.

Based on the initial laboratory results, four additional bulk samples were collected from surface soils surrounding test pit location A2-TP17 and submitted to a NATA accredited laboratory for ACM, FA and AF identification.

2.3 Groundwater Investigation

- Drilling of three boreholes (A2-GW1 to A2-GW3) at anticipated hydraulic up gradient and down gradient positions with the aid of a tracked drill rig and installation of groundwater monitoring wells. All boreholes for groundwater well installation were drilled to a maximum depth of 8 m bgl, 1 m below the observed static water level or excavation method refusal (whichever was shallower)
- Groundwater samples were collected from the wells with samples (primary and QC samples) submitted to a NATA accredited laboratory for analysis for a range of common contaminant compounds including PFCs
- Groundwater well location heights were surveyed to site datum.

2.4 Reporting

Preparation of a report detailing the results of the contamination investigation and laboratory analysis. The report includes an assessment as to the suitability of the site for continued airport land use and an assessment as to the potential impacts to development of the site (with respect to contamination).



3 Data Quality Objectives

Data Quality Objectives (DQO) are an important component of any sampling and analysis programme as they outline the aims and objectives of the investigation program with respect to the integrity of the data collection and interpretation. In order to address the DQO and to ensure that they have been achieved the following seven-step process was undertaken. The DQO process has been adopted from the Australian Standard (AS 4482.1-2005) *Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds.*

Step 1 - State the Problem

The problem was potential contamination attributable to historical site usage above the NSW EPA endorsed guidelines for commercial/industrial land use, airport regulations and protection of beneficial groundwater users and receiving environments.

Step 2 - Identify the Decision Statement

The primary decision statement that the contamination investigation will attempt to resolve is:

"Does contamination at the site pose an unacceptable risk to human or environmental health which may prevent the development and operation of the site for continued airport use"?

Step 3 - Identify inputs to the decision

The following informational inputs were required to resolve the decision statement:

- National Environment Protection (Assessment of Site Contamination) Measure 1999 (as revised 2013) Schedule B1 Guideline on Investigation levels for Soil and Groundwater (NEPC, 2013)
- Airports (Environment Protection) Regulations 1997 (the Airport Regulations)
- Western Australia Department of Health (May 2009) Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated Sites in Western Australia (WA Guidelines)
- GHD (June 2015) Managing PFC contamination at Airports, Interim Management Strategy and Decision Framework
- National Health and Medical Research Council (2008) Guidelines for Managing Risks in Recreational Waters (NHMRC, 2008)
- enHealth (June 2016) Guidance Statements on Pefluorinated Chemicals Interim Values (enHealth, 2016).

Step 4 - Define the Boundaries of the Study

The investigation extended laterally across accessible areas of the site for coverage and to target areas of environmental interest. All locations were extended vertically to the limit of the investigation or excavation method refusal.

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Step 5 - Develop a Decision Rule

The purpose of this step was to define the parameter of interest, specify the action level and combine the outputs of the previous DQO steps into an "if...then..." decision rule that defines the conditions that would cause the decision maker to choose alternative actions.

The parameters of interest (or Contaminants of Concern) have been determined based on background information and to establish baseline chemical conditions and contaminant concentrations. The action level (Site Assessment Criteria) will be used to decide if the parameter represents a potentially unacceptable risk for commercial/industrial land use, human health and/or the environment. If the measured concentration of a compound exceeds the action levels in soils, water and vapour, then this is deemed to present a potential unacceptable risk considering the current land use, adjoining land use and environmental receptors. This also indicates that refinement of the Site Assessment Criteria (SAC) by undertaking Detailed Risk Assessment (DRA) is warranted. Should this DRA action value be exceeded, remediation will be required. In some instances (such as presence of free phase hydrocarbons), the development of the DRA can be by-passed and intervention through remediation applied directly.

Step 6 - Specify Acceptable Limits on Decision Errors

There were decided to be two types of errors:

- a) Deciding that the site is acceptable for continued airport use (i.e. no risk to site users and/or receptors)
 when it actually is not acceptable. The consequence of this error may be unacceptable health risk for
 site users, adjoining site users and receiving environments; or
- b) Deciding that the site is unacceptable for continued airport use (i.e. risk to site users and/or receptors) when it actually is acceptable. The consequence of this error is that the client will pay for further investigation / remediation that are not necessary.

The more severe consequences are with decision error (a) since the risk of jeopardising human health and/or the environment outweighs the consequences of paying more for remediation. It will not be possible to conduct statistical hypothesis tests as the proposed sampling programme as part of this contamination investigation consists of the collection of one round of samples only.

Step 7 - Optimising the Design for Obtaining Data

The purpose of this step was to identify a resource-effective data collection design for generating data that are expected to satisfy the DQO.

The resource effective data collection design that was expected to satisfy the DQO is described in detail in **Sections 10** of this report. To ensure the design satisfies the DQO a comprehensive Quality Assurance and Quality Control Plan was implemented as described in **Section 11** of this report.



4 Site Information

The site information presented below is based on a review of readily available government information sources and information provided by BAL.

4.1 Site Identification

Based on information from NSW Department of Finance and Services, Land and Property Information Spatial Information Exchange (SIX), the site is located within the local government area (LGA) of Canterbury-Bankstown and comprises the following lots (whole or a portion of):

- Lot 307, deposited plan (DP) 10774400
- Lot 308, DP 10774400
- Lot 102, DP 852861
- Lot 671, DP 1014122
- Lot 41, DP 1170088.

4.2 Site Zoning and Land Use

The current zoning of the site is SP2 – Air Transport Facility under the Bankstown Local Environment Plan (LEP) 2015. At the time of preparing this report, the site was being used as an airport.

4.3 Geology

Review of the 1:100,000 Penrith Geological Sheet 9030 (Edition 1, 1991) indicated the site is within an area underlain by fluvial sediments. The sediments overlie Ashfield Shale of the Wianamatta Group. The fluvial sediments comprise clayey quartzose sand and clay. The Ashfield Shale comprises dark-grey to black claystone-siltstone and fine sandstone-siltstone laminite.

4.4 Soils

Review of the 1:100,000 Penrith Soil Landscape Series Sheet 9030 (1989) indicated that the area in which the site is located has been disturbed by human activity to a depth of at least 100 cm. The original soil has been removed, greatly disturbed or buried. Most of these areas have been levelled to slopes of less than 5%. Landfill includes soil, rock, building and waste materials. The original vegetation has been completely cleared.

The natural soils underlying these disturbed areas consist of fluvial sediments of the Berkshire group of soils. The Berkshire group of fluvial sediments are typically characterised by orange heavy clays and clayey sands, often mottled and with ironstone inclusions. Due to the depositional action of the fluvial sediments, they can exhibit marked differences in soil texture, colour, stoniness and calcium carbonate content.

4.5 Hydrogeology

Groundwater within the catchment occupied by the site is expected to flow to the west and south-west towards the Georges River. Shallow groundwater beneath the site is expected to be perched above the residual

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weathered bedrock and to be recharged predominantly by the infiltration of surface water falling onto the unsealed surfaces of the site.

Surface water flowing across sealed taxiways and runways would be directed towards the drainage channels located to the north and west of the site.

The Georges River is located approximately one kilometre to the west of the site.

4.6 Acid Sulfate Soils

Areas of the site are defined in the Liverpool Acid Sulfate Soil Risk Map (Edition 2, 1997) as disturbed terrain with an elevation of 2 m to greater than 4 m AHD. Disturbed terrain is defined as filled areas, which often occur during reclamation of low-lying wetlands and floodplains for urban development. Other disturbed terrain includes areas which have been mined or dredged, or have undergone heavy ground disturbance through general urban development or construction of dams or levees.

No suspected ASS were observed in the material excavated during the contamination investigation because fill and natural soil did not exhibit the following characteristics (as defined in the ASSMAC 1998):

- Fill and soils did not exhibit a sulphurous smell
- There was no evidence of shell
- No jarositic horizons or substantial iron oxide mottling was observed; or
- Fill and soils were not classified as unripe muds (soft, buttery, blue grey or dark greenish grey) or estuarine silty sands or sands (mid to dark grey) or bottom sediments of estuaries or tidal lakes (dark grey to black).

The Bankstown Local Environment Plan (LEP) 2015 ASS map sheet defines the areas below the site as Class 3.



5 Site History

The site history has been based on a review of the report prepared by Godden Mackay Logan (April 2005) Bankstown Airport, Heritage Management Strategy. The Godden Mackay Logan (April 2005) report outlines the history of the entire Bankstown Airport site. It should be noted that the historical operations/activities detailed may not have been specifically undertaken on the site (i.e. Site 2). A brief outline of the site history is provided below.

- The Bankstown Airport site was formerly occupied by market gardens, poultry farms and commercial premises (including a service station) located at the corner of Milperra and Billiana Roads
- Construction of the Bankstown Aerodrome commenced in 1940
- The Royal Australian Air Force (RAAF) established at the site in late 1940. The activities undertaken by the RAAF included airfield and training operations, aircraft assembly and temporary accommodation for RAAF personnel
- The Women's Australian Auxiliary Air Force (WAAAF) established to the site in 1941. The activities undertaken by the WAAAF included training, administration and accommodation
- The US Air Force were accommodated at the site from 1942 to 1945. The site was used as a base for a number of squadrons and accommodated the associated personnel
- The Clyde Engineering Co Pty Ltd undertook maintenance, repair and modification of aircraft from 1942
- Hawker de Havilland opened a factory in 1942 for the manufacture of aircraft and parts
- A Mobile Naval Air Base was commissioned at Bankstown in 1945. As part of this commission, hangers, taxiways and associated facilities were constructed
- From 1945 to 1950 sections of the site were used to house migrants
- The control of the Bankstown Airport was divested to the Department of Civil Aviation in 1980.



6 Preliminary Investigation

Jacobs undertook a preliminary investigation of the site to assess whether historical land use and/or activities undertaken on and/or adjacent to the site could have contaminated the site. The preliminary investigation also included an assessment of the potential for PFCs contamination in general accordance with the Department of Infrastructure and Regional Development GEM-002 *PFC – management actions advice.*

The results of the preliminary investigation were used to refine the intrusive investigation plan so as to target potential areas of interest and contaminants of concern (where identified). The results of the preliminary investigation are detailed below.

6.1 Aerial Photograph Review

Aerial photographs held by Jacobs and BAL were examined to provide a visual indication of the potential historical activities and changes which have taken place at or within areas adjoining the subject site. Historical aerial photos held by Jacobs were examined for the years 1943, 1986, 1991, 2000, 2005, 2007, 2009, 2011 and 2015, while historical aerial photos held by BAL were examined for the years 1950, 1956, 1957, 1961, 1967, 1977, 1979, 1980, 1985, 1986 and 2000. From a review of the historical aerial photos the subject site and it's surrounds appeared vacant except for some shelter and accommodation type buildings observed in aerial photos from 1943 adjacent and directly to the north east of the site. A few small planes were observed to be parked directly north of the site in aerial photos from 1961 along with a small round helipad or windsock type concrete pad. Formalised runways also appeared to the south and south east of the site. From 1977 onwards areas directly to the north east of the site appear to have been used as an area to park small aircraft. A portion of the plane parking area directly to the north east of the site was observed to be a concrete pad in an aerial photo from 1986. A wind sock and associated instrumentation appear in the south eastern corner of the site from 1991 onwards. One large and one medium rectangular storage type containers appear in the north eastern portion of the site and three large hanger type structures appear directly to the north and north east of the site in an aerial photo from 2000. Small aircraft appear on the concrete aprons adjacent of the three large rectangular hangers directly north and north east of the site periodically in aerial photos from 2000 onwards. A helipad appears on vacant land directly to the north west of the site in an aerial photo from 2005, the north east portion of the site adjacent and directly south of a large rectangular hanger appears to have been periodically used to park small planes and a truck in aerial photos from 2007 onwards.

6.2 Interviews

An interview was conducted with Mr Craig Smith, Facilities Management Coordinator at BAL on the 11 May 2016 prior to conducting a site inspection and walkover to gain an understanding of any potentially contaminating events or activities that may have occurred on the site in the past. Of particular interest were any fires, crashes, spills or structures that may have caused potential contamination (including PFC contamination). Anecdotal information from Mr Smith indicated that he had worked at the airport for approximately 20 years and had spoken to a few employees who had been there for a similar period of time. Mr Smith provided the following anecdotal information regarding past activities on and around the site that may have contributed to potential contamination of the site:

A firefighting exercise had been conducted on the north western portion of the site within the past five
years. The exercise consisted of lighting a drum on fire and having emergency services put it out with a
mixture of water and foam. The exercise was identified as an activity that could have resulted in PFC



contamination of surface soils and of groundwater beneath the site. This triggered the requirement for PFC analysis of groundwater and soil samples collected from across the site.

• The northern portion of the site was identified as having being raised and levelled with fill material consisting predominately of silty clay.

6.3 Site Inspection

A site inspection and walkover was conducted on 11 May 2016. During the course of the site inspection and walkover, no obvious signs of ACM, fuel or chemical spills, evidence of fires, crashes or staining of soils were observed across the surface of the site. A raised and levelled area of fill material was observed across the northern portion of the site and consisted of a silty clay material with gravel and fragments of sandstone and crushed rock (consistent with anecdotal information).



7 Site Description

At the time of the investigation, the site was located airside and comprised a vacant grassed area, taxiway, open drain and access road. The grassed area also contained a wind sock and associated instrumentation. The surrounding area consisted of taxi zones for aircraft which led to the main runway and a helipad and large sheds, which were likely used as hangars/workshops for small aircraft.

Operations that were undertaken at the site during the time of the investigation included:

- Aircraft activity: this involved aircraft leaving the hangar adjacent and directly north of the site and travelling along the taxi zone towards the main runway
- Helicopter activity within the helipad area adjacent to the site
- Airport vehicles travelling along the runway/taxi zone and access road
- Possible refuelling activities within the hanger area adjacent to site.



8 Fieldwork - Soil Investigation

Jacobs undertook the contamination investigation works at the site between 16 May 2016 and 1 June 2016. The site investigation and sampling was undertaken in accordance with documented Jacobs procedures by an experienced Jacobs environmental scientist.

8.1 Sampling Pattern

Sample locations were positioned across the proposed footprint of the development (based on information provided by BAL) as follows:

- To undertake sufficient sample locations to meet the NSW EPA (1995) Contaminated Sites: Sampling Design Guidelines Table A: Minimum Sampling Points Required for Site Characterisation Based on Detecting Circular Hot Spots by Using Systematic Sampling Pattern. The 35 test pit and 10 borehole locations (45 sample locations in total) meet the minimum sampling points required for site characterisation for a site with an area of 35,000 m² as outlined in the NSW EPA (1995) Contaminated Sites: Sampling Design Guidelines
- To undertake sufficient sample locations to meet WADOH (2009) Table 1 Triggers and Types of Asbestos Investigations. Based on the possible likelihood, the investigation regime comprised an asbestos assessment from 22 test pit locations (i.e. half of the overall sample locations) excavated as part of the contamination investigation
- To target areas of potential concern as identified during the preliminary investigation
- To assess groundwater quality migrating onto and from the site.

Sampling locations and the proposed development footprint are presented in **Figure 2-2**.

8.2 Depth Intervals of Sampling

8.2.1 Soil Contamination Investigation

For the soil contamination investigation, soil samples were collected as follows:

- As grab samples from the surface of the site and directly from the centre of the excavator bucket at depths of approximately 0.5 m and at 1.0 m intervals or at other discrete locations where there was evidence of potential contamination (odorous or discoloured soils, erroneous waste or fill)
- As grab samples from the surface and from a decontaminated SPT sampler during the drilling of boreholes at approximately 0.5 m and 1.5 m bgl.

8.2.2 Asbestos Investigation

For the asbestos investigation, sampling intervals were as follows:

10 litres of representative material excavated from test pits was collected from both 0.0 – 1.0 m and 1.0 – 2.0 m depth ranges where fill material was observed. The 10 litre samples were spread out on black plastic sheeting, raked and inspected for potential ACM



- Where potential ACM was identified within the 10 litre samples, all observable potential ACM was collected and weighed
- Where no potential ACM was identified in the 10 litre samples, a 500 ml sample was collected from material within the top 300 mm of the test pit.

To further assess AF concentrations detected in surface soils at test pit location A2-TP17, four additional 500 ml samples were manually excavated and collected from material within the top 100 mm of the excavations. Additional sample locations were excavated approximately 2m from and to the north, south, east and west of location A2-TP17.

8.3 Method of Sample Collection

8.3.1 Soil Contamination Investigation

All soil samples at depth were collected directly from the excavator bucket, as grab samples from surface soils or as undisturbed samples from a decontaminated SPT sampler. Samples were transferred to sample containers by Jacobs field staff by hand using disposable nitrile gloves.

Care was taken to ensure that representative samples were obtained from the depth required and that the integrity was maintained, particularly when dealing with potentially volatile and semi-volatile components.

8.3.2 Asbestos Investigation

No potential ACM was observed in the 22 test pits excavated for the asbestos investigation. A total of 22 bulk samples were collected as grab samples from material representing the top 300 mm of soil observed at the respective test pit locations.

An additional four bulk samples were collected as grab samples from material representing the top 100 mm of soil observed at the manual excavation locations surrounding test pit location A2-TP17.

8.4 Sample Containers, Method of Sample Storage and Handling

All soil samples for the soil investigation were placed in jars provided by the primary laboratory Eurofins MGT (Eurofins). All sample jars were fitted with Teflon lined lids. Zip lock bags were used to contain the bulk samples collected as part of the asbestos investigation. The jars and zip lock bags were completely filled with soil, labelled with the date, unique sampling point identification and sampler information.

The soil jars and zip lock bags once filled with sample and sealed, were immediately placed in an esky/cool box in which a cooling medium had been added to keep the samples below a temperature of approximately 4° C. At the end of the sampling program the samples in the cool box were transported to the laboratory. Custody seals were placed on the esky / cool box for delivery to the laboratory.

8.5 Decontamination Procedures

Samples from test pits and surface samples were collected as grab samples from material at the centre of the excavator bucket or directly from the surface of the site using new disposable nitrile gloves, changed between sample locations.



Samples from boreholes were collected from a decontaminated SPT sampler using new disposable nitrile gloves, changed between sample locations. The SPT sampler was decontaminated between sample locations by washing in potable water and then rinsed in potable water.

8.6 Sample Logging and Documentation

Experienced Jacobs field staff completed soil logs during the field investigation. The logs recorded the following data:

- Sample number and depth
- Soil classification, colour, consistency or density, moisture content and obvious indications of contamination
- · Depth of excavation
- Excavation refusal
- Method of excavation.

In addition, the physical attributes of samples such as soil/fill characteristics, obvious signs of contamination such as discolouration and/or odour were noted on the logs.

All samples, including QA samples, were transported to the primary laboratory under Chain-of-Custody (CoC) procedures and maintained in an ice-filled cool box. The CoC detailed the following information:

- Site identification
- The sampler
- Nature of the sample
- Collection time and date
- Analyses to be performed
- · Sample preservation method.

8.7 Laboratory Analysis

Soil samples were selected for analysis based generally on providing vertical and lateral coverage of the site and on visual observations.

8.7.1 Soil Contamination Investigation

Soil samples were analysed for the following potential contaminants of concern:

 48 samples (40 primary + 8 QA/QC) for heavy metals, Total Recoverable Hydrocarbons (TRH), monocyclic aromatic hydrocarbons (BTEX), polycyclic aromatic hydrocarbons (PAH)



- 21 samples for heavy metals, TRH, BTEX, PAH, organochlorine pesticides (OCP) and polychlorinated biphenyls (PCB)
- 21 samples for perfluorinated compounds (PFOS, PFOA and 6:2 FTS)
- One sample for pH, cation exchange capacity (CEC) and % clay
- Two trip spike/trip blank for BTEX.

8.7.2 Asbestos Investigation

Bulk soil/fill samples from the surface soils (0-300 mm) were analysed for ACM, AF and FA.

8.8 Analytical Parameters and Methods

Jacobs commissioned Eurofins MGT (Eurofins) as the primary laboratory and Australian Laboratory Services (ALS) as the secondary laboratory. Envirolab Services (Envirolab) were commissioned to undertake the additional asbestos fines analysis. Eurofins, ALS and Envirolab are NATA accredited for the testing undertaken.

Where appropriate, the soil samples were analysed in accordance with NEPC *National Environment Protection* (Assessment of Site Contamination) Measure 1999, as amended 2013 (NEPC, 2013) guidelines using methods based on US Environment Protection Agency (US EPA) and American Public Health Association (APHA) approved analytical methods.

Asbestos identification was undertaken in accordance with the analytical methods detailed in the WADOH (2009) guidelines.



9 Fieldwork - Groundwater Investigation

Three groundwater wells (A2-GW1, A2-GW2 and A2-GW3) were installed to assess groundwater quality beneath and migrating onto the site and to identify any potential impacts to environmental receptors and beneficial groundwater users from the migration of contaminated groundwater (if present) onto and from the site. The groundwater investigation comprised:

- Construction of groundwater wells using new, Class 18, 50 mm UPVC with machine slotted screen sections, gravel pack, bentonite seal and grout/bentonite to the surface. The wells were completed flush with the ground level with a gatic cover
- Survey of the groundwater wells to site datum to allow for the calculation of groundwater flow gradients
- · Measuring of water levels within all wells to assess depth to groundwater
- Development, purging and sampling of all newly installed groundwater wells.

Sampling locations and the proposed development footprint are presented in Figure 2-2.

9.1 Well Development and Sample Collection

Fieldwork was undertaken in accordance with documented Jacobs procedures by experienced staff. Groundwater wells were developed using a submersible pump.

Following development, the wells were allowed to stabilise for a minimum of 48 hours before being purged and sampled. The monitoring wells were purged prior to sampling in order to remove standing or stagnant water in the well and to ensure that samples collected were representative of the groundwater within the aquifer.

Monitoring wells were purged and sampled using a peristaltic pump. The pump had flow control to minimise drawdown and new dedicated, disposable polyethylene and silicon tubing was used for the collection of each sample. Care was taken to minimise the potential for volatile losses during sampling.

The electrodes of a calibrated water quality meter were used to measure pH, redox potential (Eh), electrical conductivity, dissolved oxygen and temperature in water purged from the wells. Samples were collected following stabilisation of these water quality parameters (generally \pm 10%). A calibration certificate for the water quality meter is presented in **Appendix D**.

9.2 Decontamination Procedures

The submersible pump was decontaminated between groundwater well locations by washing in potable water and then rinsed in potable water.

Dedicated, single use sample tubing was used to purge and to sample all wells. All samples were collected using new disposable nitrile gloves, changed between sample locations.

9.3 Sample Containers

Laboratory supplied sample containers were used to contain the groundwater samples. Sample containers were filled in order of volatility, with samples for the most volatile substances collected first.



9.4 Method of Sample Collection, Storage and Handling

All sample containers were labelled with the sample number, project number, date obtained and sampler and site name. This information was repeated on the CoC form.

Sample containers were filled in order of the most volatile substances. Care was taken to minimise disturbance of the sample to avoid aeration by minimising the distance between the outlet tubing and the container and tilting the container so that discharge flowed gently down the inner walls. Samples for dissolved heavy metals in groundwater were field filtered using 0.45 micron single use stericups.

Once filled, the caps were checked to ensure that they were secure (and that there were no air bubbles/head space within the glass vials and bottles) then placed within an esky / cool box in which a cooling medium had been added to keep the samples below a temperature of approximately 4 $^{\circ}$ C. Custody seals were placed on the esky / cool box for delivery to the laboratory.

9.5 Sample Logging and Documentation

While on site, the Jacobs field staff completed sampling field data sheets which document (where applicable):

- Time of sample collection
- Weather
- Unique sample identification number
- Sample location and depth
- Static Water Level
- Water quality screening results (DO, Temperature, Redox potential, pH and conductivity)
- Presence or absence of odour (nature and intensity)
- Colour of the water
- Presence or absence of sediment in the well
- Well condition and purging volumes.

All samples, including QA samples, were transported to the primary laboratory under CoC procedures and maintained in an ice-filled cooler. The CoC detailed the following information:

- Site identification
- The sampler
- Nature of the sample
- Collection date of the sample
- Analyses to be performed



Sample preservation method.

9.6 Laboratory Analysis – Water

Four (three primary and one QA/QC samples) groundwater samples were collected and analysed for dissolved heavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn), TRH, BTEX, PAH, PFOS, PFOA and 6:2 FTS.

9.7 Analytical Parameters and Methods

Jacobs commissioned Eurofins as the primary laboratory. Eurofins are NATA accredited for the analysis undertaken.

Where appropriate, the groundwater samples were analysed in accordance with NEPC (2013) using methods based on US EPA and APHA approved analytical methods.



10 Quality Control Plan

Field and laboratory QA/QC requirements compliant with NEPC (2013) requirements (where applicable) were undertaken as part of the field work program as outlined below.

10.1 Field QA/QC Programme

Field QA/QC for this project consisted of the collection of blind replicate, split replicate, trip blank and trip spike samples.

10.1.1 Environmental Samples

Environmental samples or field samples were the representative soil and groundwater samples collected for analysis to determine aspects of their chemical composition.

10.1.2 Blind Replicate Samples

Blind replicate samples were provided by the collection of two environmental samples from the same location. These samples were preserved, stored, transported, prepared and analysed in an identical manner. As a minimum, the results of analyses on the blind replicate sample pair were assessed by calculating the Relative Percentage Differences (RPDs) between the results. The RPD was calculated as the difference between the results divided by their mean value and expressed as a percentage. If the RPD exceeded the value adopted for any analytes, additional investigation would be required, or justification provided for not conducting additional investigation.

Blind replicate samples were generally collected at a rate of one duplicate for every 20 environmental samples in accordance with AS 4482.1-2005.

10.1.3 Split Samples

Split samples provided a check on the analytical proficiency of the laboratories. Split samples were provided by the collection of two environmental samples from the same location. These samples were preserved, stored and transported in an identical manner. The split samples were analysed by the secondary laboratory. As a minimum, the results of analyses on the split replicate sample pair were assessed by calculating the RPDs between the results. The RPD was calculated as the difference between the results divided by their mean value and expressed as a percentage. If the RPD exceeded the value adopted for any analytes, additional investigation would be required, or justification provided for not conducting additional investigation.

Split replicate samples were generally collected at a rate of one duplicate for every 20 environmental samples in accordance with AS 4482.1-2005.

10.1.4 Trip Blanks

The trip blanks consisted of laboratory-supplied purge water and clean sand. The purpose of trip blanks was to detect potential contamination during sample transport. These samples were kept within eskies during sampling activities and were not opened in the field. Trip blanks were analysed at the laboratory as regular samples for BTEX compounds only.

Trip blanks were submitted with every batch of soil and water samples delivered to the respective primary laboratories.



10.1.5 Laboratory-Prepared Trip Spike

Laboratory-prepared trip spikes consisted of purge water or sand spiked with known concentrations of BTEX. These samples were submitted for BTEX analysis with the results compared with the known additions. Generally, samples were spiked with concentrations of 15, 15, 15 and 30 ppm of benzene, toluene, ethylbenzene and total xylenes respectively. The purpose of these samples was to monitor VOC losses during transit.

Trip spikes were submitted with every batch of soil and water samples delivered to the respective primary laboratories.

10.2 Laboratory QA/QC Programme

The reliability of test results from the analytical laboratories was monitored according to the QA/QC procedures used by the NATA accredited laboratory. The QA/QC programme employed by Eurofins (the primary laboratory) specified holding times, extraction dates, method descriptions, Chain of Custody (COC) requirements, analysis, LORs and acceptance criteria for the results. Laboratory QA/QC requirements undertaken by Eurofins and ALS are based on NEPM requirements and are outlined below (NEPC, 2013).

10.2.1 Laboratory Duplicate Samples

Laboratory duplicates provided data on analytical precision for each batch of samples.

Laboratory duplicates were performed at a rate of one duplicate for batches of 8-10 samples with an additional duplicate for each subsequent ten samples.

10.2.2 Laboratory Control Samples

Laboratory control samples consisted of a clean matrix (de-ionised water or clean sand) spiked with a known concentration of the analyte being measured. These samples monitored method recovery in clean samples and were used (where required) to evaluate matrix interference by comparison with matrix spikes.

10.2.3 Surrogates

For organic analyses, a surrogate was added at the extraction stage in order to verify method effectiveness. The surrogate was then analysed with the batch of samples and percentage recovery calculated.

10.2.4 Matrix Spike

Matrix spikes consisted of samples spiked with a known concentration of the analyte being measured, in order to identify properties of the matrix that may hinder method effectiveness. Samples were spiked with concentrations equivalent to 5 to 10 times the LOR and percentage recovery calculated.

10.2.5 Method Blanks

Method blanks (de-ionised water or clean sand) were carried through all stages of sample preparation and analysis at a rate of approximately 10%. Analyte concentrations in blanks should be less than the stated LOR. Reagent blanks were run if the method blank exceeded the LOR. The purpose of method blanks was to detect laboratory contamination.



10.3 Data Acceptance Criteria

The QA/QC Data will be assessed against the Data Acceptance Criteria (DAC) provided in Table 10.1.

Table 10.1: QA/QC Compliance Assessment

QA/QC Sample Type	Method of Assessment	Acceptable Range
Field QA/QC		
Blind Replicates and Split Samples	The assessment of split replicate is undertaken by calculating the Relative Percent Difference (RPD) of the replicate concentration compared with the original sample concentration. The RPD is defined as: X1 - X2	The acceptable range depends upon the levels detected: • 0 - 100% RPD (When the average concentration is < 5 times the LOR) • 0 - 75% RPD (When the average concentration is 5 to 10 times the LOR) • 0 - 50% RPD (When the average concentration is > 10 times the LOR)
Blanks (Rinsate and Trip Blanks)	Each blank is analysed as per the original samples.	Analytical Result < LOR
Laboratory-prepared Trip Spike	The trip spike is analysed after returning from the field and the % recovery of the known spike is calculated.	70% - 130%
Laboratory QA/QC		
Laboratory Duplicates	Assessment as per Blind Replicates and Split Samples.	The acceptable range depends upon the levels detected: • 0 - 100% RPD (When the average concentration is < 4 times the LOR) • 0 - 50% RPD (When the average concentration is 4 to 10 times the LOR) • 0 - 30% RPD (When the average concentration is > 10 times the LOR)
Surrogates Matrix Spikes	Assessment is undertaken by determining the percent recovery of the known spike or addition to the sample.	 70% - 130% (General Analytes) 50% - 130% (Phenols) 60% - 130% (OP Pesticides)
Laboratory Control Samples	C - A % Recovery = 100 x B Where: A = Concentration of analyte determined in the original sample; B = Added Concentration; C = Calculated Concentration.	



QA/QC Sample Type	Method of Assessment	Acceptable Range		
Method Blanks	Each blank is analysed as per the original samples.	Analytical Result < LOR		
Note: LOR = Laboratory Level of Reporting (LOR) or the minimum detection limit for a particular analyte.				



11 Quality Assurance and Quality Control

For the purpose of assessing the quality of data presented in this report, Jacobs collected and analysed various Quality Control (QC) samples (blind duplicate and blind triplicate sample), trip spike and trip blank samples, while the laboratory completed their own internal QC. The current section of this report is focused on the presentation of the results of these QC samples, adherence to Quality Assurance (QA) systems and discussion of deviations, if any from the DAC.

11.1 Field Quality Assurance

All samples were collected by experienced Jacobs environmental scientists and engineers, under established Jacobs protocols. Adherence to Jacobs protocols by experienced field staff trained in sample collection and handling techniques ensures the quality and representativeness of the samples collected.

11.2 Field Quality Control

The following QC samples were collected for laboratory analysis:

- Blind Duplicate: A2-QC01 (duplicate of soil sample A2-TP01_0.0), A2-QC03 (duplicate of soil sample A2-TP19_0.2), A2-QC05 (duplicate of soil sample A2-TP25_0.3), A2-QC07 (duplicate of soil sample A2-TP31_0.0) and A2-QC09 (duplicate of water sample A2-GW3)
- Split Replicate: A2-QC02 (duplicate of soil sample A2-TP01_0.0), A2-QC04 (duplicate of soil sample A2-TP19_0.2), A2-QC06 (duplicate of soil sample A2-TP25_0.3) and A2-QC08 (duplicate of soil sample A2-TP31_0.0)
- Trip Spike sample for soil and water TS160517-1 (soil), TS160517-6 (soil) and TS160614-16 (water).
- Trip Blank sample for soil and water TB160517-1 (soil), TB160517-6 (soil) and TB160614-16 (water).

Five blind duplicate samples (four soil samples and one water sample) were analysed to assess the quality control during the field sampling program. This equates to 7% blind duplicate soil analysis and 33% blind duplicate water analysis. This blind duplicate analysis exceeds and therefore conforms to the Australian Standard (AS 4482.1 - 2005) Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds requirement of 5%.

The Relative Percentage Differences (RPDs) for all analytes for the blind duplicates taken during the soil sampling program conformed to the DAC with the exception of:

- Chromium (134 % RPD) between primary soil sample A2-TP01_0.0 and blind duplicate A2-QC01
- Nickel (113 % RPD) between primary soil sample A2-TP01_0.0 and blind duplicate A2-QC01
- Zinc (159 % RPD) between primary soil sample A2-TP01_0.0 and blind duplicate A2-QC01.

RPDs calculate the difference in magnitude between two samples and do not take into account the minor differences in actual concentrations. With respect to Chromium, Nickel and Zinc concentrations reported in samples A2-TP01_0.0 and A2-QC01, the concentrations reported represent values significantly lower than the SAC. The blind duplicate pair were collected from fill material. It is inherently difficult to obtain representative



duplicate samples from heterogenous fill materials especially when they cannot be homogenised because of potential loss of volatiles.

As a conservative approach Jacobs have assessed soil quality using the higher reported concentration for Chromium, Nickel and Zinc (primary sample). It is unlikely that the exceedances of the RPDs for Chromium, Nickel and Zinc will affect the overall usability of the data set. RPD results for soil are presented in **Table C**.

The RPDs for all analytes for the blind duplicate pair taken during the groundwater monitoring program conformed to the DAC. RPD results for groundwater are presented in **Table D**.

Four split replicate samples for soil were analysed to assess the quality control during the field sampling program. This equates to 7% split replicate soil analysis. This split replicate analysis exceeds and therefore conforms to the Australian Standard (AS 4482.1 - 2005) *Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds* requirement of 5%.

The Relative Percentage Differences (RPDs) for all analytes for the split replicates taken during the soil sampling program conformed to the DAC with the exception of:

- Chromium (139 % RPD) between primary soil sample A2-TP01_0.0 and split replicate A2-QC02
- Lead (125 % RPD) between primary soil sample A2-TP01_0.0 and split replicate A2-QC02
- Nickel (160 % RPD) between primary soil sample A2-TP01_0.0 and split replicate A2-QC02
- Zinc (171 % RPD) between primary soil sample A2-TP01_0.0 and split replicate A2-QC02.

RPDs calculate the difference in magnitude between two samples and do not take into account the minor differences in actual concentrations. With respect to Chromium, Lead, Nickel and Zinc concentrations reported in samples A2-TP01_0.0 and A2-QC02 the concentrations reported represent values significantly lower than the site assessment criteria. The split replicate pair were collected from fill material. It is inherently difficult to obtain representative duplicate samples from heterogenous fill materials especially when they cannot be homogenised because of potential loss of volatiles.

As a conservative approach Jacobs have assessed soil quality using the higher reported concentration for Chromium, Nickel and Zinc (primary sample) and Lead (secondary sample). It is unlikely that the exceedances of the RPDs for Chromium, Lead Nickel and Zinc will affect the overall usability of the data set. RPD results for soil are presented in **Table C**.

A split replicate for the water samples was not collected due to the small number of samples collected for laboratory analysis. In consideration of the low number of water samples collected, that all samples were collected by experienced personnel in accordance with documented procedures and that all other blind duplicate analysis and split replicate analysis (soils only) indicate useable data sets, the non-collection of a split replicate water sample is unlikely to affect the usability of the data.

One trip spike was submitted with each batch of soil and water samples delivered to the laboratory for analysis with the exception of soil samples delivered in Eurofins batch 501183. The trip spike samples were analysed for BTEX only. The trip spikes for soil and water returned concentrations of BTEX within the acceptable range (70% - 130%) as outlined in the DAC. Considering that all trip spike samples for soil returned concentrations of BTEX within the acceptable range and that all soil samples submitted for analysis reported concentrations of BTEX at



or below the LOR and significantly below the adopted site assessment criteria, the absence of a trip spike sample for sample batch 501183 is unlikely to affect the usability of the data set.

One trip blank was submitted with each batch of soil and water samples delivered to the laboratory for analysis with the exception of soil samples delivered in Eurofins batch 501183. The concentrations of BTEX compounds in the trip blank were below the respective laboratory LORs and therefore conformed to the DAC. Considering that all trip blank samples for soil returned concentrations of BTEX below the respective laboratory LORs and that all soil samples submitted for analysis reported concentrations of BTEX at or below the LOR and significantly below the adopted site assessment criteria,, the absence of a trip blank sample for sample batch 501183 is unlikely to affect the usability of the data set.

No rinsate sample was collected from the decontaminated SPT sampler or submersible pump used for well development. In consideration that equipment decontamination and sampling was undertaken by experienced personnel in accordance with documented procedures and the general absence of significant contamination detected within soil samples collected using the SPT sampler and groundwater samples, the non-collection of rinsate samples is unlikely to affect the usability of the data.

11.3 Laboratory QA

All analysis was undertaken by a NATA accredited laboratory using NATA accredited analytical methods.

11.4 Laboratory QC

Laboratory QC data is presented in full in the laboratory certificates in Appendix E.

11.4.1 Laboratory Duplicates

RPDs for all laboratory duplicates for soil samples conformed to the DAC with the exception of:

- Chromium, RPD 49% (501564)
- Copper, RPD 45% (501564)
- Zinc, RPD 35% (501564)
- Arsenic, RPD 61% (502799)
- Arsenic, RPD 100% (502799)
- Arsenic, RPD 70% (502799)
- Chromium, RPD 31% (502799)
- Copper, RPD 32% (502799)
- Lead, RPD 35% (502799)
- Zinc, RPD 37% (502799)
- Chromium, RPD 46.7% (ES1611169).



The laboratory (Eurofins) applied the NEPM 2013 acceptance criteria of 0-30% for laboratory duplicate sample recoveries. Laboratory duplicate sample recoveries for Arsenic, Copper and Chromium in Eurofins batch 502799 and Lead and Zinc in Eurofins batch 502799 while not conforming to the NEPM 2013 acceptance criteria did conform to the laboratories (Eurofins) own laboratory acceptance criteria of no limit for when the results are < 10 times the LOR and also conformed to the Jacobs DAC of 0-100% when the average concentration is < 4 times the LOR. Considering that the laboratory duplicate sample recoveries complied with Eurofins NATA accredited acceptance criteria and the Jacobs DAC, the recoveries outlying the applied NEPM criteria are considered unlikely to affect the usability of the data set.

Laboratory duplicate sample recoveries for Chromium and Zinc in Eurofins batch 501564 while not conforming to the NEPM 2013 acceptance criteria did conform to the laboratories (Eurofins) own laboratory acceptance criteria of no limit for when the results are < 10 times the LOR and also conformed to the Jacobs DAC of 0 – 50% when the average concentration is 4 to 10 times the LOR. Considering that the laboratory duplicate sample recoveries complied with Eurofins NATA accredited acceptance criteria and the Jacobs DAC, the recoveries outlying the applied NEPM criteria are considered unlikely to affect the usability of the data set.

The laboratory duplicate sample recovery for Chromium in ALS batch ES1611169 while not conforming to the Jacobs DAC of 0-30% when the average concentration is > 10 times the LOR did conform to the laboratories (ALS) own laboratory acceptance criteria of 0-50% for when the results are 10 to 20 times the LOR. Considering that the laboratory duplicate sample recovery complied with ALS's NATA accredited acceptance criteria, the recoveries outlying the Jacobs DAC are considered unlikely to affect the usability of the data set.

RPDs for all laboratory duplicates for water samples conformed to the DAC.

11.4.2 Laboratory Control Samples

Recoveries for all laboratory control samples for soil and water conformed to the DAC.

11.4.3 Surrogates

Recoveries for all laboratory surrogate samples for soil conformed to the DAC with the exception of:

- Dibutylchlorendate, Surrogate Recovery 138% for sample A2-TP12_0.0
- 13C-PFHxA, Surrogate Recovery 148% for sample A2-TP18_0.0
- 13C-PFHxA, Surrogate Recovery 133% for sample A2-TP21_0.0
- 4-Bromofluorobenzene, Surrogate Recovery 61% for sample A2-TP24_0.0
- 4-Bromofluorobenzene, Surrogate Recovery 59% for sample A2-TP24_0.5
- 4-Bromofluorobenzene, Surrogate Recovery 52% for sample A2-TP25_0.3
- 4-Bromofluorobenzene, Surrogate Recovery 64% for sample A2-TP26_0.0
- Dibutylchlorendate, Surrogate Recovery 68% for sample A2-TP24_0.0
- Tetrachloro-m-xylene, Surrogate Recovery 69% for sample A2-TP24_0.0



- Tetrachloro-m-xylene, Surrogate Recovery 67% for sample A2-TP26_0.0
- 4-Bromofluorobenzene, Surrogate Recovery 56% for sample A2-TP26_1.0
- 4-Bromofluorobenzene, Surrogate Recovery 53% for sample A2-TP27_0.0
- 4-Bromofluorobenzene, Surrogate Recovery 50% for sample A2-TP28_0.3
- 4-Bromofluorobenzene, Surrogate Recovery 50% for sample A2-TP29_0.0
- Dibutylchlorendate, Surrogate Recovery 56% for sample A2-TP29_0.0
- Tetrachloro-m-xylene, Surrogate Recovery 66% for sample A2-TP29_0.0
- 4-Bromofluorobenzene, Surrogate Recovery 53% for sample A2-TP29_0.5
- 4-Bromofluorobenzene, Surrogate Recovery 54% for sample A2-TP30_0.2
- 4-Bromofluorobenzene, Surrogate Recovery 54% for sample A2-TP31_0.0
- 4-Bromofluorobenzene, Surrogate Recovery 54% for sample A2-TP32_0.0
- 4-Bromofluorobenzene, Surrogate Recovery 59% for sample A2-TP33_0.0
- 4-Bromofluorobenzene, Surrogate Recovery 50% for sample A2-TP33_0.5
- 4-Bromofluorobenzene, Surrogate Recovery 54% for sample A2-QC05
- 4-Bromofluorobenzene, Surrogate Recovery 50% for sample A2-QC07
- Tetrachloro-m-xylene, Surrogate Recovery 65% for sample A2-TP33_0.0
- 4-Bromofluorobenzene, Surrogate Recovery 63% for sample A2-TP35_1.0
- Tetrachloro-m-xylene, Surrogate Recovery 61% for sample A2-TP34_0.0

The laboratory surrogate sample recoveries for Dibutylchlorendate in three samples (A2-TP12_0.0, A2-TP24_0.0 and A2-TP29_0.0), Tetrachloro-m-xylene in five samples (A2-TP24_0.0, A2-TP26_0.0, A2-TP29_0.0, A2-TP33_0.0 and A2-TP34_0.0) and 4-Bromofluorobenzene in 17 samples (A2-TP24_0.0, A2-TP24_0.5, A2-TP25_0.3, A2-TP26_0.0, A2-TP26_1.0, A2-TP27_0.0, A2-TP28_0.3, A2-TP29_0.0, A2-TP29_0.5, A2-TP30_0.2, A2-TP31_0.0, A2-TP32_0.0, A2-TP33_0.0, A2-TP33_0.5, A2-QC05, A2-QC07 and A2-TP35_1.0) while not conforming to the Jacobs DAC of 70 – 130% for general analytes did conform to the laboratories (Eurofins) own laboratory acceptance criteria of 50 – 150% for general analytes. Considering that the laboratory surrogate sample recoveries complied with Eurofins NATA accredited acceptance criteria and were only marginally above or below the Jacobs DAC limits the recoveries outlying the Jacobs DAC are considered unlikely to affect the usability of the data set.

The laboratory surrogate sample recoveries 13C-PFHxA in two samples (A2-TP18_0.0 and A2-TP21_0.0) while not conforming to the Jacobs DAC of 70 – 130% for general analytes did conform to the laboratories (Eurofins) own laboratory acceptance criteria of 20 – 130% for PFAS. Considering that the laboratory surrogate sample



recoveries complied with Eurofins NATA accredited acceptance criteria, the recoveries outlying the Jacobs DAC are considered unlikely to affect the usability of the data set.

Recoveries for all laboratory surrogate samples for water conformed to the DAC with the exception of:

- 13C8-PFOS, Surrogate Recovery 42% for sample A2-GW1
- 13C8-PFOS, Surrogate Recovery 28% for sample A2-GW2
- 13C8-PFOS, Surrogate Recovery 21% for sample A2-GW3
- 13C8-PFOS, Surrogate Recovery 26% for sample A2-QC09.

The laboratory surrogate sample recoveries for 13C8-PFOS in four samples (A2-GW1, A2-GW2, A2-GW3 and A2-QC09) while not conforming to the Jacobs DAC of 70 – 130% for general analytes did conform to the laboratories (Eurofins) own laboratory acceptance criteria of 20 – 130% for PFAS. Considering that the laboratory surrogate sample recoveries complied with Eurofins NATA accredited acceptance criteria, the recoveries outlying the Jacobs DAC are considered unlikely to affect the usability of the data set.

11.4.4 Matrix Spikes

Recoveries for all matrix spike control samples for soil conformed to the DAC with the exception of:

Pyrene, Spike Recovery 142%

The Matrix spike recovery for Pyrene while not conforming to the Jacobs DAC of 70-130% for general analytes did conform to the laboratory's (ALS's) own laboratory acceptance criteria of 52 – 148% for matrix spike samples for Pyrene. Considering that the recovery complied with ALS's NATA accredited acceptance criteria and were only marginally above the Jacobs DAC limits, the recovery outlying the Jacobs DAC is unlikely to affect the usability of the data set.

Matrix spike recoveries could not be determined for Zinc in ALS batch EM1606431 due to background levels greater than or equal to four times the spike level. Considering that all samples analysed for Zinc in the sample batch recorded concentrations either below the LOR or significantly below the adopted site assessment criteria the absence of matrix spike recoveries for Zinc in ALS batch EM1606431 is unlikely to affect the usability of the data set.

Recoveries for all matrix spike control samples for water conformed to the DAC.

11.4.5 Method Blanks

All method blanks for soil and water reported analyte concentrations below the laboratory LOR and therefore conformed to the DAC.

11.4.6 Sample Holding Times

All soil and water samples were extracted and analysed within the specified holding times.



11.4.7 Sample Condition

All samples were received by the analytical laboratories in correctly preserved and chilled containers with no reported breakages. The individual sample receipts are presented with the laboratory reports in **Appendix E.**

11.5 QA/QC Assessment

It is concluded that laboratory data are of acceptable quality and are considered useable in making conclusions and recommendations regarding the site.



12 Site Assessment Criteria

To address potential health and environmental impacts within the site, Jacobs compared the analytical test results against a set of health and ecological based soil investigation levels to be referred to as Site Assessment Criteria (SAC) considered to be appropriate for the proposed land use and main potential receptors of concern (i.e. airport and commercial/industrial guidelines, given the current and proposed land use and that any potential exposure times to possible contaminants during construction activities have been considered as short term).

That is, the SAC have been set at levels that provide confidence that contaminant concentrations below the SAC will not adversely affect human health or terrestrial/aquatic ecosystems.

The SAC developed for the investigation was derived (where applicable) from the following guidelines.

- National Environment Protection (Assessment of Site Contamination) Measure 1999 (as revised 2013) Schedule B1 Guideline on Investigation levels for Soil and Groundwater (NEPC, 2013)
- Airports (Environment Protection) Regulations 1997 (the Airport Regulations)
- Western Australia Department of Health (May 2009) Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated Sites in Western Australia (WA Guidelines)
- GHD (June 2015) Managing PFC contamination at Airports, Interim Management Strategy and Decision Framework
- National Health and Medical Research Council (2008) Guidelines for Managing Risks in Recreational Waters (NHMRC, 2008)
- enHealth (June 2016) Guidance Statements on Pefluorinated Chemicals Interim Values (enHealth, 2016).

12.1 Aesthetics

Aesthetics on sites relates to the presence of observable odours, discoloration and erroneous wastes materials in soil which could possibly indicate contamination. Such olfactory evidence can point to how receptors can be impacted by vapours on and migrating from the site. Odour threshold for organic substances can be exceeded in off-site settings (through groundwater transmission of hydrocarbons) and whilst may not represent a direct health risk, could possibly prompt civil action. Aesthetics was continually assessed during the investigation and reported on the field logs (where present).

12.2 Ecological Investigation Levels

The site and surrounding areas comprise land used for airport purposes. As such ecological investigation levels (EILs) were considered for a commercial/industrial land use as part of this investigation.

EILs were generated using the NEPC (2013) - Volume 2 - Table 1B (1-7). For the Project, it has been assessed that the EILs will apply to contaminants within the top 2 metres of soil at the surface / ground level which corresponds to the root zone and habitation zone of many species. Additionally, typical background



concentrations were required to be calculated in order to derive selected EILs. To generate the EILs for the investigation, Jacobs have used the methodology as described in **Appendix A** and summarised below.

EILs were generated for heavy metals, DDT and naphthalene. Sample A2_TP17_2.5 was assumed to be representative of the 'background concentration' for the soils within the site due to the sample being taken from natural soils, the depth of the sample (2.4 mbgl), and that the soil at this location was unlikely to be impacted by anthropogenic sources. The EILs were calculated (where appropriate) using the NEPC (2013) equation:

$$EIL = ABC^1 + ACL^2$$

In context of the Airport Regulation for the protection of soil ecosystems, soil analytical results have also been compared against Table 2 – areas of environmental significance.

A summary of the adopted EILs is presented as **Table 12.1**.

Table 12.1: Ecological Investigation Levels (expressed as mg/kg).

Substance	Ecological Investigation Levels	Airport Regulations ⁴
Arsenic	160 ¹	20
Cadmium	3 ²	3
Chromium	670 ³	50
Copper	198.7 ³	60
Lead	1,810 ³	300
Mercury	1 ²	1
Nickel	295 ³	60
Zinc	425 ³	200
DDT	640 ¹	0.97
Naphthalene	370 ¹	-
Total PCB	-	1
Aldrin	-	0.05
Dieldrin	-	0.2

¹Generic EILs for aged arsenic/DDT/Naphthalene from **Table 1B(5)**.

12.3 Ecological Screening Levels

Ecological Screening Levels (ESLs) are focused on petroleum hydrocarbon and total recoverable hydrocarbon (TRH) compounds and are compared against actual site conditions (sub-surface materials and depth) to assess the potential risk to terrestrial ecosystems. For the purposes of calculating the ESLs, the generic soil type (i.e. three broad classes of sands, silts or clays) and land use need to be defined.

For the purposes of this assessment Jacobs considered clays to be most representative for the soil profile at the site.

² EILs from NEPM 1999 (no EILs specified for contaminants in NEPM 2013).

³ EILs derived from NEPM 2013 equation ABC+ACL.

⁴ Levels from the Airport Regulations Table 2 – areas of environmental significance

¹ ABC is ambient background concentration (the soil concentration in a specified locality that is the sum of the naturally occurring background level and the contaminant levels that have been introduced from diffuse or non-point sources by general anthropogenic activity).

² ACL is added contaminant limit (the added concentration (above the ABC) of a contaminant above which further appropriate investigation and valuation of the impact on ecological values is required).



Given the current and ongoing land use of commercial/industrial, the corresponding land use and associated ESL were used to determine the assessment criteria.

In context of the Airport Regulation for the protection of soil ecosystems, soil analytical results for hydrocarbon compounds have also been compared against Table 2 – areas of environmental significance.

Table 12.2 summarises the ESL criteria for soils that have been adopted.

Table 12.2: ESLs for Petroleum Based Fractions (expressed as mg/kg).

Compound / Fraction	Ecological Screening Levels ¹	Airport Regulations ²
F1 (C6 – C10)	215	-
F2 (>C10 – C16)	170	-
F3 (>C16 – C34)	2,500	-
F4 (>C34 - C40)	6,600	-
Benzene	95	0.5
Toluene	135	3
Ethylbenzene	185	5
Xylenes	95	5
Benzo(a)pyrene	0.7	-
TPH (C6 - C9)	-	100
TPH (>C6)	-	1,000
Total PAH	-	5

¹ Table 1B(6) ESLs for TPH fractions F1 – F4, BTEX and Benzo(a)pyrene in soils - NEPM (2013).

12.4 Health Investigation Levels

To address potential health impacts at the site, Jacobs compared the analytical testing results against a set of health based Soil Investigation Levels (SILs) appropriate for commercial/industrial land use in context of the current and future land use as an airport and have taken into consideration the potential for contamination in soil to impact upon groundwater and generate vapours which could impact upon on human receptors. The health based SILs are a combination of Health Investigation Levels (HILs) and Health Screening Levels (HSLs) as detailed in the NEPM (2013) and the Accepted Limit/Trigger Levels detailed in Table 1 – areas of an airport generally of the Airport Regulations (1997). The adopted SILs are summarised in **Table 12.3**.

HILs have been developed for a broad range of metals and organic substances. The HILs are applicable for assessing human health risk via all relevant pathways of exposure. The HILs are generic to all soil types and apply generally to a depth of three metres below the surface for residential use.

HSLs have been developed for selected petroleum compounds and fractions and are applicable to assessing human health risk via the inhalation and direct contact pathways. The HSLs depend on specific soil physicochemical properties, land use scenarios, and the characteristics of building structures. They apply to different soil types, and depths below surface to >4 metres. Further details on their use are provided in Friebel and Nadebaum (2011a, 2011b & 2011c).

The HSLs defined within the NEPC (2013) relate only to the volatile fractions of the petroleum hydrocarbons range i.e. BTEX, naphthalene and TRH C6 - C10, TRH C10 - C16.

² Levels from the Airport Regulations Table 2 – areas of environmental significance



Jacobs has adopted the lower value from the following criteria given that exposure times to contamination (if present) during construction are expected to be short term:

- NEPC (2013) Health Investigation Level recommended from exposure setting 'D' which includes premises such as shops, offices, factories and industrial sites (i.e. sites with minimal exposure opportunities).
- Friebel, E & Nadebaum, P (September 2011) Technical Report No.10, Health screening levels for petroleum hydrocarbons in soil and groundwater. Part 1: Technical development document HSL-D Commercial / Industrial Criteria and Intrusive Maintenance Worker (Table A4).

Table 12.3: Soil Investigation Levels (expressed mg/kg)

Cantaminanta	Soil investigation levels (HILs / HSLs)			
Contaminants	Commercial / Industrial (D)	Airport Regulations		
	Metals/Metalloids			
Arsenic (total)	3,000 1	500		
Cadmium	900 ¹	100		
Chromium (III)	3,600 ¹	600,000		
Copper	240,000 ¹	5,000		
Lead	1,500 ¹	1,500		
Mercury (inorganic)	730 ¹	75		
Nickel	6,000 ¹	3,000		
Zinc	400,000 ¹	35,000		
,	Polycyclic Aromatic Hydrocarbo	ns		
Carcinogenic PAHs (as B(a)P TEQ)	40 ¹			
Naphthalene	11,000 ³			
B(a)P		5		
Total PAHs	4,000 ¹	100		
	Total Recoverable Hydrocarbon	es		
TRH (C6-C9)		800		
TRH (>C6)		5,000		
>C16-C34	27,000 ³			
>C34-C40	38,000 ³			
	Polychlorinated Biphenyls			
PCB	7 1	50		
	Organochlorine Pesticides			
DDT		1,000		
DDD + DDE + DDT	3,600 ¹			
Aldrin		50		
Aldrin and dieldrin	45 ¹	20		
Dieldrin		20		
Chlordane	530 ¹	250		



Contaminants	Soil investigation le			estigation l	evels (HILs / HSLs)
Contaminants	C	ommercial /	Industrial ([D)	Airport Regulations
Endosulfan		2,0	000 ¹		
Endrin		10	00 ¹		
Heptachlor		5	60 ¹		50
HCB		8	30 ¹		
Methoxychlor	2,500 ¹				
Mirex		10	00 ¹		
Toxaphene		16	60 ¹		
		F1, F2 and I	BTEX (Based	on a CLAY S	oil Type) ^{4, #}
Depth (m)	0 – <1m	1 – <2m	2 – <4m	>4m	
F1 (C6-C10*)	310	480	NL	NL	
F2 (>C10-C16*)	20,000 ³				
Benzene	4 6 9 20			20	1
Toluene	99,000 ³				130
Ethylbenzene	27,000 ³				50
Xylenes	81,000 ³				25

¹ NEPC (2013) Table 1 A(1) Health investigations levels for soil contaminants – Commercial / Industrial D.

NL – NL indicates the HSL is not limiting (see Footnote 5, Table 1A(3)).

TEQ - Toxic Equivalent.

12.5 Management Limits

Within NEPC (2013), management limits are applied to petroleum hydrocarbons which are considered in addition to the SAC (HILs, EILs, ESLs etc). These Management Limits reflect the nature and properties of petroleum hydrocarbons and their potential effects such as:

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

The application of the management limits will require site specific factors to be considered in more detail. These factors include, but not limited to, depth of building basements and services (where applicable) and depth to groundwater in order to determine the maximum depth to which the limits should apply. When the management limits are exceeded, further site-specific assessment and management may enable any identified risk to be addressed.

² NEPC (2013) Table 1 A(3) Soil HSLs for vapour intrusion – commercial/industrial, 0 to <1, 1 - <2, 2 - <4, >4 m CLAY.

³ HSL-D Commercial / Industrial Criteria and Intrusive Maintenance Workers detailed within Table A4, Friebel, E & Nadebaum, P 2011, Soil Health screening levels for direct contact, Technical Report 10.

⁴ NEPC (2013) Table 1A(3) Soil HSLs for Vapour Intrusion (mg/kg) HSL D Commercial / Industrial.

[#] Soil Vapour as the primary Exposure Pathway to impact potential receptors.



The presence of site TRH contamination at the levels of the management limits does not imply that there is no need for administrative notification or controls in accordance with jurisdiction requirements. Adopted management limits for petroleum hydrocarbons are detailed in **Table 12.4**.

Table 12.4: Management Limits for TPH fractions F1-F4 in soil (adapted from NEPC 2013 Schedule B1)

TPH fraction	Soil texture	Management Limits ¹ (mg/kg dry soil)
		Commercial and Industrial
F1 ² C ₆ - C ₁₀	Fine	800
F2 ² >C ₁₀ -C ₁₆	Fine	1,000
F3 >C ₁₆ -C ₃₄	Fine	5,000
F4 >C ₃₄ -C ₄₀	Fine	10,000

¹ Management limits are applied after consideration of relevant ESLs and HSLs

12.6 Asbestos

The NEPM (2013) adopts guidelines for asbestos materials in soil as outlined in the WADOH (2009) guidelines. The WADOH (2009) guidelines were designed specifically to improve the characterisation of asbestos soil contamination and to manage human health risks now and into the future and specifically take the following practical positions into account:

- That overall, potential health impacts posed by different asbestos minerals, such as chrysotile and crocidolite, and fibre dimensions can be treated as equivalent
- ACM may pose a future free-fibre risk through its degradation, and therefore potential release of asbestos fibres
- The cancer risk from asbestos should be kept as low as practical and preferably no more than one
 occurrence in one million over a lifetime for the exposed population. Mesothelioma is used here as the
 most sensitive health impact of asbestos exposure.

The WADOH (2009) guideline values are based on extensive research by Swartjes and Tromp in the Netherlands (2008). The study resulted in the Netherlands introducing general regulatory investigation criteria of 0.01% w/w asbestos for fibrous asbestos and 0.1% w/w asbestos for non-friable ACM. The 0.01% criteria has the highest attendant risk (ie. Residential use) and is set at a level that should keep asbestos air levels below 0.001 fibres/millilitre (f/ml) and probably around 0.0001 f/ml. Using WHO (2000) risk figures for mesothelioma, 0.0001 f/ml corresponds to a lifetime risk of 10⁻⁶ to 10⁻⁵ in the exposed human population, which are risks that are considered broadly acceptable to the WADOH.

WADOH has used these Netherland figures and divided by a factor of 10 to derive the investigation criteria outlined in the WA guidelines. The factor of 10 takes into account the greater dryness and dust-generating potential of local soil and the fact that WADOH treats the mineralogical forms of asbestos as equivalent. The fibrous asbestos criterion applies to Friable Asbestos (FA) and Asbestos Fines (AF) due to their ability to generate asbestos fibre. WADOH applies even higher criteria for ACM, depending on the site use. These mirror the NEPM (2013) site uses and associated default exposure ratios.

² Separate management limits for BTEX and naphthalene are not available hence these should not be subtracted from the relevant fractions to obtain F1 and F2.



Soil asbestos investigation criteria are outlined in **Table 12.5**.

Table 12.5: Soil Asbestos Investigation Criteria

Site Asbestos Investigation Criteria	Site Use
0.001% w/w asbestos for FA and AF	All site uses
0.05 % w/w asbestos for ACM	Commercial/Industrial
All forms of asbestos	No visible asbestos in surface soil 1

¹ Investigation criteria from NEPM (2013)

Taking into account the current and proposed future land use for the site, Jacobs have adopted the soil asbestos investigation criteria for all land uses (for FA and AF), commercial/Industrial land use for ACM and no visible asbestos in surface soils as the SAC.

12.7 Perflourinated Chemicals (PFCs)

The Commonwealth and State regulatory framework for the management of PFC impacts to land is still under development. There are no screening criteria for PFCs for soil included in the NEPC (2013). There are no specific published NSW EPA guidelines or requirements for the assessment of PFC impacts or for the disposal of PFC impacted waste in NSW.

Jacobs has adopted SAC for PFCs and management approaches from the GHD (2015) guidelines relevant to a commercial/industrial land use.

The screening criteria relevant for this investigation are summarised in Table 12.6 below.

Table 12.6: Selected Interim Screening Criteria for PFC

Exposure scenario	PFOS	PFOA	6:2FTS
Soil, human health – industrial	90 mg/kg	240 mg/kg	900 mg/kg
Ecological (terrestrial)	4.71 mg/kg (commercial/industrial – 60% species protection)	3.73 mg/kg	NA

12.8 Groundwater

Groundwater investigation levels (GILs) are the concentrations of a contaminant in groundwater above which further investigation (point of extraction) or a response (point of use) is required. GILs are based on Australian water quality guidelines and drinking water guidelines and are applicable for assessing human health risk and ecological risk from direct contact (including consumption) with groundwater.

The NSW EPA has endorsed the use of the water quality trigger levels given in the Australia and New Zealand Environment and Conservation Council (2000) *Australian and New Zealand guidelines for fresh and marine water quality* (ANZECC 2000) guidelines. These guidelines provide criteria for the protection of aquatic ecosystems (marine and fresh waters), primary industries, recreational water and drinking water.

The most likely environmental receptor of groundwater from the site would be the marine ecosystems of the Georges River located approximately 1 km to the west of the site. Based on information from the NSW Department of Environment, Climate Change and Water NSW Water Quality and River Flow Objectives (NSW DECCW, 2006) the Georges River is an estuarine environment down stream of Liverpool.



The NSW DECCW (2006) defines water quality objectives (WQO) for the Georges River. The areas surrounding the Georges River in the near vicinity of the site are characterised by urban developments. The NSW DECCW (2006) states that the WQO for the Georges River affected by urban development should be selected to protect aquatic ecosystems and recreational contact (both primary and secondary). It is noted in NSW DECCW (2006) that these WQOs may not be achievable in the short term and that the protection of primary recreational users may not be achievable.

From a review of the NSW Department of Primary Industries – Water Real Time Data database, no registered groundwater bores are located within a 0.5 km radius of the site. Based on the information above and the absence of known registered sensitive beneficial users of the groundwater down gradient from the site, the site assessment criteria (SAC) for groundwater should consider protection of environmental receptors. The most appropriate Groundwater Investigation Levels (GIL) are generally the 95% protection levels for marine water given in the ANZECC (2000) guidelines, although these are likely to be conservative in urbanised areas where waterways are degraded. Where the guideline does not provide these criteria or the guideline considers the 95% protection level is inappropriate, GILs have been sourced by using:

- The 99% protection levels for marine water ecosystems given in the ANZECC (2000) guidelines for contaminants considered to be bioaccumulative (e.g. cadmium, mercury, nickel)
- The 99% and 95% protection levels for freshwater ecosystems provided in the ANZECC (2000) guidelines (where applicable/available)
- NEPC (2013) prescribed GILs
- With respect to toluene and ethyl benzene the NSW EPA (1994) threshold concentrations for the protection of aquatic ecosystems.
- Nation Health and Medical Research Council (NHMRC) 2011 Australian Drinking Water Guidelines.
- The Dutch (2000) groundwater intervention levels for Total Petroleum Hydrocarbons fractions. The aromatic solvents criteria of 150μg/L was adopted for TRH (C6-C9) fraction and the mineral oil criteria of 600μg/L was adopted for TPH (C10-C36) fraction.

Depth to groundwater measured during the monitoring was between 2.146 m and 7.56 m bgl. For the purposes of this assessment Jacobs have based the GILs and groundwater health screening levels (HSLs) on a depth of between 2 and 4 m (shallowest groundwater depth range provided in NEPC (2013).

In addition schedule 2 (Water pollution – accepted limits) of the Airports (Environment Protection) Regulations 1997 outline the accepted limit of concentrations of contaminants for freshwater and marine water. The adopted GILs are summarised in **Table 12.7**.



Table 12.7: Groundwater Investigation Levels (expressed as µg/L)

Contaminants	Contaminant	Ecosystem protection levels – Marine	Airport Regulations
Heavy Metals	Arsenic	24 ³	50
	Cadmium	0.7 2	2.0
	Chromium	4.4 1	50
	Copper	1.3 1	5.0
	Lead	4.4 1	5.0
	Mercury	0.1 ²	0.1
	Nickel	7 2	15
	Zinc	15 ¹	50
BTEX Compounds	Benzene	500 ²	300
	Ethyl Benzene	140 4	-
	Naphthalene	50 ²	-
	Toluene	300 4	-
	Xylene (o)	350 ³	-
	Xylene Total	380 4	-
Total Petroleum	TRH C ₆ -C ₉	150 ⁵	-
Hydrocarbons (TRH)	TRH C ₁₀ -C ₃₆	600 ⁵	-
Polycyclic Aromatic	Benzo(a)pyrene	0.01 ⁶	-
Hydrocarbons (PAHs)	Naphthalene	50 ²	-

Notes:

HSLs for groundwater apply to exposure to petroleum hydrocarbons through the dominant vapour inhalation exposure pathway only.

The groundwater HSLs are based on three-phase equilibrium theory and vapour is limited by the maximum solubility limit of the chemical in the soil pore water phase or the groundwater. The soil saturation concentration of a particular contaminant is the condition where pore water is at its solubility limit and soil vapour is at the maximum vapour concentration. When a calculated HSL in groundwater exceeds this limit, the vapour in the soil or above groundwater cannot result in an unacceptable vapour risk and is denoted as NL (not limiting) in the HSL tables (Tables 1 A(3) – 1A(5)). HSLs for groundwater have been developed for sand, silt and clay soils based on the US soil texture classification system (Friebel & Nadebaum 2011a). The HSLs assume a uniform soil profile and the soil texture making up the greatest proportion of the soil profile should be used in selecting the appropriate HSLs (Friebel & Nadebaum 2011a and 2011b). Based on observations during the drilling and soil sampling program undertaken at the site, clay has been selected as the major soil type underlying the site.

The heavier end fractions, $>C_{16}-C_{34}$ and $>C_{34}-C_{40}$ are not volatile and as such are not included within the groundwater HSLs for vapour intrusion.

¹ ANZECC (2000) 95% of species protected – marine

² ANZECC (2000) 99% of species protected –marine

³ANZECC (2000) 95% of species protected – fresh water

⁴ NSW EPÀ (1994) Protection of aquatic ecosystems - fresh water

⁵ Dutch (2000) groundwater intervention levels

⁶ NHMRC 2011 Australian Drinking Water Guidelines



The adopted criteria for vapour intrusion relevant for this investigation are summarised in Table 12.8 below.

Table 12.8: Groundwater HSLs for vapour intrusion (mg/L)

	· · · · · · · · · · · · · · · · · · ·	
Contaminants	Groundwater investigation levels (HILs / HSLs	
	Commercial / Industrial (D)	
F1, F2 and BTEX (Based on a CLAY	Soil Type) ^{1,}	
Depth (m)	2 – <4	
F1 (TRH C ₆ -C ₁₀)	NL	
F2 (TRH >C ₁₀ -C ₁₆)	NL	
Benzene	30,000	
Toluene	NL	
Ethylbenzene	NL	
Xylenes	NL	
Naphthalene	NL	

¹ NEPC (2013) Table 1 A(4) Groundwater HSLs for vapour intrusion -Commercial / Industrial, 2 to <4m, CLAY.

At the request of BAL, the significance of PFC in groundwater have been assessed against the GHD (June 2015) *Managing PFC Contamination at Airports, Interim Contamination Management Strategy and Decision Framework* prepared for Airservices Australia (GHD, 2015).

It should be noted that the guidelines for PFC in groundwater detailed in the GHD (2015) report are for the protection of groundwater as a potable water resource. At the time of preparing this report, there were no licensed potable users of groundwater within and/or immediately surrounding the Bankstown Airport site.

The adopted criteria for PFC compounds in groundwater are summarised in Table 12.9.

Table 12.9: Groundwater Investigation Levels (expressed as µg/L)

Contaminants	Drinking Water
8:2 Fluorotelomer sulfonate	0.4
6:2 Fluorotelomer Sulfonate (6:2 FtS)	5.0
PFOS	0.2
PFOA	0.4

[#] Soil Vapour as the primary Exposure Pathway to impact potential receptors

NL - No Limit: No limit exists for these contaminants based on the function of the solubility limit, the soil vapour and groundwater.



13 Results

13.1 Site Stratigraphy

The sub-surface material encountered in the test pits (A2-TP01 to A2-TP35) and boreholes (A2-BH01 to A2-BH10 and A2-GW1 to A2-GW3) generally consisted of fill material comprising predominantly silty clay and minor gravelly clays and silty sands to a maximum depth of 1.0 m bgl overlying alluvial silty clays with occasional ferruginous gravel layers to a maximum depth of 10.45 m bgl.

13.2 Groundwater Flow Gradients

The heights (surveyed to site datum using a laser level) for all newly installed groundwater wells were surveyed to allow for the calculation of groundwater flow gradients. The position and heights (relative to site datum) of the groundwater wells and reduced groundwater levels are contained in **Table 13.1.**

Table 13.1: Groundwater Level Information

Well ID	Groundwater Level (m BTOC)	Relative Height (m TOC)	Relative Level of Groundwater (m)
A2-GW1	7.561	0.698	8.259
A2-GW2	3.908	1.723	5.631
A2-GW3	2.146	1.867	4.013

Notes:

- m BTOC m below top of casing
- m TOC m top of casing
- · Relative level of groundwater reported as metres below site datum
- Groundwater levels as measured 20.06.16 and 21.06.16

The survey and groundwater level measurement indicated that groundwater flow direction is in a general north easterly direction. It may be possible that the significant rainfall event experienced at the site and subsequent localised flooding of the Georges River in the vicinity of the site prior to undertaking the groundwater monitoring influenced localised groundwater levels across the site. The flooding of the Georges River is likely to have created groundwater mounding in the vicinity of the river which would push groundwater away from the river. When river levels have stabilised, groundwater flow direction is expected to return towards the Georges River.

13.3 Aesthetics

A number of aesthetic issues (i.e. presence of erroneous wastes) were observed during the fieldwork program as detailed in **Table 13.2.**

Table 13.2: Aesthetic Issues.

Investigation Location	Depth (mbgl)	Aesthetic Issues
A2-TP12	0-0.3	Sandstone and asphalt inclusions
A2-TP13	0.1-0.5	Sandstone and aggregate inclusions
A2-TP14	0-0.1	Sandstone and wire inclusions
A2-TP14	0.1-0.5	Asphalt and concrete inclusions
A2-TP17	0.306	Ash/charcoal inclusions
A2-TP20	0-0.3	Asphalt and concrete inclusions
A2-TP26	0.5-0.7	Sandstone and ash/charcoal inclusions



A2-TP27	0-0.2	Sandstone, concrete and ash/charcoal inclusions
A2-TP28	0-0.2	Sandstone, concrete and ash/charcoal inclusions
A2-TP29	0-0.2	Sandstone and glass inclusions
A2-TP33	0-0.1	Asphalt and aggregate inclusions
A2-TP34	0-0.1	Ash/charcoal inclusions
A2-TP35	0-0.1	Ash/charcoal inclusions

Although not observed at the specific sampling locations, isolated areas of lead shot were observed across the surface of the north western portion of the site (between the drainage swale and the taxiways).

Lead shot was observed at a number of the sample locations and this material was sampled accordingly. In other areas (as detailed above), the contamination status has been extrapolated based on observations and sample results for lead shot impacted materials.

Borehole and test pit logs are presented in Appendix D.

13.4 Soil Analytical Results

Soil analytical results from samples collected from test pits (A2-TP01 to A2-TP35) and boreholes (A2-BH01 to A2-BH10) are presented below and in **Table A**. Laboratory certificates of analysis are presented in **Appendix E**.

13.4.1 Heavy Metals

Concentrations of all heavy metals in all soil samples analysed were below the SAC with the exception of the following:

- Lead concentrations (760 mg/kg) detected in sample A2_TP12_0.0 exceeded the EIL (300 mg/kg)
- Lead concentrations (710 mg/kg) detected in sample A2_TP12_0.5 exceeded the EIL (300 mg/kg)
- Lead concentrations (910 mg/kg) detected in sample A2_TP13_0.0 exceeded the EIL (300 mg/kg)
- Lead concentrations (540 mg/kg) detected in sample A2_TP13_0.2 exceeded the EIL (300 mg/kg)
- Lead concentrations (710 mg/kg) detected in sample A2_TP15_0.0 exceeded the EIL (300 mg/kg)
- Lead concentrations (2,200 mg/kg) detected in sample A2_TP32_0.0 which exceed the both the EIL (1,815/300 mg/kg) and HIL (1,500 mg/kg)
- Nickel concentrations (110 mg/kg) detected in sample A2_TP33_0.0 exceeded the EIL (60 mg/kg).

13.4.2 Total Recoverable Hydrocarbons (TRH)

The concentrations of TRH compounds in all soil samples analysed were below the SAC with the exception of TRH (>C6) concentrations (1,130 mg/kg) detected in sample A2_TP12_0.0 which exceeded the EIL (1,000 mg/kg).



13.4.3 BTEX

The concentrations of BTEX compounds in all soil samples analysed were at or below the LOR and below the SAC.

13.4.4 Polycyclic Aromatic Hydrocarbons (PAHs)

Concentrations of all PAH compounds in all soil samples were below the SAC with the exception of the following:

- Benzo(a)pyrene concentrations (2.3 mg/kg) in sample A2_TP12_0.0 exceeded the ESL (0.7mg/kg)
- Benzo(a)pyrene concentrations (2.7 mg/kg) in sample A2_TP14_0.3 exceeded the ESL (0.7mg/kg)
- Benzo(a)pyrene concentrations (2.4 mg/kg) in sample A2_TP15_0.0 exceeded the ESL (0.7mg/kg)
- Benzo(a)pyrene concentrations (1.4 mg/kg) in sample A2_TP20_0.0 exceeded the ESL (0.7mg/kg).

13.4.5 Organochlorine Pesticides (OCPs)

The concentrations of OCP compounds in all soil samples analysed were below the LOR and below the SAC.

13.4.6 Polychlorinated Biphenyls (PCB)

The concentrations of PCB compounds in all soil samples analysed were below the LOR and below the SAC.

13.4.7 Perfluorinated Compounds (PFC)

The concentrations of PFC compounds in all soil samples analysed were below the SAC.

Sample locations exceeding the respective SAC are presented in Figure 3-2.

13.5 Asbestos Analytical Results

Soil analytical results from samples collected from 22 test pits (A2-TP02, A2-TP04, A2-TP06, A2-TP07, A2-TP08, A2-TP10, A2-TP11, A2-TP12, A2-TP13, A2-TP15, A2-TP17, A2-TP18, A2-TP20, A2-TP21, A2-TP22, A2-TP23, A2-TP24, A2-TP26, A2-TP29, A2-TP33, A2-TP34, A2-TP35) are presented below and in **Table A.** Laboratory certificates of analysis are presented in **Appendix E**.

13.5.1 Asbestos Analysis of Soil Bulk Samples

Asbestos analytical results for the soil bulk samples are presented below and in **Table A**. Laboratory certificates of analysis are presented in **Appendix E**.

Trace analysis of asbestos in all soil bulk samples analysed reported no detectable asbestos with the exception of sample A2_TP17_0.0. Analysis for AF, FA and ACM for all samples analysed recorded results of no visible asbestos identified with the exception of AF (0.0025 grams, estimated AF concentration of 0.0002% w/w) detected in sample A2_TP17_0.0. The estimated AF concentration was below the SAC.

Laboratory calculated concentrations for ACM, AF and FA and total asbestos in the 22 soil samples reported results below the laboratory LOR.



Trace analysis of asbestos in the additional soil bulk samples (A2_TP17N, A2_TP17E, A2_TP17S and A2_TP17W) analysed reported no detectable asbestos with the exception of sample A2_TP17N. Analysis for AF, FA and ACM for all samples analysed recorded results of no visible asbestos identified with the exception of AF (0.0196 grams, estimated AF concentration of 0.0014% w/w) detected in sample A2_TP17N. The estimated AF concentration was above the SAC of 0.001% w/w.

13.5.2 Asbestos Concentration in Soil

Asbestos (based on visual observations during the fieldwork and laboratory analysis) was not identified at any of the 22 test pit locations in material observed and sampled from 0.0 - 1.0 m (strata A).

13.5.3 Inspection and Analysis of Surface Soils

A visual inspection of surface soils for potential ACM fragments was undertaken at each of the 35 test pit locations (where possible) prior to the commencement of excavations. Where the surface of the site and surface soils were visible, no potential ACM fragments were observed at or in the near vicinity of the sampling locations.

Sample locations exceeding the respective SAC are presented in Figure 3-2.

13.6 Groundwater Analytical Results

Groundwater analytical results from samples collected from groundwater wells A2-GW1, A2-GW2 and A2-GW3 are presented below and in **Table B**. Laboratory certificates of analysis are presented in **Appendix E**.

13.6.1 General Water Quality Parameters

The general water quality parameters measured at the respective groundwater well locations indicated the following:

- pH ranged from 4.43 pH units (A2-GW3) to 7.05 pH units (A2-GW1)
- Electrical conductivity ranged from 15,403 μS/cm (A2-GW1) to 21,157 μS/cm (A2-GW2)
- Temperature ranged from 17.5 oC (A2-GW3) to 19.3 oC (A2-GW2)
- Dissolved oxygen levels ranged from 2.32 mg/L (A2-GW2) to 4.42 mg/L (A2-GW1)
- Redox potential ranged from 81.3 mV (A2-GW1) to 230.8 mV (A2-GW3).

Groundwater field data sheets are provided in **Appendix C**.

Field water quality parameters indicated that groundwater beneath the site was slightly acidic. The EC of the groundwater beneath the site was generally brackish to saline. ORP measurements were generally consistent across the site and indicated an oxidizing potential.

13.6.2 Heavy Metals

Concentrations of all dissolved heavy metals in all samples were low or below the LOR and below the SAC with the following exceptions:

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- Copper concentrations exceeded the SAC of 1.3 μ g/L and the airport regulations criteria of 5 μ g/L in the groundwater sample analysed from A2-GW3 (14 μ g/L).
- Lead concentrations exceeded the SAC of 4.4 μg/L and the airport regulations criteria of 5 μg/L in the groundwater sample analysed from A2-GW3 (18 μg/L).
- Nickel concentrations exceeded the SAC of 7 μg/L and the airport regulations criteria of 15 μg/L in groundwater samples analysed from A2-GW2 (34 μg/L) and A2-GW3 (210 μg/L).
- Zinc concentrations exceeded the SAC of 15 μg/L in the groundwater sampled from A2-GW2 (44 μg/L) and the SAC and the airport regulations criteria of 50 μg/L in the groundwater sampled from A2-GW3 (170 μg/L).

13.6.3 Total Recoverable Hydrocarbons (TRH)

Concentrations of all TRH compounds in all samples analysed were below the LOR and below the SAC.

13.6.4 BTEX

Concentrations of all BTEX compounds in all samples analysed were below the LOR and below the SAC.

13.6.5 Polycyclic Aromatic Hydrocarbons (PAHs)

Concentrations of all PAH compounds in all samples analysed were below the LOR and below the SAC.

13.6.6 Perfluorinated Compounds (PFCs)

Concentrations of all PFC compounds in all samples analysed were below the SAC.



14 Discussion

14.1 Soil

Samples of soil / fill material collected from the test pits and boreholes were analysed for contaminants of concern which could be associated with the former and current use of the site for airport purposes.

The following aesthetic issues were identified at the site:

- Isolated areas of lead shot were also observed across the surface of the north western portion of the site (between the drainage swale and the taxiways)
- Miscellaneous materials (i.e. sandstone and general building wastes) were observed in A2-TP12, A2-TP13, A2-TP14, A2-TP17, A2-TP20, A2-TP26, A2-TP27, A2-TP28, A2-TP29, A2-TP33, A2-TP34 and A2-TP35. The majority of these miscellaneous materials were observed across the northern and southern portions of the site.

No aesthetically unsuitable materials were observed in the natural soils underlying the fill material at the site.

Soil samples from test pits and boreholes were selected for analysis based generally on providing vertical and lateral coverage of potential contaminant extents and on visual observations. The majority of soil samples recorded contaminant concentrations below the adopted SAC. A small number of samples reported concentrations of contaminant compounds above adopted ecological investigation and screening levels. The benzo(a)pyrene detected at concentrations above ecological screening levels in a number of samples are likely to be associated with asphalt inclusions identified in the fill material across the site. In context of the likely development at the site (comprising commercial/industrial facilities with minimal landscaping opportunities), these exceedances are unlikely to impact upon the development or continued use of the site for airport related activities.

A sample collected from surface soils at test pit location A2-TP32 (located within the north western portion of the site) reported lead concentrations of 2,200 mg/kg which exceeds the health investigation levels of 1,500 mg/kg. Surface soils at locations A2-TP12, A2-TP13 and A2-TP15 reported lead concentrations above the ecological investigation levels (300 mg/kg) detailed in Table 2 – areas of environmental significance of the Airport Regulations. Nickel was also detected in the surface sample collected from A2_TP33_0.0 at concentrations exceeding the ecological investigation levels detailed in Table 2 – areas of environmental significance of the Airport Regulations. These locations are in the near vicinity to where isolated lead shot was observed across the surface of the site and therefore the elevated lead concentrations could be associated with lead shot (fragment or whole shot) being present in the sample collected. It is also likely that elevated lead concentrations would also be present in areas where lead shot was observed in surface soils (i.e. across the north western portion of the site). In context of the likely development at the site (comprising commercial/industrial facilities with minimal landscaping opportunities), elevated lead and nickel concentrations and visible lead shot in surface soils located within the north western portion of the site could impact upon the development or continued use of the site for airport related activities.

Asbestos fines were identified in surface soils sampled from A2-TP17 and A2-TP17N. The estimated concentration of asbestos fines in A2-TP17N was above the SAC. Considering that no asbestos (as ACM) was identified in the fill material across the site and asbestos fines were only detected in two adjacent soil sample locations, the asbestos fines are likely to be localised to the areas immediately surrounding A2-TP17 and A2-TP17N. Asbestos fines in surface soils are more likely to be liberated (in comparison to ACM) as a result of

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ground disturbance which could increase the exposure risk to site users (construction workers or airport personnel) from asbestos fibres.

14.2 Groundwater

The groundwater monitoring results indicated that the concentrations of compounds detected in groundwater wells subjected to monitoring were below the adopted SAC and airport regulations with the exception of pH (A2-GW2 and A2-GW3 only) copper, lead, nickel and zinc in A2-GW2 (nickel and zinc only) and A2-GW3. Higher concentrations of nickel and zinc were detected in A2-GW3 in comparison to the concentrations reported in A2-GW2.

pH levels in groundwater across the site were generally low with two locations (A2-GW2 and A2-GW3) reporting levels below the lower criteria (pH 6.5) detailed in the Airport Regulations. pH levels reported in A2-GW1 were 7.05. It should be noted that only one round of field chemistry testing was undertaken from A2-GW1 to ensure that sufficient volume was available for sampling as the well exhibited extremely low recharge. It is possible that this well could have recorded lower pH levels if additional field chemistry testing was possible. With the absence of known activities which could affect pH levels present surrounding the groundwater well locations, lower pH levels could be attributable to a localised natural occurrence across the site. Additionally, the actual quality of groundwater is likely to have been influenced by heavy rainfall and flooding events which occurred prior to sampling. With generally low pH levels detected in groundwater across the site (i.e. likely to be representative of background levels), the lower pH reported in wells A2-GW2 and A2-GW3 are unlikely to represent a risk to groundwater receptors.

The source of the metals detected in A2-GW2 and A2-GW3 are not known and copper, nickel and zinc were not detected in soils at the site at concentrations exceeding the SAC. Lead was detected at elevated concentrations at A2-TP32, however this location is down gradient from wells A2-GW2 and A2-GW3. These isolated exceedances of the SAC for copper, lead, nickel and zinc in groundwater are unlikely to require specific remediation and/or management.

It is acknowledged that the groundwater flow gradients may be affected by rainfall events and localised flooding of the Georges River prior to undertaking the monitoring event.



15 Conclusions and Recommendations

Jacobs have undertaken the contamination investigation of Site 2 (Drover Road) located on a portion of airside land at Bankstown Airport, NSW.

Based on site observations and the results of the laboratory analysis, some contamination is present at the site which will need to be considered in context of the development of the site and ongoing airport land use as detailed below.

Lead and nickel concentrations in surface soils and areas of observable lead shot within the north western portion of the site will require remediation and/or management.

Based on the results of the investigation, it is unlikely that extensive asbestos fine contamination is present at the site. However in consideration of the increased risk of asbestos fibre liberation during ground disturbance from asbestos fines (compared to bonded ACM) it is recommended that remediation of surface soils surrounding A2-TP17 and A2-TP17N be undertaken.

There were some exceedances of groundwater guideline levels for pH, copper, lead, nickel and zinc. While the exceedance of the guideline levels is considered unlikely to impact upon the construction of the proposed facilities, should dewatering of excavations be required to facilitate construction, the water may require some treatment or management.

The presence of general building waste observed across the site could indicate potential contamination within this material in areas not tested as part of this investigation. To manage potential contamination, it is recommended that an unexpected finds protocol be developed and implemented during construction to manage potentially contaminated materials, should they be identified.



16 Limitations

The sole purpose of this report and the associated services performed by Jacobs is to assess the condition of the site (with respect to soil and groundwater contamination) in accordance with the scope of services set out in the contract between Jacobs and Bankstown Airport Limited (the Client). That scope of services, as described in this report, was developed with the Client.

In preparing this report, Jacobs has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

Jacobs derived the data in this report from information sourced from the Client (if any), from observations made during the investigations and data from analytical laboratories. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations and conclusions expressed in this report. Jacobs has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by Jacobs for use of any part of this report in any other context.

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Contamination Investigation - Site 2 (Drover Road)
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Figures



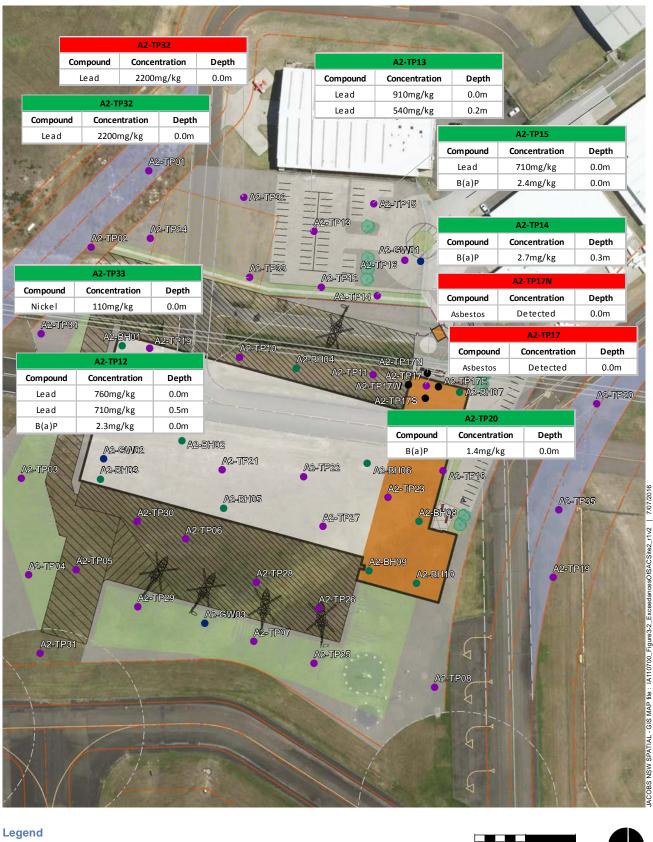
| Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Company | Comp

1:5,000 @ A4





Figure 2-2 | Bankstown Airport - Site 2





Data sources
Jacobs 2015
Ausimage 2014
RMS 2015
LPI 2015
© Land and Property Information 2015

Additional Asbestos Fines

Contamination Investigation - Site 2 (Drover Road) Bankstown Airport



Tables

Table A: Soil Analytical Results

Table B: Groundwater Analytical Results

Table C: Soil QA/QC

Table D: Groundwater QA/QC



Table A - Soil Analytical Results																															
		Referenc Sample dat	INELIAI SOTO LADIG	NEPM Table 1B(6)		501564	501183	501183	501564	501183	501183	501183 18/05/2016	501183	501183	501183	501564	501564	501564 20/05/2016	501564 20/05/2016	501183 17/05/2016	501183 17/05/2016	501183 17/05/2016	501183 17/05/2016	501183 16/05/2016	501564 20/05/2016						
		Matri	ix Comm/Ind D Soil	ESLs Commercial and Industrial	Limits for TPH Airport Regulation.	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
ChemName	Units	Sample II	D Commy ma 5 30m	una maastrar	fractions in soil	A2_BH1_1.5	5 A2_BH2_0.0	A2_BH3_1.5	A2_BH4_0.0	A2_BH5_0.5	A2_BH6_0.5	A2_BH7_0.0	A2_BH8_0.5	A2_BH9_0.0	A2_BH10_0.5	A2_TP01_0.0	A2_TP02_0.0	A2_TP02_0.2	A2_TP02_0.5	A2_TP03_0.3	A2_TP04_0.0	A2_TP04_0.5	A2_TP05_0.0	A2_TP06_0.0	A2_TP06_0.2	A2_TP07_0.0	A2_TP07_0.1	A2_TP07_0.5	A2_TP08_0.0	A2_TP08_0.3	A2_TP09_0.3
Metals	Oilits	LQL																													
Arsenic	mg/kg	2	3000 ¹	160 4	500 6 / 20 12	5	<2	4	4.8	4.7	5.8	2	5.6	5	5.3	5.8	3.8	-	4.6	3.9	4.9	4.3	6.2	10	2	3.2	-	6	-	2.4	7.1
Cadmium Chromium (III+VI)	mg/kg mg/kg	0.4	900 ¹	3 ° 666.6 9	100 ° / 3 12 600,000 ° / 50 12	<0.4 7.1	<0.4	<0.4 8.6	0.7	1.7	<0.4	0.8	<0.4 17	<0.4 9.6	<0.4	<0.4	<0.4	-	<0.4	<0.4 5.4	<0.4	<0.4 17	<0.4 10	<0.4	<0.4 7.8	<0.4	-	<0.4 19	-	<0.4 6.6	<0.4 15
Copper	mg/kg	5	240,000 ¹	315 ⁹	5000 ⁶ / 60 ¹²	9.6	<5	14	10	<5	9.3	8.8	9.9	6.4	12	<5	12	-	5.4	<5	12	6.6	5.5	6	<5	13	-	8.8	-	<5	9.4
Lead	mg/kg	5	1500 ¹	1815 ⁹	1500 ⁶ / 300 ¹²	7.9	7.5	12	39	12	9.3	21	9	22	13	183	210	-	8.2	10	27	12	20	28	14	32	-	8.1	-	11	63
Mercury	mg/kg	0.05	730 ¹	18	75 ⁶ /1 ¹²	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.42	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.17	-	<0.05	-	<0.05	<0.05
Nickel	mg/kg mg/kg	5	6000 1	465 9	3000 6 / 60 12	<5 7.7	<5	<5 5.2	<5 35	<5 200	<5 <5	8.6	<5 6.5	<5 15	<5 <5	18 64	11 47	-	5.1	<5 <5	9.6	<5 <5	<5 8.7	5.6	<5 6.3	5.4 37	-	<5 <5	-	<5 <s< td=""><td><5 23</td></s<>	<5 23
Organochlorine Pesticides (OCPs)	IIIg/ Ng	,	400,000 1	1114 9	35,000 ⁶ / 200 ¹²	7.7		3.2	33	200		33	0.5	15		04	47		- 11		30	,	6.7	22	0.3	37	-	,	-	9	25
4,4-DDE	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	-	<0.05	-	-	-	-	-
a-BHC	mg/kg	0.05			50 ⁶ /0 05 ¹²	-	-	-	-	-	-	-	-	-	-	-	<0.05 <0.05	-	-	-	<0.05	-	-	<0.05 <0.05	-	<0.05	-	-	-	-	-
Aldrin + Dieldrin	mg/kg mg/kg	0.05	45 ¹		50 ⁶ / 0.05 ¹² 20 ⁶	1	-	-	-	-	-	-	-	-	-	-	<0.03	-	-	-	<0.1	-	-	<0.03	-	<0.1	-	-	-	-	-
b-BHC	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	-	<0.05	-	-	-	-	-
chlordane	mg/kg	0.1	530 ¹		250 °	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<0.1	-	-	-	-	-
DDD	mg/kg mg/kg	0.05				1	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	-	<0.05	-	-	-	-	-
DDT	mg/kg	0.05		640 ⁴	1000 ⁶ / 0.97 ¹²	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	-	<0.05	-	-	-	-	-
DDT+DDE+DDD Dieldrin	mg/kg	0.05	3600 ¹		6 , 12	-	-	-	-	-	-	-	-	-	-	-	<0.15	-	-	-	<0.15	-	-	<0.15	-	<0.15	-	-	-	-	-
Endosulfan I	mg/kg mg/kg	0.05	2000 ¹		20 6 / 0.2 12	-	-	-	-	-	-	-		-	-	-	<0.05 <0.05	-	-	-	<0.05 <0.05	-	-	<0.05 <0.05	-	<0.05 <0.05	-	-	-	-	-
Endosulfan II	mg/kg	0.05	2000 ¹			-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	-	<0.05	-	-	-	-	-
Endosulfan sulphate	mg/kg	0.05				-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	<0.05	-	-	<0.05	-	<0.05	-	-	-	-	-
Endrin Endrin aldehyde	mg/kg mg/kg	0.05	100 1			+ -	-	-	-	-	-	-	-	-	-	-	<0.05 <0.05	-	-	-	<0.05 <0.05	-	-	<0.05 <0.05	-	<0.05 <0.05	-	-	-	-	-
Endrin ketone	mg/kg	0.05						-		-			-				<0.05				<0.05		-	<0.05	-	< 0.05	-		-	-	-
g-BHC (Lindane)	mg/kg	0.05	1			-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-	-	< 0.05	-	-	< 0.05	-	<0.05	-	-	-	-	-
Heptachlor Heptachlor epoxide	mg/kg mg/kg	0.05	50 ¹		50 6	+ -	-	-	-	-	-	-	-	-	-	-	<0.05 <0.05	-	-	-	<0.05 <0.05	-	-	<0.05 <0.05	-	<0.05	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.05	80 ¹			1 -	-	-	-	-	1	-	-	-	1 -	-	<0.05	-	<u> </u>	-	< 0.05	-	-	<0.05	-	<0.05	-	-	-	-	-
Methoxychlor	mg/kg	0.05	2500 ¹			-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-	-	<0.2	-	-	<0.2	-	<0.2	-	-	-	-	-
Toxaphene	mg/kg	1	160 ¹			1 -	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	<1	-	-	<1	-	<1	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs) Acenaphthene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	T -	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5
Acenaphthylene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5 <0.5
Anthracene Benz(a)anthracene	mg/kg mg/kg	0.5				<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	-	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5													
Benzo(a) pyrene	mg/kg	0.5		0.7 5	5 ⁶	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5
Benzo(a)pyrene TEQ (lower bound) *	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5
Benzo(a)pyrene TEQ (medium bound) * Benzo(a)pyrene TEQ (upper bound) *	mg/kg mg/kg	0.5	40 ¹			0.6 1.2	0.6 1.2	0.6 1.2	1.2	0.6 1.2	0.6 1.2	-	0.6 1.2	0.6 1.2	0.6 1.2	0.6 1.2	0.6 1.2	1.2	1.2	1.2	-	0.6 1.2	-	0.6 1.2	1.2						
Benzo[b+j]fluoranthene	mg/kg	0.5	40			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5
Benzo(g,h,i)perylene	mg/kg	0.5				<0.5 <0.5	<0.5	<0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5	<0.5	<0.5	<0.5	<0.5 <0.5	-	<0.5	<0.5	<0.5	<0.5 <0.5	<0.5 <0.5	<0.5	<0.5	<0.5	-	<0.5 <0.5	-	<0.5 <0.5	<0.5
Benzo(k)fluoranthene Chrysene	mg/kg mg/kg	0.5				<0.5	<0.5 <0.5	<0.5 <0.5	<0.5	<0.5	<0.5	<0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5	-	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5	<0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	-	<0.5	-	<0.5	<0.5 <0.5
Dibenz(a,h)anthracene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5 <0.5
Fluoranthene Fluorene	mg/kg mg/kg	0.5				<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	0.8 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	-	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5							
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5
Naphthalene	mg/kg	0.5	11,000 ³	370 ⁴	£ 43	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5
PAHs (Sum of total) Phenanthrene	mg/kg mg/kg	0.5	4000 ¹		100 6 /5 12	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	1.6	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	-	<0.5 <0.5	-	<0.5 <0.5	<0.5 <0.5							
Pyrene	mg/kg	0.5				<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<0.5
Polychlorinated Biphenyls (PCBs)	lana fina	0.1				1		1			1			1			*0.F		1		*0 F			<0.5		40 F					
Arochlor 1016 Arochlor 1221	mg/kg mg/kg	0.1				1	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	<0.5	-	-		-	<0.5	-	-	-	-	-
Arochlor 1232	mg/kg	0.1					-	-	-	-	-	-	-	-	-		<0.5	-	-	-	<0.5	-	-	<0.5	-	<0.5	-	-	-	-	-
Arochlor 1242 Arochlor 1248	mg/kg mg/kg	0.1				+ :	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	<0.5 <0.5	-	-	<0.5 <0.5	-	<0.5 <0.5	-	-	-	-	-
Arochlor 1254	mg/kg	0.1				-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	-	<0.5	-	-	<0.5	-	<0.5	-	-	-	-	-
Arochlor 1260 PCBs (Sum of total)	mg/kg	0.1			1 12	-	-	-	-	-	-	-	-	-	-	-	<0.5 <0.5	-	-	-	<0.5 <0.5	-	-	<0.5 <0.5	-	<0.5 <0.5	-	-	-	-	-
TRH - Semivolatile Fraction	mg/kg	0.1			1												\U.5				~0.5			-U.5		NU.3					
C10-C16	mg/kg	50			7	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50	<50	<50	<50	-	<50	-	<50	<50
C16-C34 C34-C40	mg/kg mg/kg	100	27,000 ³ 38,000 ³	2500 ⁵	5000 ⁷	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	<100 <100	-	<100 <100	-	<100 <100	-	<100 <100	<100 <100													
F2-NAPHTHALENE	mg/kg	50	20,000 ³	170 ⁵	10,000	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	-	<50	<50	<50	<50	<50	<50	<50	<50	-	<50	-	<50	<50
C10 - C14	mg/kg	20	,,			<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	-	<20	<20	<20	<20	<20	<20	<20	<20	-	<20	-	<20	<20
C15 - C28 C29-C36	mg/kg mg/kg	50 50				<50 <50	<50 <50	<50 <50	<50 <50	<50 <50	<50 54	-	<50 <50	-	<50 <50	-	<50 <50	<50 <50													
+C10 - C36 (Sum of total)	mg/kg	50			1,000 12	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	54	-	<50	<50	<50	<50	<50	<50	<50	<50	-	<50	-	<50	<50
TRH / BTEX									,	_								_						_							
Benzene Ethylbenzene	mg/kg	0.1	42	95 5	1 6 / 0.5 12	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 <0.1	<0.1	<0.1	<0.1 <0.1	-	<0.1 <0.1	<0.1 <0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1 <0.1	<0.1 <0.1
Naphthalene	mg/kg mg/kg	0.1	27,000 ³	185 ⁵	50 6 / 5 12	<0.1	<0.1 <0.5	<0.1	<0.1 <0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1 <0.5	<0.1	<0.1 <0.5	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1
Toluene	mg/kg	0.1	99,000 ³	135 5	130 6 / 3 12	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1 -	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1
Xylene (m & p)	mg/kg	0.2	.,,		/ /	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	-	<0.2	<0.2
Xylene (o) Xylene Total	mg/kg mg/kg	0.1	91 non 3	95 ⁵	25 ⁶ /5 ¹²	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	-	<0.1	<0.1 <0.3	<0.1	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1	<0.1 <0.3	-	<0.1	-	<0.1 <0.3	<0.1 <0.3
C6 - C9	mg/kg mg/kg	20	81,000 ³	95 -	25 ° / 5 12 800 ° / 100 12	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	-	<20	<20	<20	<20	<0.3	<20	<20	<20	-	<0.3	-	<20	<20
C6-C10 less BTEX (F1)	mg/kg	20	310 ²	215 5	800 / 100 800 ⁷	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	-	<20	<20	<20	<20	<20	<20	<20	<20	-	<20	-	<20	<20
C6-C10	mg/kg	20				<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	-	<20	<20	<20	<20	<20	<20	<20	<20	-	<20	-	<20	<20
Perfluorinated Compounds (PFCs) 6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.01	900 10			Т -		T -	-	-	T -			-	T -	-	<0.01	T -	-	-	<0.01	-	-	<0.01	-	<0.01		-	-		
Perfluorooctanesulfonic acid (PFOS)	mg/kg	0.005	900 10	4.71 10		+ -	-	-	-	-	-	-	-	-	-	-	0.34	-	-	-	<0.005	-	-	<0.005	-	<0.005	-	-	-	-	-
Perfluorooctanoate	mg/kg	0.005	240 ¹⁰	3.73 10		-	-	-	-	-	-	-	-	-	-	-	<0.005	-	-	-	<0.005	-	-	<0.005	-	<0.005	-	-	-	-	-
Asbestos	les d				<u> </u>						1																				
Asbestos from ACM in Soil	%w/w	0.004	0.05 11			-	-	-	-	-	-	-	-	-	-	-	-	0 <0.001	-	-	0	-	-	-	0 <0.001	-	0 <0.001	-	0 <0.001	-	-
Asbestos from FA & AF in Soil Mass ACM	%w/w	0.001	0.001 11			-	-	-	-	-	-	-	-	-	-	-	-	<0.001	-	-	<0.001	-	-	-	<0.001	-	<0.001	-	<0.001	-	-
Mass AF	g						-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	-	-	-	0	-	0	-	0	-	-
Mass FA	g					-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	-	-	-	0	-	0	-	0 ND	-	
Asbestos Fibres		1				1 -	1 -	-	-	-	-	-	-	-	-	-	-	ND	-	-	ND	-	-	-	ND	-	ND	-	ND	-	-
% Clay	%	1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture Content (dried @ 103*C)	% pH Units	1 0.1				15	5	18	11	12	18	5.1	19	8.8	18	11	8.8	-	23	5.2	14	21	18	10	4.6	16	-	25	-	18	9.7
pH (Lab)	[pr1_UIIITS	U.1	1			1 .	1 -	1 -	1 7	1 7	1 -	1 -	-		1 -			1 - 1	1 -					1 -	1	-		-	-	-	-

- Notes:

 Notes:

 NEPC (2013) Table 1 A(1) Health investigations levels for soil contaminants Commercial / Industrial D.

 NEPC (2013) Table 1 A(1) Soil Net Is for vapour invision commercial value facility in the A(1) Soil Net Is for vapour invision commercial value facility in the A(2) Soil Net Is for vapour invision commercial and industrial Net Is and Is and Industrial Net Is (Is Sist Is of the Academy Industrial Net Is (Is Sist Is of the Academy Industrial Net Is Net Is (Is Sist Is of the Academy Industrial Net Is Net Is Is Is and Is Industrial Net Is Is Is Is Is Industrial Net Is Is Industrial Net Is Is Is Is Is Industrial Net Is Is Industrial Net Is Is Is Is Industrial Net Is Is Industrial Net Is Is Is Is Is Industrial Net Is Industrial Net Is Is Industrial Net Is Industrial Net Is Industrial Net Is Is Industrial Net Is Is Industrial Net Is Industrial Net Is Industrial Net Is Is Industrial Net Is Is Industrial Net Is Industrial Net Is Industrial Net Is Industrial Net Is Is

IA110700



Table A - Soil Analytical Results																															
		Reference Sample date	INCHINI ZULS TABLE	NEPM Table 1B(6)		501564 19/05/2016	501564 19/05/2016		501564 19/05/2016	501564 20/05/2016	501564 20/05/2016	501564 19/05/2016	501564 19/05/2016	501564 19/05/2016	501564 19/05/2016	501564 19/05/2016		501564 20/05/2016	501183 18/05/2016	151807 12/08/2016	151807 12/08/2016		151807 12/08/2016	501183 18/05/2016	501183 17/05/2016	501183 17/05/2016	501564 20/05/2016	501564 20/05/2016	501564 20/05/2016		501183 17/05/2016
		Matrix	Comm/Ind D Soil	ESLs Commercial and Industrial	Limits for TPH Airport Regulations	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
ChemName	Units	Sample ID	Commy ma b son	una maastrar	fractions in soil	A2_TP10_0.0	A2_TP10_0.5	A2_TP11_0.0	A2_TP11_2.0	A2_TP12_0.0	A2_TP12_0.5	A2_TP13_0.0	A2_TP13_0.2	A2_TP14_0.3	A2_TP15_0.0	A2_TP15_0.2	A2_TP15_1.0	A2_TP16_0.3	A2_TP17_0.0	A2-TP17 N	A2-TP17 E	A2-TP17 S	A2-TP17 W	A2_TP17_2.5	A2_TP18_0.0	A2_TP18_0.3	A2_TP19_0.2	A2_TP20_0.0	A2_TP20_1.0	A2_TP21_0.0 A	A2_TP21_0.2
Metals	joinis	- CQC																													
Arsenic	mg/kg	2	3000 ¹	160 4	500 6 / 20 12	5.5	5.4	3.4	4.5	8.9	10	10	7.9	5.7	7.4	-	5.4	10	9.4	-	-	-	-	3.4	3.9	-	3.1	5.2	4.7	4.1	4.4
Cadmium Chromium (III+VI)	mg/kg mg/kg	0.4 5	900 ¹	3 ° 666.6 9	100 ⁶ / 3 ¹² 600,000 ⁶ / 50 ¹²	<0.4 12	<0.4 15	1.5 9.9	<0.4 5.1	0.5 19	<0.4 11	<0.4	<0.4	0.8	<0.4	-	<0.4	<0.4 9.2	0.5	-	-	-	-	<0.4 6.6	<0.4 10	-	<0.4 5.5	0.4	<0.4 15	<0.4	<0.4 17
Copper	mg/kg	5	240,000 ¹	315 °	5000 ⁶ / 60 ¹²	10	6.6	11	9.1	13	<5	13	10	25	14	-	10	<5	11	-	-	-	-	15	7.7	-	<5	17	11	5.6	5.8
Lead	mg/kg	5	1500 ¹	1815 ⁹	1500 ⁶ / 300 ¹²	30	9.3	44	5.4	760	710	910	540	32	710	-	12	51	61	-	-	-	-	15	23	-	10	54	11	17	7.9
Mercury	mg/kg	0.05	730 ¹	18	75 6 /1 12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	-	-	-	<0.05	0.07	-	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel Zinc	mg/kg mg/kg	5	6000 ¹ 400,000 ¹	465 ⁹	3000 ⁶ / 60 ¹² 35,000 ⁶ / 200 ¹²	<5 26	<5 <5	6.9 43	<5 7.2	11 23	<5 12	12 30	5.6 24	36 35	11 22	-	5.3 <5	<5 7.9	6 49	-	-	-	-	<5 14	5.4 33	-	<5	24 50	9 15	<5 13	<5 5.6
Organochlorine Pesticides (OCPs)	···o/ ··o		400,000	1114	33,000 / 200												-								***		-				
4,4-DDE	mg/kg	0.05				<0.05	-	<0.05	-	<0.05	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	-	-	-	<0.05	-	-	<0.05	-	<0.05	
Aldrin	mg/kg mg/kg	0.05 0.05			50 ⁶ / 0.05 ¹²	<0.05	-	<0.05 <0.05	-	<0.05	-	<0.05	-	-	<0.05	-	-	-	<0.05 <0.05	-	-	-	-		<0.05 <0.05	-	-	<0.05 <0.05	-	<0.05 <0.05	
Aldrin + Dieldrin	mg/kg		45 ¹		20 6	<0.1	-	<0.1	-	<0.1	-	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	-	-	<0.1	-	-	<0.1	-	<0.1	-
b-BHC	mg/kg	0.05 0.1	1		6	<0.05 <0.1	-	<0.05 <0.1	-	<0.05 <0.1	-	<0.05 <0.1	-	-	<0.05 <0.1	-	-	-	<0.05	-	-	-	-	-	<0.05	-	-	<0.05 <0.1	-	<0.05 <0.1	
d-BHC	mg/kg mg/kg	0.05	530 ¹		250 b	<0.05	-	<0.05	-	<0.05	-	<0.05	-	-	<0.05	-	-	-	<0.1	-	-	-	-		<0.1 <0.05	-	-	<0.05	-	<0.05	
DDD	mg/kg	0.05				<0.05	-	< 0.05	-	< 0.05	-	< 0.05	-	-	<0.05	-	-	-	<0.05	-	-	-	-	-	< 0.05	-	-	<0.05	-	<0.05	-
DDT+DDE+DDD	mg/kg	0.05	1	640 ⁴	1000 6 / 0.97 12	<0.05 <0.15	-	<0.05 <0.15	-	<0.05 <0.15	-	<0.05 <0.15	-	-	<0.05 <0.15	-	-	-	<0.05 <0.15	-	-	-	-	-	<0.05 <0.15	-	-	<0.05 <0.15	-	<0.05 <0.15	
Dieldrin	mg/kg mg/kg	0.05	3600 ¹		20 6 / 0.2 12	<0.15	-	<0.15	-	<0.15		<0.15	-	-	<0.15	-	-	-	<0.15	-	-	-	-		<0.15	-	-	<0.15	-	<0.15	
Endosulfan I	mg/kg	0.05	2000 ¹		20 / 0.2	<0.05	-	<0.05	-	<0.05	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	-	-	-	<0.05	-	-	<0.05	-	<0.05	-
Endosulfan II	mg/kg	0.05	2000 1			<0.05	-	<0.05	-	<0.05	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	-	-	-	<0.05	-	-	<0.05	-	<0.05	-
Endosulfan sulphate Endrin	mg/kg mg/kg	0.05 0.05	100 ¹			<0.05 <0.05	-	<0.05 <0.05	-	<0.05 <0.05	-	<0.05 <0.05	-	-	<0.05 <0.05	-	-	-	<0.05 <0.05	-	-	-	-	-	<0.05 <0.05	-	-	<0.05 <0.05	-	<0.05 <0.05	
Endrin aldehyde	mg/kg	0.05	200			<0.05	-	<0.05	-	<0.05	-	<0.05	-	-	<0.05	-	-	-	<0.05	-			-	-	<0.05	-	-	<0.05		<0.05	
Endrin ketone	mg/kg	0.05				<0.05 <0.05	-	<0.05 <0.05	-	<0.05 <0.05	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	-	-	-	<0.05	-	-	<0.05	-	<0.05	
g-BHC (Lindane) Heptachlor	mg/kg mg/kg	0.05 0.05	50 ¹		50 ⁶	<0.05 <0.05	-	<0.05 <0.05	-	<0.05 <0.05	-	<0.05 <0.05	-	-	<0.05 <0.05	-	-	-	<0.05 <0.05	-	-	-	-	-	<0.05 <0.05	-	-	<0.05 <0.05	-	<0.05 <0.05	
Heptachlor epoxide	mg/kg	0.05				<0.05	-	<0.05	-	<0.05	-	< 0.05	-	-	<0.05	-	-	-	<0.05	-	-	-	-	-	<0.05	-	-	<0.05	-	<0.05	
Hexachlorobenzene Methopychlor	mg/kg	0.05	80 ¹			<0.05	-	<0.05	-	<0.05	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	-	-	-	<0.05	-	-	<0.05	-	<0.05	
Methoxychlor Toxaphene	mg/kg mg/kg	0.05	2500 ¹			<0.2	-	<0.2 <1	-	<0.2 <1	-	<0.2	-	-	<0.2	-	-	-	<0.2	-	-	-	-	-	<0.2 <1	-	-	<0.2 <1	-	<0.2	
Polycyclic Aromatic Hydrocarbons (PAHs)	lp.	<u> </u>	100																												
Acenaphthene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	-	-	-	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5 <0.5
Acenaphthylene Anthracene	mg/kg mg/kg	0.5				<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	0.6	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	0.9	0.7	-	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	-	-	-	-	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5
Benz(a)anthracene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	1	<0.5	<0.5	<0.5	0.8	0.8	-	<0.5	<0.5	<0.5	-	-	-	-	<0.5	<0.5	-	<0.5	0.5	<0.5	<0.5	<0.5
Benzo(a) pyrene	mg/kg	0.5		0.7 5	5 6	0.7	<0.5	<0.5	<0.5	2.3	<0.5	<0.5	<0.5	2.7	2.4	-	<0.5	<0.5	0.7	-	-	-	-	<0.5	<0.5	-	<0.5	1.4	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ (lower bound) * Benzo(a)pyrene TEQ (medium bound) *	mg/kg mg/kg	0.5 0.5				1.1	<0.5	<0.5 0.6	<0.5	3.2	<0.5 0.6	<0.5	<0.5	4.1	3.6	-	<0.5 0.6	<0.5 0.6	0.8	-	-	-	-	<0.5	<0.5 0.6	-	<0.5 0.6	1.8	<0.5 0.6	<0.5	<0.5 0.6
Benzo(a)pyrene TEQ (upper bound) *	mg/kg	0.5	40 ¹			1.4	1.2	1.2	1.2	3.5	1.2	1.2	1.2	4.1	3.6	-	1.2	1.2	1.4	-	-	-	-	1.2	1.2	-	1.2	2.3	1.2	1.2	1.2
Benzo(b+j)fluoranthene	mg/kg	0.5 0.5				<0.5 0.6	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	1.9	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	1.9	1.6 2.6	-	<0.5 <0.5	<0.5 <0.5	0.6 <0.5	-	-	-	-	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	1.2	<0.5 <0.5	<0.5 <0.5	<0.5
Benzo(g,h,i)perylene Benzo(k)fluoranthene	mg/kg mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	1.9	<0.5	<0.5	<0.5	2.3	1.8	-	<0.5	<0.5	0.6	-	-	-	-	<0.5	<0.5	-	<0.5	1	<0.5	<0.5	<0.5 <0.5
Chrysene	mg/kg	0.5				<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	1.1	<0.5 <0.5	<0.5	<0.5	0.7	1	-	<0.5	<0.5	<0.5	-	-	-	-	<0.5	<0.5	-	<0.5	0.6	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5
Dibenz(a,h)anthracene Fluoranthene	mg/kg mg/kg	0.5 0.5				1.4	<0.5	<0.5	<0.5	<0.5 1.8	<0.5	<0.5 <0.5	<0.5 <0.5	1.2	0.6 1.6	-	<0.5 <0.5	<0.5 <0.5	<0.5	-	-	-	-	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	-	-	-	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene Naphthalene	mg/kg mg/kg	0.5	11.000 ³	370 ⁴		<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	1.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5	1.8 <0.5	-	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	-	-	-	-	<0.5 <0.5	<0.5 <0.5	-	<0.5 <0.5	<0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5
PAHs (Sum of total)	mg/kg	0.5	4000 ¹	370	100 ⁶ / 5 ¹²	4.8	<0.5	<0.5	<0.5	16.7	<0.5	<0.5	<0.5	18.7	17	-	<0.5	<0.5	7	-	-	-	-	<0.5	<0.5	-	<0.5	9.4	<0.5	<0.5	<0.5
Phenanthrene	mg/kg	0.5				0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	1.2	-	-	-	-	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene Polychlorinated Biphenyls (PCBs)	mg/kg	0.5				1.4	<0.5	<0.5	<0.5	2	<0.5	<0.5	<0.5	1.4	1.5	-	<0.5	<0.5	1.9	-	-	-	-	<0.5	<0.5	-	<0.5	0.8	<0.5	<0.5	<0.5
Arochlor 1016	mg/kg	0.1				<0.5	-	<0.5	-	<0.5	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	-	-	-	<0.5	-	-	<0.5	-	<0.5	-
Arochlor 1221 Arochlor 1232	mg/kg	0.1				<0.5	-	<0.5	-	<0.5	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	-	-	-	<0.5	-	-	<0.5	-	<0.5	
Arochlor 1242	mg/kg mg/kg	0.1				<0.5	-	<0.5	-	<0.5	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	-	-		<0.5	-	-	<0.5	-	<0.5	
Arochlor 1248	mg/kg	0.1				<0.5	-	<0.5	-	<0.5	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	-	-	-	<0.5	-	-	<0.5	-	<0.5	
Arochlor 1254 Arochlor 1260	mg/kg mg/kg	0.1				<0.5 <0.5	-	<0.5 <0.5	-	<0.5 <0.5	-	<0.5 <0.5	-	-	<0.5 <0.5	-	-	-	<0.5 <0.5	-	-	-	-		<0.5 <0.5	-	-	<0.5 <0.5	-	<0.5 <0.5	
PCBs (Sum of total)	mg/kg	0.1			1 12	<0.5	-	<0.5	-	<0.5	-	<0.5	-	-	<0.5	-	-	-	<0.5	-	-	-	-	-	<0.5	-	-	<0.5	-	<0.5	-
TRH - Semivolatile Fraction C10-C16	mg/kg	50				<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	- 1	<50	<50	<50		. 1			<50	<50		<50	<50	<50	<50	<50
C16-C34	mg/kg	100	27,000 ³	2500 ⁵	5000 ⁷	<100	<100	<100	<100	770	240	<100	<100	700	520	-	<100	<100	<100	-	-	-	-	<100	140	-	<100	260	<100	<100	<100
C34-C40	mg/kg	100	38,000 ³	6600 ⁵	10,000 7	<100	<100	<100	<100	880	140	<100	<100	510	150	-	<100	<100	<100	-	-	-	-	<100	<100	-	<100	130	<100	<100	<100
F2-NAPHTHALENE C10 - C14	mg/kg	50 20	20,000 3	170 ⁵	1000 7	<50 <20	<50 <20	<50 <20	<50 <20	<50 <20	<50 <20	<50 <20	<50 <20	<50 <20	<50 <20	-	<50 <20	<50 <20	<50 <20	-	-	-	-	<50 <20	<50 <20	-	<50 <20	<50 <20	<50 <20	<50 <20	<50 <20
C10 - C14 C15 - C28	mg/kg mg/kg	50				<50	<50	<20 <50	<50	<20 240	<50	<20 <50	<20 <50	<20 290	<20 69	-	<20 <50	<20 <50	<20 <50		-	-	-	<20 <50	<20 60	-	<20 <50	75	<20 <50	<20 <50	<20 <50
C29-C36	mg/kg	50				<50	<50	<50	<50	890	220	64	<50	640	600	-	<50	76	<50	-	-	-	-	<50	96	-	62	240	<50	<50	<50
+C10 - C36 (Sum of total) TRH / BTEX	mg/kg	50			1,000 12	<50	<50	<50	<50	1130	220	64	<50	930	669	-	<50	/6	<50	-	-	-	-	<50	156	-	62	315	<50	<50	<50
Benzene	mg/kg	0.1	4 ²	95 ⁵	1 6 / 0.5 12	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	-	-	-	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	27,000 ³	185 ⁵	50 ⁶ /5 ¹²	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	-	-	-	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene	mg/kg	0.5	11,000 ³	370 ⁴		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	-	-	-	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene Xvlene (m & n)	mg/kg	0.1	99,000 3	135 5	130 6 / 3 12	<0.1 <0.2	<0.1 <0.2	<0.1 <0.2	<0.1 <0.2	<0.1 <0.2	<0.1	<0.1 <0.2	<0.1 <0.2	<0.1 <0.2	<0.1	-	<0.1 <0.2	<0.1 <0.2	<0.1	-	-	-	-	<0.1	<0.1 <0.2	-	<0.1 <0.2	<0.1 <0.2	<0.1 <0.2	<0.1	<0.1
Xylene (m & p) Xylene (o)	mg/kg mg/kg	0.2				< 0.1	<0.1	<0.1	<0.1	< 0.1	<0.1	< 0.1	<0.1	<0.1	< 0.1	-	<0.1	<0.1	< 0.1		-	-	-	< 0.1	<0.2	-	< 0.1	<0.1	< 0.1	<0.1	<0.1
Xylene Total	mg/kg	0.3	81,000 ³	95 ⁵	25 ⁶ /5 ¹²	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	-	<0.3	<0.3	<0.3	-	-	-	-	<0.3	<0.3	-	<0.3	<0.3	<0.3	<0.3	<0.3
C6 - C9 C6-C10 less BTEX (F1)	mg/kg	20 20	240.7	245.5	800 ⁶ / 100 ¹²	<20 <20	<20 <20	<20 <20	<20 <20	<20 <20	<20 <20	<20 <20	<20 <20	<20 <20	<20 <20	-	<20 <20	<20 <20	<20 <20	-	-	-	-	<20 <20	<20 <20	-	<20 <20	<20 <20	<20 <20	<20 <20	<20 <20
C6-C10 less BTEX (F1) C6-C10	mg/kg mg/kg	20	310 ²	215 ⁵	800 7	<20 <20	<20	<20 <20	<20	<20 <20	<20 <20	<20 <20	<20 <20	<20 <20	<20 <20	-	<20 <20	<20 <20	<20		-	-	-	<20	<20 <20	-	<20 <20	<20 <20	<20 <20	<20	<20 <20
Perfluorinated Compounds (PFCs)																	-														
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.01	900 10	. 10		<0.01 <0.005	-	<0.01 0.01	-	<0.01 <0.005	-	<0.01	-	-	<0.01	-	-	-	<0.01 <0.005	-	-		-	-	<0.01	-	-	<0.01	-	<0.01 <0.005	-
Perfluorooctanesulfonic acid (PFOS) Perfluorooctanoate	mg/kg mg/kg	0.005 0.005	90 ¹⁰	4.71 ¹⁰		<0.005	-	<0.005	-	<0.005	-	<0.005 <0.005	-	-	0.006 <0.005	-	-	-	<0.005		-	-	-	-	0.005 <0.005	-	-	0.013 <0.005	-	<0.005	-
Asbestos		2.303	240	3./3		.5.005																									
Asbestos from ACM in Soil	%w/w		0.05 11			0	-	0	-	0	-	-	0	-	-	0	-	-	0	<0.01	<0.01	<0.01	<0.01	-	-	0	-	0	-	-	0
Asbestos from FA & AF in Soil Mass ACM	%w/w	0.001	0.001 11			<0.001	-	<0.001	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	0.0002	0.0014	<0.001	<0.001	<0.001	-	-	<0.001	-	<0.001	-	-	<0.001
Mass AF	g					0	-	0	-	0	-	-	0	-	-	0	-	-	0.0025					-	-	0	-	0	-		
Mass FA	g					0	-	0	-	0	-	-	0	-	-	0	-	-	0	0.0196	0	0	0		-	0	-	0	-	-	0
Asbestos Fibres	1					ND	-	ND	-	ND	-	-	ND	-	-	ND	-	-	ND	ND	ND	ND	ND	-	-	ND	-	ND	-		ND
% Clay	%	1				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58	-	-	-	-	-		
Moisture Content (dried @ 103°C) pH (Lab)	% pH Units	1 0.1				14	19	18	19	8.8	7.6	15	13	6.2	14		25	4	7.2	 	- 1			21 7.2	14	-	9.9	10	22	13	10
p (==0)	Ibu-ourg	0.1				 							-			-			•					7.4				-		$\overline{}$	

- Notes:

 Notes:

 NEPC (2013) Table 1 A(1) Health investigations levels for soil contaminants Commercial / Industrial D.

 NEPC (2013) Table 1 A(1) Soil NELs for vapour intrusion commercial industrial to 1 v. 1, 1 v. 2, 2 v. 4, x m CLAY.

 NEPC (2013) Table 1 A(3) Soil NELs for vapour intrusion commercial industrial to 1 v. 1, 1 v. 2, 2 v. 4, x m CLAY.

 NEPC (2013) Table 1 A(3) Soil NELs for Table 1 B(6) Commercial and industrial.

 NEPC (2013) Table 1 B(6) ESLs for Table 1 B(6) Commercial and industrial.

 NEPC (2013) Table 1 B(6) ESLs for Table 1 B(6) Est and benzo(a)loystene in soil Commercial and Industrial

 NEPC (2013) Table 1 B(7) Management Limits for Table 1 Areas on benzo(a)loystene in soil Commercial and Industrial

 NEPM 1998 generated ELIs for Exproved in NEPC 2013

 Ests derived from NEPM 2013 equation ABC-ACL

 G HD (2015) Table 1 Interim Science (avets) (Bush), Managing PFC contamination at Airports, Interim Management Strategy and Decision Framework

 A Judy Coll (2013) Table 1 Interim Science (avets) (Bush), Managing PFC contamination at Airports, Interim Management Strategy and Decision Framework

 A Judy Coll (2015) Soil advectors investigation criteria

 A Judy Coll (2015) Soil advectors investigation criteria

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Table A - Soil Analytical Results		Ref	erence		NEPM 2013 Table		501183	501183	501183	501183	501183	502799	502799	502799	502799	502799	502799	502799	502799	502799	502799	502799	502799	502799	502799	502799	502799	502799	502799 502799
			le date NEPM 2013 Tab	DIE NEPM Table 1B(6 ESLs Commercial	1B(7) Managemen		16/05/2016	16/05/2016	16/05/2016	16/05/2016	16/05/2016	30/05/2016	30/05/2016	31/05/2016	31/05/2016	31/05/2016	31/05/2016	31/05/2016	31/05/2016	31/05/2016	31/05/2016	31/05/2016	31/05/2016	31/05/2016	31/05/2016	1/06/2016	1/06/2016	1/06/2016	1/06/2016 1/06/2016
			Matrix ople ID		Limits for TPH fractions in soil	,	Soil A2 TP22 0.0	Soil A2 TP22 0.2	Soil A2 TP22 0.5	Soil A2 TP23 0.0	Soil A2 TP23 0.2	Soil A2 TP24 0.0	Soil A2 TP24 0.5	Soil A2 TP25 0.3	Soil A2 TP26 0.0	Soil A2 TP26 1.0	Soil A2 TP27 0.0	Soil A2 TP28 0.3	Soil A2 TP29 0.0	Soil A2 TP29 0.5	Soil A2 TP30 0.2	Soil A2 TP31 0.0	Soil A2 TP32 0.0	Soil A2 TP33 0.0	Soil A2 TP33 0.5	Soil A2 TP34 0.0	Soil A2 TP34 0.3	Soil A2 TP35 0.0	Soil Soil A2_TP35_0.2 A2_TP35_1.0
ChemName	Units	EQL					1	1 11211221					1 11211 - 12110						1 11-211			1							
Metals Arsenic	mg/kg	2	3000 ¹	160 ⁴		500 ⁶ / 20 ¹²	7.6	1 -	4.7	3.5	3.8	<2	2.3	2.2	6.3	5.2	2.3	4	2.3	<2	2.8	2.2	7.6	<2	4.6	<2	3.3	<2	- <2
Cadmium	mg/kg	0.4	900 1	3 8		100 6 / 3 12	0.8	-	<0.4	<0.4	<0.4	<0.4	0.5	<0.4	0.6	<0.4	0.9	<0.4	<0.4	0.5	<0.4	<0.4	<0.4	0.6	<0.4	<0.4	<0.4	<0.4	- <0.4
Chromium (III+VI)	mg/kg	5	3600 ¹	666.6 ⁹		600,000 ⁶ / 50 ¹²	13	-	16	9.1	11	10	20	9.3	13	18	10	14	15	25	13	13	15	22	29	14	15	16	- 11
Copper	mg/kg	5	240,000 1	315 9		5000 6 / 60 12	9.1	-	7.1	15	6	<5	5.9	<5	17	11	10	6.3	17	11	5.9	10	10	46	11	9.6	10	20	- 11
Mercury	mg/kg mg/kg	0.05	1500 ¹	1815 9		75 6 / 1 12	35 <0.05	-	8.8 <0.05	0.1	16 <0.05	8.8 <0.1	5.1 <0.1	12 <0.1	0.1	13 <0.1	110 <0.1	16 <0.1	91 <0.1	6.7 <0.1	9 <0.1	12 <0.1	2200 <0.1	20 <0.1	14 <0.1	11 <0.1	24 <0.1	36 <0.1	- 7.9 - <0.1
Nickel	mg/kg	5	6000 ¹	465 ⁹		3000 ⁶ / 60 ¹²	5.6	-	<5	6.7	<5	<5	<5	<5	7.8	<5	5.7	<5	<5	7.2	<5	7.9	5.5	110	5.4	6.1	<5	10	- <5
Zinc	mg/kg	5	400,000 ¹	1114 9		35,000 ⁶ / 200 ¹²	23	-	<5	38	12	<5	<5	<5	39	6.4	25	11	57	9.5	8.9	18	25	44	7.1	15	20	35	- 5.3
Organochlorine Pesticides (OCPs)																													
4,4-DDE a-BHC	mg/kg mg/kg	0.05					<0.05 <0.05	-	-	<0.05	-	<0.05 <0.05	-	-	<0.05	-	-	-	<0.05 <0.05	-	-	-	-	<0.05 <0.05	-	<0.05	-	<0.05 <0.05	
Aldrin	mg/kg	0.05				50 ⁶ / 0.05 ¹²	<0.05	-	-	< 0.05	-	< 0.05	-	-	< 0.05	-	-	-	<0.05	-	-	-	-	< 0.05	-	<0.05	-	< 0.05	
Aldrin + Dieldrin	mg/kg		45 ¹			20 6	<0.1	-	-	<0.1	-	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	-	<0.1	-	<0.1	-	<0.1	
b-BHC chlordane	mg/kg mg/kg	0.05	530 ¹			250 ⁶	<0.05 <0.1	-	-	<0.05 <0.1		<0.05 <0.1	-		<0.05 <0.1	-	-	-	<0.05 <0.1		-	-	-	<0.05 <0.1	-	<0.05 <0.1	-	<0.05 <0.1	
d-BHC	mg/kg	0.05					<0.05	-	-	<0.05	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	-	-	< 0.05	-	<0.05	-	<0.05	
DDD	mg/kg	0.05		4		6 / 12	<0.05 <0.05	-	-	<0.05 <0.05	-	<0.05 <0.05	-	-	<0.05 <0.05	-	-	-	<0.05 <0.05	-	-	-	-	<0.05 <0.05	-	<0.05 <0.05	-	<0.05 <0.05	
DDT+DDE+DDD	mg/kg mg/kg	0.05	3600 ¹	640 ⁴		1000 6 / 0.97 12	<0.05	-	-	<0.05		<0.05	-		<0.05	-	-	-	<0.05	-	-	-	-	<0.05	-	<0.15	-	<0.05	
Dieldrin	mg/kg	0.05	3000			20 6 / 0.2 12	<0.05	-	-	<0.05	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	-	-	<0.05	-	<0.05	-	<0.05	
Endosulfan I	mg/kg	0.05	2000 1				<0.05	-	-	<0.05	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	-	-	<0.05	-	<0.05	-	<0.05	
Endosulfan II Endosulfan sulphate	mg/kg	0.05	2000 1				<0.05 <0.05	-	-	<0.05 <0.05	-	<0.05 <0.05	-	•	<0.05 <0.05	-	-	-	<0.05 <0.05	-	-	-	-	<0.05 <0.05	-	<0.05 <0.05	-	<0.05 <0.05	
Endrin	mg/kg mg/kg	0.05	100 ¹				<0.05	-	-	<0.05	-	<0.05	-		<0.05	-	-	-	<0.05		-	-	-	<0.05	-	<0.05	-	<0.05	
Endrin aldehyde	mg/kg	0.05					<0.05	-	-	<0.05	-	< 0.05	-	-	<0.05	-	-	-	<0.05	-	-	-	-	< 0.05	-	<0.05	-	<0.05	
Endrin ketone g-BHC (Lindane)	mg/kg mg/kg	0.05					<0.05 <0.05	-	-	<0.05 <0.05	-	<0.05 <0.05	-	-	<0.05 <0.05	-	-	-	<0.05 <0.05	-	-	-	-	<0.05 <0.05	-	<0.05 <0.05	-	<0.05 <0.05	
Heptachlor	mg/kg mg/kg	0.05	50 ¹			50 ⁶	<0.05	-	-	<0.05		<0.05	-	-	<0.05	-	-	-	<0.05	-	-	1 -	-	<0.05	-	<0.05	-	<0.05	
Heptachlor epoxide	mg/kg	0.05					<0.05	-	-	<0.05	-	<0.05	-	-	<0.05	-	-	-	<0.05	-	-	-	-	<0.05	-	<0.05	-	<0.05	
Hexachlorobenzene Methoxychlor	mg/kg	0.05	80 ¹				<0.05 <0.2	-	-	<0.05 <0.2	•	<0.05 <0.05	-	-	<0.05	-	-	-	<0.05 <0.05	-	-	-	-	<0.05 <0.05	-	<0.05 <0.05	-	<0.05 <0.05	
Methoxychlor Toxaphene	mg/kg mg/kg	0.05	2500 ¹				<0.2	-	-	<0.2	-	<0.05	-	-	<1	-	-	-	<0.05	-	-	+ -	-	<0.05	-	<1	-	<1	
Polycyclic Aromatic Hydrocarbons (PAHs)			100						l .																				
Acenaphthene	mg/kg	0.5					<0.5 <0.5	-	<0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5	<0.5	<0.5 <0.5	<0.5	<0.5	<0.5 <0.5	<0.5	<0.5	<0.5	<0.5 <0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	- <0.5
Acenaphthylene Anthracene	mg/kg mg/kg	0.5					<0.5	-	<0.5 <0.5	<0.5	<0.5	<0.5	<0.5 <0.5	<0.5 <0.5	<0.5	<0.5 <0.5	<0.5 <0.5	<0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	<0.5 <0.5	- <0.5 - <0.5
Benz(a)anthracene	mg/kg	0.5					<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	- <0.5
Benzo(a) pyrene	mg/kg	0.5		0.7 5		5 6	<0.5	-	<0.5	<0.5	<0.5 <0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5 <0.5	<0.5	<0.5	<0.5	- <0.5
Benzo(a)pyrene TEQ (lower bound) * Benzo(a)pyrene TEQ (medium bound) *	mg/kg mg/kg	0.5					<0.5 0.6	-	<0.5 0.6	<0.5 0.6	0.6	<0.5 0.6	0.6	<0.5 0.6	<0.5 0.6	<0.5 0.6	- <0.5 - 0.6												
Benzo(a)pyrene TEQ (upper bound) *	mg/kg	0.5	40 ¹				1.2	-	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	- 1.2
Benzo(b+j)fluoranthene	mg/kg	0.5					<0.5 <0.5	-	<0.5 <0.5	<0.5	- <0.5 - <0.5																		
Benzo(g,h,i)perylene Benzo(k)fluoranthene	mg/kg mg/kg	0.5					<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	- <0.5
Chrysene	mg/kg	0.5					<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	- <0.5
Dibenz(a,h)anthracene Fluoranthene	mg/kg mg/kg	0.5					<0.5 <0.5	-	<0.5 <0.5	- <0.5 - <0.5																			
Fluorene	mg/kg	0.5					<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	- <0.5
Indeno(1,2,3-c,d)pyrene Naphthalene	mg/kg mg/kg	0.5	44 000 3	370 ⁴			<0.5 <0.5	-	<0.5 <0.5	- <0.5 - <0.5																			
PAHs (Sum of total)	mg/kg	0.5	11,000 ³	370		100 ⁶ /5 ¹²	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	- <0.5
Phenanthrene	mg/kg	0.5	4000			/5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	- <0.5
Pyrene Palvetiested Bishands (BCBs)	mg/kg	0.5					<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	- <0.5
Polychlorinated Biphenyls (PCBs) Arochlor 1016	mg/kg	0.1					<0.5	-	-	<0.5		<0.1	-		<0.1	-	-	-	<0.1	-	-	-	-	<0.1	-	<0.1	-	<0.1	
Arochlor 1221	mg/kg	0.1					-	-	-	-	-	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	-	<0.1	-	<0.1	-	<0.1	
Arochlor 1232 Arochlor 1242	mg/kg mg/kg	0.1					<0.5 <0.5	-	-	<0.5 <0.5		<0.1 <0.1	-		<0.1 <0.1	-	-	-	<0.1 <0.1		-	-	-	<0.1 <0.1	-	<0.1 <0.1	-	<0.1 <0.1	
Arochlor 1248	mg/kg	0.1					<0.5	-	-	<0.5	-	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	-	<0.1	-	<0.1	-	<0.1	
Arochlor 1254 Arochlor 1260	mg/kg	0.1					<0.5 <0.5	-	-	<0.5 <0.5	-	<0.1	-	-	<0.1	-	-	-	<0.1	-	-	-	-	<0.1	-	<0.1	-	<0.1	
PCBs (Sum of total)	mg/kg mg/kg	0.1				1 12	<0.5	-	-	<0.5		<0.1 <0.1			<0.1	-	-	-	<0.1 <0.1			1 -	-	<0.1 <0.1	-	<0.1 <0.1	-	<0.1 <0.1	
TRH - Semivolatile Fraction								_																		-			
C10-C16 C16-C34	mg/kg mg/kg	100	27,000 ³	2500 ⁵	5000 7		<50 <100	-	<50 <100	- <50 - <100																			
C34-C40	mg/kg	100	38,000 ³	6600 ⁵	10,000 7	1	<100	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	- <100
F2-NAPHTHALENE	mg/kg	50	20,000 ³	170 ⁵	1000 7		<50	-	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	- <50
C10 - C14 C15 - C28	mg/kg mg/kg	20 50					<20 <50	-	<20 <50	<20 50	- <20 - <50																		
C29-C36	mg/kg mg/kg	50					<50	-	<50	79	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	- <50
+C10 - C36 (Sum of total)	mg/kg	50				1,000 12	<50	-	<50	79	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	50	- <50
TRH / BTEX Benzene	mg/ba	0.1	. 2	or 5		1 6 / 2 5 12	<0.1	_	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	- <0.1
Ethylbenzene Ethylbenzene	mg/kg mg/kg	0.1	27,000 ³	95 °		1 ° / 0.5 12 50 6 / 5 12	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	- <0.1
Naphthalene	mg/kg	0.5	11,000 ³	370 ⁴		30 /3	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	- <0.5
Toluene	mg/kg	0.1	99,000 ³	135 ⁵		130 6 / 3 12	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	- <0.1
Xylene (m & p)	mg/kg	0.2				1	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	- <0.2
Xylene (o) Xylene Total	mg/kg mg/kg	0.1	81,000 ³	95 ⁵		25 ⁶ /5 ¹²	<0.1 <0.3	-	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1	<0.1 <0.3	<0.1 <0.3	<0.1	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1 <0.3	<0.1	<0.1 <0.3	- <0.1 - <0.3
C6 - C9	mg/kg	20	81,000	33		800 ⁶ / 100 ¹²	<20	-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	- <20
C6-C10 less BTEX (F1)	mg/kg	20	310 ²	215 ⁵	800 ⁷	,	<20	-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	- <20
C6-C10 Reaffluorinated Compounds (RECs)	mg/kg	20					<20	-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	- <20
Perfluorinated Compounds (PFCs) 6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/kg	0.01	900 10				<0.01	-	-	<0.01	-	<0.01	- 1	-	<0.01	-	-	-	<0.01	-	-	-	-	<0.01	-	<0.01	-	<0.01	
Perfluorooctanesulfonic acid (PFOS)	mg/kg	0.005	90 ¹⁰	4.71 ¹⁰			0.006	-	-	<0.005	-	0.035	-	-	<0.005	-	-	-	<0.005	-	-	-	-	<0.005	-	0.02	-	0.028	
Perfluorooctanoate	mg/kg	0.005	240 ¹⁰	3.73 ¹⁰			<0.005	-	-	<0.005	-	<0.005	-	-	<0.005	-	-	-	<0.005	-	-	-	-	<0.005	-	<0.005	-	<0.005	
Asbestos Asbestos from ACM in Soil	9/14-/							0							0				0					0		0			0 -
Asbestos from ACM in Soil Asbestos from FA & AF in Soil	%w/w %w/w	0.001	0.05 ¹¹			1	-	<0.001	-		<0.001	<0.001	-	-	<0.001	-	-	-	<0.001	-	-	1 -	-	<0.001	-	<0.001	-		<0.001 -
Mass ACM	g g	0.001	0.001				-	0	-	-	0.001	0.001	-	-	0	-	-	-	0.001	-	-	-	-	0	-	0	-	-	0 -
Mass AF	g						-	0	-	-	0	0	-	-	0	-	-	-	0	-	-	-	-	0	-	0	-	-	0 -
Mass FA Asbestos Fibres	g						-	0 ND	-	-	0 ND	0 ND	-	-	0 ND	-	-	-	0 ND	-	-	-	-	0 ND	-	0 ND	-	-	0 - ND -
						<u> </u>					.40								140										
% Clay	%	1					-		-	-	-	-		-	-	-		-		-		-		-	-	-	-	-	- :
Moisture Content (dried @ 103°C) pH (Lab)	% pH_Units	0.1					20	-	- 22	- 15	17	5.9	- 15	7.8	8.9	16	6.2	7.4	7.5	- 19	6.9	9.8	- 8	10	- 21	9.3	9.4	9.7	- 18
p	1				_	-																						$\overline{}$	



Table B - Groundwater Analytical Results

Table B - Groundwater Analytical Results								
	Reference					505196	505196	505196
	Matrix		GIL	HSLs	Airport	Water	Water	Water
	Date Sample	:d			Regulations	20/06/2016	20/06/2016	21/06/2016
	Borehole ID					A2-GW1	A2-GW2	A2-GW3
ChemName	Units	EQL						
Dissolved Metals	- 6		. 1		. 7	1 4		1 2
Arsenic (Filtered)	μg/L	1	24 1		50 7	1	<1	2
Cadmium (Filtered)	μg/L	0.1	0.7 12		2.0 7	<0.1	0.3	0.2
Chromium (III+VI) (Filtered)	μg/L	1	4.4 ¹³		50 ⁷	3	<1	<1
Copper (Filtered)	μg/L	1	1.3 ¹³		5.0 7	<1	<1	14
Lead (Filtered)	μg/L	1	4.4 ¹³		5.0 ⁷	<1	<1	18
Mercury (Filtered)	μg/L	0.1	0.1 12		0.1 7	0.1	<0.1	<0.1
Nickel (Filtered)	μg/L	1	7 ¹²		15 7	3	34	210
Zinc (Filtered)	μg/L	5	15 ¹³		50 7	<5	44	170
Perfluorinated Compounds (PFCs)	P6/ -		15		30	1		
6:2 Fluorotelomer Sulfonate (6:2 FtS)	μg/L	0.05	5 ⁹		1	<0.05	<0.05	<0.05
Perfluorooctanoate (PFOA)		0.01	0.4 9			<0.01	<0.01	<0.01
PFOS	μg/L		0.4		+	0.04	0.01	<0.01
	μg/L	0.01	0.2			0.04	0.01	<0.01
Polycyclic Aromatic Hydrocarbons (PAHs)		0.04				.0.01	-0.04	-0.04
Acenaphthylone	μg/L	0.01			+	<0.01	<0.01	<0.01
Acenaphthylene Anthracene	μg/L	0.01			+	<0.01 <0.01	<0.01 <0.01	<0.01 <0.01
Benz(a)anthracene	μg/L μg/L	0.01				<0.01	<0.01	<0.01
Benzo(a) pyrene		0.01	0.01 5			<0.01	<0.01	<0.01
Benzo[b+j]fluoranthene	μg/L mg/L	0.0001	0.01			<0.0001	<0.0001	<0.001
Benzo(g,h,i)perylene		0.0001				<0.0001	<0.0001	<0.0001
Benzo(k)fluoranthene	μg/L μg/L	0.01			+	<0.01	<0.01	<0.01
Chrysene	μg/L	0.01				<0.01	<0.01	<0.01
Dibenz(a,h)anthracene	μg/L	0.01				<0.01	<0.01	<0.01
Fluoranthene	μg/L	0.01				<0.01	<0.01	<0.01
Fluorene	μg/L	0.01				<0.01	<0.01	<0.01
Indeno(1,2,3-c,d)pyrene	μg/L	0.01				<0.01	<0.01	<0.01
Naphthalene	μg/L	0.01	50 ¹²			<0.01	<0.01	<0.01
PAHs (Sum of total)	μg/L	0.01				<0.05	<0.05	<0.05
Phenanthrene	μg/L	0.01				<0.01	<0.01	<0.01
Pyrene	μg/L	0.01				<0.01	<0.01	<0.01
TRH - Semivolatile Fraction								
C10-C16	mg/L	0.05				<0.05	<0.05	<0.05
C16-C34	mg/L	0.1				<0.1	<0.1	<0.1
C34-C40	mg/L	0.1				<0.1	<0.1	<0.1
F2-NAPHTHALENE	mg/L	0.05		NL ⁶		<0.05	<0.05	<0.05
C10 - C14	μg/L	50				<50	<50	<50
C15 - C28	μg/L	100			1	<100	<100	<100
C29-C36	μg/L	100			1	<100	<100	<100
+C10 - C36 (Sum of total)	μg/L	100	600 ⁴			<100	<100	<100
TRH Volatiles/BTEX								
Benzene	μg/L	1	500 ¹²	30,000 ⁶	300 7	<1	<1	<1
Ethylbenzene	μg/L	1	140 ³	NL ⁶		<1	<1	<1
Naphthalene	μg/L	10	50 ¹²	NL ⁶		<10	<10	<10
Toluene	μg/L	1	300 ³	NL ⁶		<1	<1	<1
Xylene (m & p)	μg/L	2				<2	<2	<2
Xylene (o)	μg/L	1	350 ¹			<1	<1	<1
Xylene Total	μg/L	3	380 ³	NL ⁶	1	<3	<3	<3
C6 - C9	μg/L	20	150 ⁴			<20	<20	<20
C6-C10 less BTEX (F1)		0.02	130	NL ⁶	+	<0.02	<0.02	<0.02
C6-C10	mg/L	0.02		NL	-	<0.02	<0.02	<0.02
CO-C10	mg/L	0.02				\U.UZ	\0.02	\U.UZ

Notes:

- ANZECC (2000) 95% of species protected fresh water

 ANZECC (2000) 99% of species protected –fresh water

 NSW EPA (1994) Protection of aquatic ecosystems fresh water

 Dutch (2000) groundwater intervention levels

 NHMRC 2011 Australian Drinking Water Guidelines

 NEDC (2013) Table 1 A(4) Groundwater HSIs for vacour intrusion -
- ⁶ NEPC (2013) Table 1 A(4) Groundwater HSLs for vapour intrusion –Commercial / Industrial, 2 to <4m, CLAY.
 ⁷ Airports (Environment Protection) Regulations 1997 Marine water

- Provisional USEPA Region 4 2009 Guideline (PFOS/PFOA) for drinking water

 Managing PFC Contamination at Airports, Interim Contamination Management Strategy and Decision Framework (GHD, June 2015)
- ¹⁰ Aquatic predicted no-effect contentration (PNEC) for Perfluorooctane sulfonic acid, Qi et al 2011 ¹¹ Ecological toxicity criterion for PFOA, Giesy et al 2010
- ¹² ANZECC (2000) 99% of species protected –marine ¹³ ANZECC (2000) 95% of species protected marine

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Table C - Soil QA/QC

		Lab Reference	501564	501564		501564	ES1611169		501564	501564		501564	FS1611169		502799	502799		502799	FM1606431		502799 502	700	502799	FM1606431	
		Sample ID			RPD	A2 TP01 0.0		RPD	A2 TP19 0.2		RPD	A2 TP19 0.2	A2-QC04	RPD	A2 TP25 0.3		RPD	A2 TP25 0.3	A2-QC06	RPD	A2 TP31 0.0 A2-0		A2 TP31 0.0	A2-QC08	RPD
		Date Sample ID	19/05/2016	19/05/2016	I KI D	19/05/2016	19/05/2016	KID	20/05/2016	20/05/2016	KI D		20/05/2016	KI D	31/05/2016	31/05/2016	KID	31/05/2016	31/05/2016	KI D	31/05/2016 31/05		31/05/2016	31/05/2016	- 1110
	Units	FQL.	13/03/2010	13/03/2010		13/03/2010	13/03/2010		20/03/2010	20/03/2010		20/03/2010	20/03/2010		31/03/2010	31/03/2010		31/03/2010	31/03/2010		31/00/2010 31/00	2010	31/03/2010	31/03/2010	+
Harris Matala	Units	EQL				1									l .								1		
Heavy Metals Arsenic	mg/kg	2 (Primary): 5 (Interlab)	5.8	5.1	13	5.8	<5.0	15	3.1	3.7	18	3.1	<5.0	0	2.2	4.1	60	2.2	5.0	78	2.2	0 10	2.2	<5.0	1 0
Cadmium	mg/kg	0.4 (Primary): 1 (Interlab)	<0.4	<0.4	0	<0.4	<1.0	0	<0.4	<0.4	n	<0.4	<1.0	0	<0.4	<0.4	00	<0.4	<1.0	7 O	<0.4		<0.4	<1.0	0
Chromium (III+VI)	mg/kg	5 (Primary): 2 (Interlab)	50.0	9.9	134	50.0	9.0	139	5.5	6.6	18	5.5	6.0	q	9.3	10.0	7	9.3	11.0	17	13.0 6		13.0	10.0	26
	mg/kg	5 (Frimary), 2 (interiab)	<5.0	<5.0	0	<5.0	<5.0	0	<5.0	<5.0	0	<5.0	<5.0	0	9.3 <5.0	<5.0	0	9.3 <5.0	<5.0	0	10.0 12		10.0	12.0	18
Copper Lead	mg/kg	5	42.0	35.0	18	42.0	183.0	125	10.0	14.0	33	10.0	10.0	0	12.0	14.0	15	12.0	13.0	8	12.0 5		12.0	15.0	22
Mercury	mg/kg	0.1	<0.05	<0.05	0	<0.05	<0.1	0	<0.05	<0.05	0	<0.05	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1 <0		<0.1	<0.1	0
Nickel	mg/kg	5 (Primary); 2 (Interlab)	18.0	<5.0	113	18.0	<2.0	160	<5.0	<5.0	0	<5.0	<2.0	0	<5.0	<5.0	0	<5.0	<2.0	0		2 15	7.9	8.0	1
Zinc	mg/kg	5 (Filliary), 2 (Interial)	64.0	7.4	159	64.0	<5.0	171	<5.0	<5.0	0	<5.0	<5.0	0	<5.0 <5.0	5.5	10	<5.0	<5.0	0		.0 25	18.0	18.0	0
		5	04.0	7.4	159	04.0	<0.0	171	<5.0	<3.0	U	<3.0	<0.0	U	₹3.0	5.5	10	₹3.0	<5.0	U	10.0	.0 23	10.0	10.0	
Polycyclic Aromatic Hydrocarbons (PAHs			<0.5	<0.5	_		<0.5	_	<0.5	<0.5			<0.5	0	< 0.5	<0.5	_	<0.5	<0.5	0		5 0	<0.5	<0.5	
Acenaphthene	mg/kg	0.5			0	<0.5		0			0	<0.5		0		<0.5 <0.5	0			,					0
Acenaphthylene Anthracene	mg/kg	0.5	<0.5 <0.5	<0.5 <0.5	0	<0.5 <0.5	<0.5 <0.5	0	<0.5 <0.5	<0.5 <0.5	0	<0.5 <0.5	<0.5 <0.5	0	<0.5 <0.5	<0.5	0	<0.5 <0.5	<0.5 <0.5	0		.5 0	<0.5 <0.5	<0.5 <0.5	0
	mg/kg	0.5	<0.5 <0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5 <0.5	0		<0.5 <0.5	0	<0.5 <0.5	<0.5 <0.5	0	<0.5 <0.5	<0.5 <0.5	0	<0.5 <0.5		<0.5	< 0.5	0
Benz(a)anthracene Benzo(a) pyrene	mg/kg mg/ka	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5 <0.5	<0.5	0	<0.5 <0.5	<0.5	0	<0.5	<0.5	0	<0.5 <0.5		<0.5	<0.5	0
	mg/kg mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5 <0.5	<0.5	0	<0.5 <0.5	<0.5	0	<0.5	<0.5	0		.5 0	<0.5	<0.5	-
Benzo(a)pyrene TEQ (lower bound) * Benzo(a)pyrene TEQ (medium bound) *	mg/kg	0.5	<0.5 0.6	<0.5 0.6	0	<0.5 0.6	0.6	0	<0.5 0.6	<0.5 0.6	0	<0.5 0.6	<0.5 0.6	0	<0.5 0.6	<0.5 0.6	0	<0.5 0.6	<0.5 0.6	0	0.6		<0.5 0.6	<0.5 0.6	0
Benzo(a)pyrene TEQ (inediam bodilo) *	mg/kg	0.5	1.2	1.2	0	1.2	1.2	0	1.2	1.2	0	1.2	1.2	0	1.2	1.2	0	1.2	1.2	0		2 0	1.2	1.2	0
Benzo(b+i)fluoranthene	mg/kg	0.5	<0.5	< 0.5	0	<0.5	< 0.5	0	< 0.5	<0.5	0	< 0.5	<0.5	0	< 0.5	<0.5	0	< 0.5	<0.5	0		.5 0	<0.5	< 0.5	0
Benzo(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0		.5 0	<0.5	<0.5	0
Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0		.5 0	<0.5	<0.5	0
Chrysene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0		.5 0	<0.5	<0.5	0
Dibenz(a.h)anthracene	mg/kg	0.5	< 0.5	<0.5	0	< 0.5	<0.5	0	< 0.5	< 0.5	0	<0.5	<0.5	0	< 0.5	< 0.5	0	< 0.5	<0.5	0	<0.5		<0.5	<0.5	0
Fluoranthene	mg/kg	0.5	< 0.5	<0.5	0	< 0.5	<0.5	0	< 0.5	<0.5	0	< 0.5	<0.5	0	< 0.5	< 0.5	0	< 0.5	<0.5	0	<0.5 <0		<0.5	<0.5	0
Fluorene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0		.5 0	<0.5	<0.5	ő
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5 <0		<0.5	<0.5	0
Naphthalene	mg/kg	0.5 (Primary): 1 (Interlab)	<0.5	<0.5	0	< 0.5	<0.5	0	< 0.5	< 0.5	0	< 0.5	<0.5	0	< 0.5	<0.5	0	< 0.5	<0.5	0		5 0	<0.5	<0.5	0
PAHs (Sum of total)	mg/kg	0.5	< 0.5	<0.5	0	<0.5	-	-	<0.5	<0.5	Ö	<0.5	-		<0.5	<0.5	0	<0.5	-			.5 0	<0.5	-	T:
Phenanthrene	mg/kg	0.5	< 0.5	< 0.5	0	< 0.5	< 0.5	0	< 0.5	< 0.5	0	< 0.5	< 0.5	0	< 0.5	< 0.5	0	< 0.5	< 0.5	0	<0.5 <0	.5 0	< 0.5	< 0.5	0
Pyrene	mg/kg	0.5	< 0.5	< 0.5	0	< 0.5	< 0.5	0	< 0.5	< 0.5	0	< 0.5	< 0.5	0	< 0.5	< 0.5	0	< 0.5	< 0.5	0		.5 0	< 0.5	< 0.5	0
TRH/BTEX																							•		•
Benzene	ma/ka	0.1 (Primary): 0.2 (Interlab)	<0.1	<0.1	0	<0.1	< 0.2	0	<0.1	<0.1	0	<0.1	< 0.2	0	<0.1	<0.1	0	<0.1	< 0.2	0	<0.1 <0	.1 0	<0.1	<0.2	0
Ethylbenzene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	< 0.5	0	<0.1	<0.1	0	<0.1	< 0.5	0	<0.1	<0.1	0	<0.1	< 0.5	0	<0.1 <0	.1 0	<0.1	< 0.5	0
Naphthalene	mg/kg	0.5 (Primary): 1 (Interlab)	< 0.5	< 0.5	0	< 0.5	< 0.5	0	< 0.5	< 0.5	0	< 0.5	< 0.5	0	< 0.5	< 0.5	0	< 0.5	< 0.5	0	<0.5 <0	.5 0	< 0.5	< 0.5	0
Toluene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	< 0.5	0	<0.1	<0.1	0	<0.1	< 0.5	0	<0.1	<0.1	0	<0.1	< 0.5	0	<0.1 <0	.1 0	<0.1	< 0.5	0
Xvlene (m & p)	mg/kg	0.2 (Primary): 0.5 (Interlab)	< 0.2	< 0.2	0	< 0.2	< 0.5	0	< 0.2	<0.2	0	< 0.2	< 0.5	0	< 0.2	< 0.2	0	< 0.2	< 0.5	0	<0.2 <0	.2 0	< 0.2	< 0.5	0
Xylene (o)	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	< 0.5	0	<0.1	<0.1	0	<0.1	< 0.5	0	<0.1	<0.1	0	<0.1	< 0.5	0	<0.1 <0	.1 0	<0.1	< 0.5	0
Xylene Total	mg/kg	0.3 (Primary): 0.5 (Interlab)	<0.3	<0.3	0	<0.3	<0.5	0	<0.3	<0.3	Ö	<0.3	<0.5	0	<0.3	<0.3	0	<0.3	<0.5	0	<0.3 <0	.3 0	<0.3	<0.5	Ö
C6 - C9	mg/kg	20 (Primary): 10 (Interlab)	<20.0	<20.0	0	<20.0	<10.0	0	<20.0	<20.0	0	<20.0	<10.0	0	<20.0	<20.0	0	<20.0	<10.0	0	<20.0 <2	0.0	<20.0	<10.0	0
C6-C10 less BTEX (F1)	mg/kg	20 (Primary): 10 (Interlab)	<20.0	<20.0	0	<20.0	<10.0	0	<20.0	<20.0	0	<20.0	<10.0	0	<20.0	<20.0	0	<20.0	<10.0	0	<20.0 <2	0.0	<20.0	<10.0	0
C6-C10	mg/kg	20 (Primary): 10 (Interlab)	<20.0	<20.0	0	<20.0	<10.0	0	<20.0	<20.0	0	<20.0	<10.0	0	<20.0	<20.0	0	<20.0	<10.0	0	<20.0 <2	0.0	<20.0	<10.0	0
TRH - Semivolatile Fraction																									
C10-C16	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0 <5	0.0	<50.0	<50.0	0
C16-C34	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	110.0	10	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0	<100.0 <10	0.0	<100.0	<100.0	0
C34-C40	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0	<100.0	<100.0	0	<100.0 <10	0.0	<100.0	<100.0	0
F2-NAPHTHALENE	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0	<50.0	0	<50.0 <5	0.0	<50.0	<50.0	0
C10 - C14	mg/kg	20 (Primary): 50 (Interlab)	<20.0	<20.0	0	<20.0	<50.0	0	<20.0	<20.0	0	<20.0	<50.0	0	<20.0	<20.0	0	<20.0	<50.0	0	<20.0 <2	0.0	<20.0	<50.0	0
C15 - C28	mg/kg	50 (Primary): 100 (Interlab)	<50.0	<50.0	0	<50.0	<100.0	0	<50.0	<50.0	0	<50.0	<100.0	0	<50.0	<50.0	0	<50.0	<100.0	0	<50.0 <5	0.0	<50.0	<100.0	0
C29-C36	mg/kg	50 (Primary): 100 (Interlab)	<50.0	<50.0	0	<50.0	<100.0	0	62.0	84.0	30	62.0	<100.0	0	<50.0	<50.0	0	<50.0	<100.0	0	<50.0 <5	0.0	<50.0	<100.0	0
+C10 - C36 (Sum of total)	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0	62.0	84.0	30	62.0	<50.0	21	<50.0	<50.0	0	<50.0	<50.0	0	<50.0 <5	0.0	<50.0	<50.0	0
			•		•																				

Notes:
The acceptable range depends upon the levels detected:
0 - 100% RPD (When the average concentration is < 5 times the LOR)
0 - 75% RPD (When the average concentration is 5 to 10 times the LOR)
0 - 50% RPD (When the average concentration is > 10 times the LOR)



27/06/2016



Table D - Groundwater QA/QC

	T-	1	1		
	Lab	Reference	505196	505196	
		Sample ID		A2-QC09	RPD
			21/06/2016	21/06/2016	
	Units	EQL			
Dissolved Metals					
Arsenic (Filtered)	mg/l	0.001	0.002	0.002	0
Cadmium (Filtered)	mg/l	0.0001	0.0002	0.0002	0
Chromium (III+VI) (Filtered)	mg/l	0.001	<0.001	<0.001	0
Copper (Filtered)	mg/l	0.001	0.014	0.013	7
Lead (Filtered)	mg/l	0.001	0.018	0.017	6
Mercury (Filtered)	mg/l	0.0001	<0.0001	<0.0001	0
Nickel (Filtered)	mg/l	0.001	0.21	0.2	5
Zinc (Filtered)	mg/l	0.005	0.17	0.17	0
Perfluorinated Compounds (PFCs)					
6:2 Fluorotelomer Sulfonate (6:2 FtS)	mg/l	0.00005	<0.00005	< 0.00005	0
Perfluorooctanoate	mg/l	0.00001	<0.00001	<0.00001	0
PFOS	mg/l	0.00001	<0.00001	<0.00001	0
Polycyclic Aromatic Hydrocarbons (PAH	ls)				
Acenaphthene	mg/l	0.00001	<0.00001	< 0.00001	0
Acenaphthylene	mg/l	0.00001	<0.00001	<0.00001	0
Anthracene	mg/l	0.00001	<0.00001	< 0.00001	0
Benz(a)anthracene	mg/l	0.00001	<0.00001	< 0.00001	0
Benzo(a) pyrene	mg/l	0.00001	<0.00001	< 0.00001	0
Benzo[b+j]fluoranthene	mg/l	0.00001	<0.00001	<0.00001	0
Benzo(g,h,i)perylene	mg/l	0.00001	<0.00001	< 0.00001	0
Benzo(k)fluoranthene	mg/l	0.00001	<0.00001	<0.00001	0
Chrysene	mg/l	0.00001	<0.00001	< 0.00001	0
Dibenz(a,h)anthracene	mg/l	0.00001	<0.00001	< 0.00001	0
Fluoranthene	mg/l	0.00001	<0.00001	< 0.00001	0
Fluorene	mg/l	0.00001	<0.00001	< 0.00001	0
Indeno(1,2,3-c,d)pyrene	mg/l	0.00001	<0.00001	<0.00001	0
Naphthalene	mg/l	0.00001	<0.00001	<0.00001	0
PAHs (Sum of total)	mg/l	0.00005	<0.00005	<0.00005	0
Phenanthrene	mg/l	0.00001	<0.00001	<0.00001	0
Pyrene	mg/l	0.00001	<0.00001	<0.00001	0
TRH / BTEX					
Benzene	μg/l	1	<1.0	<1.0	0
Ethylbenzene	μg/l	1	<1.0	<1.0	0
Naphthalene	μg/l	10	<10.0	<10.0	0
Toluene	μg/l	1	<1.0	<1.0	0
Xylene (m & p)	μg/l	2	<2.0	<2.0	0
Xylene (o)	μg/l	1	<1.0	<1.0	0
Xylene Total	μg/l	3	<3.0	<3.0	0
C6 - C9	μg/l	20	<20.0	<20.0	0
C6-C10 less BTEX (F1)	mg/l	0.02	< 0.02	< 0.02	0
C6-C10	mg/l	0.02	<0.02	<0.02	0
TRH - Semivolatile Fraction					
C10-C16	mg/l	0.05	< 0.05	< 0.05	0
C16-C34	mg/l	0.1	<0.1	<0.1	0
C34-C40	mg/l	0.1	<0.1	<0.1	0
F2-NAPHTHALENE	mg/l	0.05	<0.05	< 0.05	0
C10 - C14	μg/l	50	<50.0	<50.0	0
C15 - C28	μg/l	100	<100.0	<100.0	0
C29-C36	μg/l	100	<100.0	<100.0	0
+C10 - C36 (Sum of total)	μg/l	100	<100.0	<100.0	0

Notes:

The acceptable range depends upon the levels detected:

 $0-100\%\ \text{RPD}$ (When the average concentration is < 5 times the LOR)

0-75% RPD (When the average concentration is 5 to 10 times the LOR)

 $0-50\%\ \text{RPD}$ (When the average concentration is > 10 times the LOR)



04/07/16 IA110700



Appendix A – NEPM 2013 Ecological Investigation Limits Methodology

Jacobs Group (Australia) Pty Limited

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NEPM 2013 Ecological Investigation Limits Methodology

Ecological investigation levels (EILs) for the protection of terrestrial ecosystems have been derived for common contaminants in soil based on a species sensitivity distribution (SSD) model developed for Australian conditions. EILs have been derived for As, Cu, CrIII, DDT, naphthalene, Ni, Pb and Zn.

EILs apply principally to contaminants in the top 2 metres of soil at the finished surface/ground level which corresponds to the root zone and habitation zone of many species. In arid regions, where the predominant species may have greater root penetration, specific considerations may result in their application to 3 metres depth.

The methodology assumes that the ecosystem is adapted to the ambient background concentration (ABC) for the locality and that it is only adding contaminants over and above this background concentration which has an adverse effect on the environment.

The ABC of a contaminant is the soil concentration in a specified locality that is the sum of the naturally occurring background level and the contaminant levels that have been introduced from diffuse or non-point sources by general anthropogenic activity not attributed to industrial, commercial, or agricultural activities, for example, motor vehicle emissions.

The preferred method to determine the ABC is to measure the ABC at an appropriate reference site. This approach is essential in areas where there is a high naturally occurring background level such as will occur in mineralised areas.

An added contaminant limit (ACL) is the added concentration (above the ABC) of a contaminant above which further appropriate investigation and evaluation of the impact on ecological values is required. **The EIL is derived by summing the ACL and the ABC.**

ACLs are based on the soil characteristics of pH, CEC and clay content. Empirical relationships that can model the effect of these soil properties on toxicity are used to develop soil-specific values. These soil-specific values take into account the biological availability of the element in various soils. In this approach different soils will have different contaminant EILs rather than a single generic EIL for each contaminant.

The adopted soil characteristics (pH, clay content and cation exchange capacity) have been selected from sample A2_TP17_2.5 as the sample was considered to be representative of the primary soil type (silty clay) at the site and that the soils are unlikely to be impacted by anthropogenic sources due to the sample depth (2.4 m bgl).

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Filename:

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JACOBS

Table 5.2: Calculating the ACL

ACLs				mg	/kg				
ACLS	A2_TP17_2.5	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
рН	7.2	=	"	"		=	"	"	:
CEC	16	"	"	"	300	"	"	460	1100
% clay	58	"	"	660	"	"	"	"	"
Generic	-		***	"	"	1800	"	"	"

Kohqto cvkqp"f gtkxgf "htqo "Table 1B(1) Soil-specific added contaminant limits for aged zinc in soils, Table 1B(2) Soil-specific added contaminant limits for aged copper in soils, "Table 1B(3) Soil-specific added contaminant limits for aged chromium III and nickel in soils, cpf Table 1B(4) Generic added contaminant limits for lead in soils (commercial/industrial) irrespective of their physicochemical properties (NEPM 2013).

Table 5.3: Calculating the ABC

ABC				mg/	/kg			
ABC	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
A2_TP17_2.5	n/a	n/a	6.6	15	15	n/a	5	14

Uco r rg"C4aVR39a407"%ukn/("erc{+"y cu"cuuwo gf "vq"dg"tgr tgugpvc\kxg"qh"vj g"\dceni tqwpf "eqpegpvtc\lqpø'qh"vj g"ukg"f wg"vq"vj g"f gr vj "406"o "di n"cpf "vj cv"vj g"erc{u"cv" vj cv"f gr vj "ctg"vprkngn("vq"dg"ko r cevgf "d{"cpvj tqr qi gpke"uqwtegu0

Vj g'GKN'ku'f gtkxgf ''d{ ''uwo o kpi ''yj g'CEN'cpf ''yj g'CDE0

Table 5.4: Calculating the EIL

GKNu					o i lmi					
OINU	Ctugple	Ecfo kwo	Ej tqo kwo	Eqrrgt	Ngcf	O gtewt {	P kengn	\ kpe	FFV	Pcrj y 0
CDE"- "CEN	"	"	666.6 ³	315 ³	1815 ³	"	465 ³	1114 ³		
P GRO '4235	160 ¹	"	"	"	"	"	"	"	640 ¹	370 ¹
P GRO '3; ; ;	"	3 ²	"	"	"	12	"	"		

2

Filename:

³I gpgtke 'GKNu'hqt'ci gf 'ctugpke. 'FFV'cpf 'P crj yj crgpg'htqo 'Table 1B(5) hqt 'eqo o gtekenllpf wuxkerlicpf 'wug.

 $^{^{4&}quot;}$ GKNu'ltqo "P GRO "3; ; ; "*pq'GKNu'ur geldlef 'hqt'eqpvco lepcpvu'lep'P GRO ''4235+0

^{5"}GKNu'f gtkxgf 'htqo 'P GRO '4235''gs wcvkqp''CDE- CENU'



Appendix B – Borehole Logs



RI ·

Project: Contamination Investigation Location:Bankstown Airport - Site 2

Moderate Non-Natural odours Strong Non-Natural odours

CD

Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 20/05/16 - 20/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass Northings: mN Eastings:

Logged: BC Checked: MS

SOIL COMMENTS FIELD DATA SOIL DESCRIPTION CONDITION visual ranking sample type field tests ground water odour ranking consistency/ density soil type, unified classification, colour, structure, drilling method, well construction, water field test XRF (ppm) log sample ID depth (m) particle characteristics, minor components moisture condition graphic le and additional PID (ppm) observations FILL: Silty CLAY: (CL) brown, dry, stiff, trace fine gravel, minor fine grained sands, minor rootlets, no odour. 0 A3-TP01_0.0, A2-QC01, A2-QC02 Α D As above but light brown and brown, some fine St grained sands. SI M Silty CLAY: (CL) St brown mottled orange/brown, slightly moist, stiff, trace fine ironstone gravel, no odour. A3-TP01_0.5 0 Α As above but brown mottled grey/brown and St SI. M 0 A3-TP01_1.0 Test Pit terminated at 1.0 m bgl Limit of Investigation. 7/7/16 SKM ENV 1 BANKSTOWN SITE 2.GPJ SKM_ENVL1.GDT FIELD DATA ABBREVIATIONS
Suv = Uncorrected vane shear (kPa)
Sup = Pocket penetrometer (kPa)
N = SPT blows per 300mm
FPM = Field permeability
PID = Photoionisation detector CONSISTENCY (Su) VISUAL RANKING FIELD DATA SYMBOLS DENSITY (N-value) No visible evidence of contamination Slight visible contamination < 12 kPa × = Shear vane test VL (very loose) <10 VS (very soft) = Pocket Penetrometer test (loose) 10 - 20 S (soft) 12 - 25 2 Visible contamination
Significant visible contamination = Standard Penetration Test (SPT top = start of N blowcount) D MD (medium dense) 20 - 30 (firm) 25 - 50 (dense) 30 - 50 St (stiff) 50 - 100 ODOUR RANKING reading (ppm, V/V) = SPT Spoon Sample (Pushed) (very stiff) VD (very dense) >50 VSt 100 - 200 GROUNDWATER SYMBOLS = Water level (static) No Non-Natural odours Slight Non-Natural odours A B = Undisturbed Tube Sample CO (compact) >50/150mm Н (hard) > 200 kPa

= Disturbed Sample

= Bulk Sample

MOISTURE CONDITION D = Dry M = Moist W = Wet

= Water level (during drilling)

= Outflow / Inflow



Project: Contamination Investigation Location:Bankstown Airport - Site 2

Client: Bankstown Airport Limited Start - Finish Date: 20/05/16 - 20/05/16 Rig: Backhoe

Driller: Ken Coles

Northings: mN

Job No: IA110700

Bore dia: 450 mm Surface Conditions: Grass Eastings: RL:

Logged: BC Checked: MS

			FIEL	D DATA			SOIL DESCRIPTION		OIL DITION	COMMENTS
PID (mdd)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, wel construction, water and additional observations
	0	A		A2-TP02_0.0			FILL: Sitty CLAY: (CL) brown, dry, stiff, minor fine gravel, minor fine to medium grained sands, minor rootlets, no odour. FILL: sitty Sandy CLAY: (CL)	St	D	
	0	А		A2-TP02_0.2	- O -		light brown and light grey, dry, hard, fine grained sands, no odour.			
	0	A		A2-TP02_0.5	-		Silty CLAY: (CL) brown mottled orange/brown, slightly moist, very stiff, minor rootlets, no odour.	VSt	SI. M	pp (510, 480, 480)
	0	A		A2-TP02_1.0	- O 1		As above but grey mottled orange/brown and red/brown.	VSt	SI. M	
					-		Test Pit terminated at 1.0 m bgl. Limit of Investigation.			
					-					
					-					
					2					
0 1 2 3	No visi Slight v Visible Signific	visible o contam cant visi	lence of contamination ontamination nination ble contamination	Suv = Uncorrect Sup = Pocket pe N = SPT blow FPM = Field perm PID = Photoionis	enetrometer (kPa s per 300mm neability sation detector	(kPa)	= Pocket Penetrometer test	10 0 - 20 0 - 30 0 - 50	VS S F St	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100
A B C D	No No Slight I Moder	Non-Natate Non	IKING al odours tural odours -Natural odours atural odours	■ = Water leve	ATER SYMBOL el (static) el (during drilling		= SPT Spoon Sample (Pushed) VD (very dense) > CO (compact) >	50 50/150mi ITION	VSt	(very stiff) 100 - 200 (hard) > 200 kP



Project: Contamination Investigation Location:Bankstown Airport - Site 2

Client: Bankstown Airport Limited Start - Finish Date: 17/05/16 - 17/05/16 Rig: Backhoe

Driller: Ken Coles

Northings: mN

Eastings:

Logged: BC Checked: MS

Job No: IA110700

Bore dia: 450 mm Surface Conditions: Grass RL:

			FIEL	.D DATA				SOIL DESCRIPTION	CONE	DIL DITION	COMMENTS
PID (maa)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, well construction, water and additional observations
	0	Α		A2-TP03_0.0	0			Silty CLAY: (CL) brown, dry, stiff, minor fine gravel, trace fine grained sands, minor rootlets, no odour.	St	D	
								FILL: sandy Silty CLAY: (CL) light brown and brown, dry, hard, minor fine gravel, fine grained sands, no odour.	Н	D	
	0	А		A2-TP03_0.2	0			Silty CLAY: (CL) brown mottled orange/brown, slightly moist, very stiff, trace fine grained sands, minor rootlets, no odour.	VSt	SI. M	
	0	А		A2-TP03_0.5	0						
	0	A		A2-TP03 1.0	0			Silty CLAY: (CL) grey mottled orange/brown and red/brown, moist, stiff, minor fine to medium grained sands, no odour.	St	М	
GFJ SAM_ENVEL.6D1 777.10				A2-1F03_1.0		1	-	Test Pit terminated at 1.0 m bgl. Limit of Investigation.			
0 1 2 3 A B C D	No visi Slight v Visible Signific ODOI No No Slight I Moder	visible contami contami cant visib JR RAN n-Natura Non-Nat ate Non-	ence of contamination ontamination ination ole contamination	FIELD DATA Suv = Uncorrect Sup = Pocket pe N = SPT blow FPM = Field pern PID = Photoionis reading (p GROUNDW W = Water leve W = Outfle	enetro es per neabi satior opm, ' ATEF	ometer (kF 300mm lity o detector V/V) R SYMBO	Pa) Pa	7 = Standard Penetration Test (SPT top = start of N blowcount) 7 = SPT Spoon Sample (Pushed) 8 = Undisturbed Tube Sample CO (compact) >5	0 - 20 - 30 - 50 0 0/150mn	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 50 - 50 (stiff) 50 - 100 (very stiff) 100 - 200 (hard) > 200 kPa



Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 17/05/16 - 17/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass Northings: mN

Eastings: RL:

Logged: BC Checked: MS

			FIEL	D DATA				SOIL DESCRIPTION		DIL DITION	COMMENTS
PID (maa)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	rield tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, well construction, water and additional observations
	0	Α		A2-TP04_0.0	0			FILL: Silty CLAY: (CL) brown, dry, firm, minor fine gravel, some fine to medium grained sands, no odour. FILL: silty Sandy CLAY: (CL) grey/brown and brown, dry, hard, minor fine gravel,	F H	D D	
	0	А		A2-TP04_0.2	0			fine grained sands, no odour. Silty CLAY: (CL)	VSt	SI. M	
								brown mottled orange/brown, slightly moist, very stiff, minor rootlets, no odour.	VSI	Si. IVI	
	0	А		A2-TP04_0.5	0	_					pp (440, 480, 500)
								As above but brown/grey mottled orange/brown and red/brown.	VSt	SI. M	
	0	A		A2-TP04_1.0							pp (460, 490, 440)
						1_	-	Test Pit terminated at 1.0 m bgl. Limit of Investigation.	_		
							_				
						-	- -				
91////							-				
GPJ SKM_ENVL1.GDI 77/10							_				
<u> </u>						2					
O 1 2 3 A B C D	No visi Slight Visible Signific ODO No No	visible od contami cant visib UR RAN n-Natura	ence of contamination ontamination nation ble contamination	FIELD DATA Suv = Uncorrect Sup = Pocket pe N = SPT blow FPM = Field perm PID = Photoionis reading (p GROUNDW, Y = Water leve	ted var enetror s per meabili sation opm, V ATER	ne shear meter (kF 300mm lity detector //V) R SYMBO	(kPa) ra) - T	7 = Standard Penetration Test (SPT top = start of N blowcount) 7 = SPT Spoon Sample (Pushed) 8 = Undisturbed Tube Sample CO (compact) >5	0 - 20 - 30 - 50	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 200 (hard) > 200 kPa
M ENV T	Moder	ate Non-	Natural odours tural odours	■ = Water level □ = Water level □ = Outfle	el (dur	ring drillin	g) [= Disturbed Sample MOISTURE CONDI = Bulk Sample D = Dry M = Moist V			

SKM ENV 1 BANKSTOWN SITE 2.GPJ SKM_ENVL1.GDT 7/7/16



Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700 Client: Bankstown Airport Limited Driller: Ken C Start - Finish Date: 17/05/16 - 17/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Rig: Backhoe Surface Conditions: Grass Northings: mN Eastings: mE

RL:

Logged: BC Checked: MS

			FIEL	_D DATA				SOIL DESCRIPTION		OIL DITION	COMMENTS
PID (ppm)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, we construction, water and additional observations
	0	A		A2-TP05_0.0 A2-TP05_0.3	0	-		FILL: Silty CLAY: (CL) brown and grey/brown, dry, firm, minor fine gravel, trace fine grained sands, minor rootlets, no odour. FILL: sandy Silty CLAY: (CL) light grey/brown and brown, dry, hard, fine grained sands, no odour.	F H	D D	
	0	A		A2-TP05_0.5	d	- - -		Silty CLAY: (CL) brown mottled orange/brown, slightly moist, very stiff, minor medium grained sands, trace rootlets, no odour.	VSt	SI. M	pp (520, 500 520)
	0	Α		A2-TP05_0.5 - 1.0		-		As above but grey mottled orange/brown and red/brown and stiff.	St	SI. M	
	0	А		A2-TP05_1.0	C	1_ - - -					pp (410, 420 470)
	0	Α		A2-TP05_2.0	C	- - 2_		Silty CLAY: (CL) grey mottled red/brown and orange/brown, moist, firm, minor fine to medium grained sands, no odour.	- F	М	pp (310, 320 350)
	0	Α		A2-TP05_2.5	C	- - -		As above but stiff and minor small ironstone gravel. Test Pit terminated at 2.5 m bgl. Limit of Investigation.	St	M	pp (440, 46(470)
						3_ -					
0 1 2 3 A B C	No visil Slight v Visible Signific ODOU No Nor Slight N	visible of contame cant visil JR RAN n-Natura Non-Nat	ence of contamination ontamination ination ole contamination	FIELD DATA Suv = Uncorrect Sup = Pocket pe N = SPT blows FPM = Field perm PID = Photoionis reading (p) GROUNDW W = Water leve W = Outflet	ed vertical ed ver	vane shear (kP rometer (kP er 300mm bility on detector (V/V) ER SYMBOI	(kPa) a) ×	7 = Standard Penetration Test (SPT top = start of N blowcount) V = SPT Spoon Sample (Pushed) = Undisturbed Tube Sample Sample MD (medium dense) 20 D (dense) 30 VD (very dense) 55 CO (compact) 55	10) - 20) - 30) - 50 50 50/150mr	VS S F St VSt H	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 200 (hard) > 200 kP



Project: Contamination Investigation Location:Bankstown Airport - Site 2

Client: Bankstown Airport Limited Start - Finish Date: 17/05/16 - 17/05/16 Rig: Backhoe

Driller: Ken Coles

Northings: mN

Eastings:

Logged: BC

Checked: MS

Job No: IA110700

Bore dia: 450 mm Surface Conditions: Grass RL:

			FIEL	.D DATA				SOIL DESCRIPTION	SO COND		COMMENTS
(mdd)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, well construction, water and additional observations
	0	Α		A2-TP06_0.0	0	_		FILL: Silty CLAY: (CL) brown, dry, firm, minor fine gravel, minor rootlets, no	F	D	
	0	A		A2-TP06_0.2	0	-		odour. FILL: sandy Silty CLAY: (CL) light brown and brown, dry, hard, fine grained sands, no odour.	Н	D	
						-		Silty CLAY: (CL) brown mottled orange/brown and dark brown, slightly moist, stiff, minor rootlets, no odour.	St	SI. M	
	0	Α		A2-TP06_0.5	0	- - -		As above but grey mottled brown and orange/brown and no rootlets.	St	SI. M	pp (350, 320, 310)
	0	А		A2-TP06_1.0	0	- 1_ - -					pp (380, 360, 400)
						- - - - -		Silty CLAY: (CL) grey mottled red/brown, slightly moist, firm, trace fine grained sands, no odour.	F	SI. M	
	0	Α		A2-TP06_2.0	0	2_ -					pp (260, 280, 300)
	0	Α		A2-TP06_2.5	0	- - -		As above Test Pit terminated at 2.5 m bgl. Limit of Investigation.	F	SI. M	pp (280, 300, 320)
						- 3_ -					
						-					
	No visil Slight v Visible Signific ODOU No Nor Slight N Modera	visible on contame cant visib JR RAN n-Natura Non-Nat ate Non-	ence of contamination ontamination ination ole contamination	FIELD DATA / Suv = Uncorrecte Sup = Pocket per N = SPT blows FPM = Field perm PID = Photoioniss reading (pr GROUNDWA W = Water level W = Water level W = Outfloor	ed vanetro s per seab ation pm, ATEI I (sta	ane shear (cometer (kP r 300mm ility n detector V/V) R SYMBOL atic) uring drilling	(kPa)	7 = Standard Penetration Test (SPT top = start of N blowcount) 7 = SPT Spoon Sample (Pushed) 8 = Undisturbed Tube Sample (Pushed) 9 CO (compact) 20 (dense) 30 (very dense) >50 (CO (compact) >50 (CO (compact))) - 20 - 30 - 50))/150mm	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 200 (hard) > 200 kPa

A B C D



RL:

Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 16/05/16 - 16/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass

Northings: mN Eastings:

Logged: BC Checked: MS

			FIEL	D DATA				SOIL DESCRIPTION		OIL DITION	COMMENTS
PID (ppm)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, we construction, water and additional observations
	0	A		A2-TP07_0.0 A2-TP07_0.1	C			FILL: Sandy SILT: (MH) brown, dry, medium density, minor fine gravel, fine to medium grained sands, minor rootlets, no odour. FILL: silty Sandy CLAY: (CL) brown, dry, firm, some small to medium ironstone gravel, trace small to medium fragments of ironstone, medium to coarse grained sands, no odour. FILL: silty Clayey SAND: (SC) light brown and brown, slightly moist, compact, fine grained sands, no odour.	MD F CO	D D SI. M	
	0	A		A2-TP07_0.5	С	- - - -		Silty CLAY: (CL) grey mottled orange/brown and red/brown, moist, very stiff, no odour.	VSt	M	pp (400, 450 430)
	0	A		A2-TP07_1.0	С	- - -		As above but grey mottled red/brown and stiff.	St	М	
	0	A		A2-TP07_2.0	С	- - 2_)		Silty CLAY: (CL) grey mottled red/brown and orange/brown, moist, firm, no odour.	₹ F	M	pp (320, 33 280) pp (280, 30 300)
	0	А		A2-TP07_2.5	С	-) - - -		Test Pit terminated at 2.5 m bgl. Limit of Investigation.	_		
						3_					
0 1 2 3 A B C D	No visi Slight v Visible Signific ODOL No Noi Slight I Modera	visible or contam cant visit UR RAN n-Natura Non-Nat ate Non-	ence of contamination ontamination ination ole contamination	Suv = Uncorrect Sup = Pocket pe N = SPT blow FPM = Field per PID = Photoionic reading (p GROUNDW W = Water leve W = Outfl	ed vereineal seation pm ATE el (se	vane shear rometer (kP er 300mm bility on detector , V/V) ER SYMBOI tatic) luring drilling	(kPa) Ya) ×	7 = Standard Penetration Test (SPT top = start of N blowcount) V = SPT Spoon Sample (Pushed) = Undisturbed Tube Sample Sample MD (medium dense) 20 D (dense) 30 VD (very dense) >5 CO (compact) >5	0 - 20 - 30 - 50 60 0/150mr	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPz (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 20 (hard) > 200 kF



RI ·

Project: Contamination Investigation Location:Bankstown Airport - Site 2

Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 16/05/16 - 16/05/16 Rig: Backhoe

Bore dia: 450 mm

= Water level (static)

= Water level (during drilling)

= Outflow / Inflow

Moderate Non-Natural odours Strong Non-Natural odours

CD

Driller: Ken Coles Surface Conditions: Grass Northings: mN Eastings:

Logged: BC Checked: MS

SOIL **COMMENTS** FIELD DATA SOIL DESCRIPTION CONDITION visual ranking sample type field tests ground water odour ranking soil type, unified classification, colour, structure, consistency drilling method, well construction, water field test XRF (ppm) log \Box particle characteristics, minor components moisture condition depth (m) graphic le sample and additional PID (mdd) observations FILL: Sandy SILT: (MH) A2-TP08_0.0 0 Α brown, dry, medium density, fine to medium grained sands, some rootlets, no odour. D Н FILL: silty Sandy CLAY: (CL) light brown and brown, dry, hard, fine grained sands, 0 Α A2-TP08_0.3 Silty CLAY: (CL) SI. M brown mottled orange/brown, slightly moist, stiff, trace fine grained sands, no odour. pp (520, 500, 510) 0 Α A2-TP08_0.3 - 0.8 A2-TP08_0.5 Silty CLAY: (CL) SI M S-F grey/brown mottled red/brown, slightly moist, soft to firm, no odour. pp (270, 280, 260) 0 A2-TP08_1.0 Α As above but grey mottled red/brown and orange/brown, trace fine grained sands. S-F SI. M pp (280, 290, 280) 0 A2-TP08_2.0 Α SI. M As above but grey mottled red/brown and soft. s pp (250, 270, 270) 0 Α A2-TP08_2.5 Test Pit terminated at 2.5 m bgl. Limit of Investigation. 7/7/16 SKM ENV 1 BANKSTOWN SITE 2.GPJ SKM_ENVL1.GDT FIELD DATA ABBREVIATIONS
Suv = Uncorrected vane shear (kPa)
Sup = Pocket penetrometer (kPa)
N = SPT blows per 300mm VISUAL RANKING FIELD DATA SYMBOLS DENSITY (N-value) CONSISTENCY (Su) No visible evidence of contamination Slight visible contamination = Shear vane test (very loose) <10 VS (very soft) < 12 kPa = Pocket Penetrometer test (loose) 10 - 20 S (soft) 12 - 25 2 Visible contamination
Significant visible contamination FPM = Field permeability
PID = Photoionisation detector = Standard Penetration Test (SPT top = start of N blowcount) MD (medium dense) 20 - 30 (firm) 25 - 50 D (dense) 30 - 50 St (stiff) 50 - 100 ODOUR RANKING reading (ppm, V/V) = SPT Spoon Sample (Pushed) (very stiff) VD (very dense) >50 VSt 100 - 200 No Non-Natural odours Slight Non-Natural odours A B GROUNDWATER SYMBOLS = Undisturbed Tube Sample CO (compact) >50/150mn Н (hard) > 200 kPa

= Disturbed Sample

= Bulk Sample

MOISTURE CONDITION

D = Dry M = Moist W = Wet



Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 20/05/16 - 20/05/16 Rig: Backhoe

Driller: Ken Coles

Northings: mN

Surface Conditions: Grass Bore dia: 450 mm

Eastings: RL:

Logged:	BC
Checked:	MS

			FIEL	_D DATA			SOIL DESCRIPTION		DIL DITION	COMMENTS
PID (ppm)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, well construction, water and additional observations
	0	A		A2-TP09_0.0 A2-TP09_0.3	O .		FILL: Silty CLAY: (CL) brown, dry, very stiff, minor fine gravel and fine grained sands, minor rootlets, no odour. FILL: Silty CLAY: (CL) red/brown and grey, dry, hard, trace fine to medium ironstone gravel, minor fine grained sands, no odour.	VSt H	D D	
	0	A A		A2-TP09_0.5 A2-TP09_0.4 - 0.9			Silty CLAY: (CL) brown mottled orange/brown, slightly moist, very stiff, minor rootlets, no odour. As above but red/brown mottled grey/brown, stiff and trace rootlets.	VSt St	SI. M	pp (420, 460, 470)
	0	A		A2-TP09_1.0	1_ 0					pp (420, 430, 450)
	0	A		A2-TP09_2.0			Silty CLAY: (CL) grey mottled red/brown and orange/brown, slightly moist, firm, some fine to medium ironstone gravel, minor small to medium fragments of ironstone, trace fine grained sands, no odour.	F	SI. M	pp (320, 320, 310)
	0	A		A2-TP09_2.5	- - - 0		As above but grey mottled orange/brown, soft and minor fine to medium ironstone gravel. Test Pit terminated at 2.5 m bgl. Limit of Investigation.	S	SI. M	pp (180, 220, 230)
GF3 GNW_ENVELSOR 177.16					3_					
0 1 2 3 A B C D	No visi Slight v Visible Signific ODOL No Noi Slight I Modera	visible contami cant visib UR RAN n-Natura Non-Nat ate Non-	ence of contamination ontamination ination ole contamination	= Water leve	ed vane shear netrometer (kP s per 300mm neability ation detector pm, V/V) ATER SYMBOI	(kPa)	Standard Penetration Test (SPT top = start of N blowcount) = SPT Spoon Sample (Pushed) UD (very dense) >5 CO (compact) >5	0 - 20 - 30 - 50 0 0/150mn	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 200 (hard) > 200 kPa



RI ·

Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 19/05/16 - 19/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass Northings: mN Eastings:

Logged: BC Checked: MS

SOIL **COMMENTS** FIELD DATA SOIL DESCRIPTION CONDITION visual ranking sample type field tests ground water odour ranking consistency/ density soil type, unified classification, colour, structure, drilling method, well construction, water field test XRF (ppm) log \Box particle characteristics, minor components moisture condition depth (m) graphic le sample and additional PID (mdd) observations FILL: Silty CLAY: (CL) brown, dry, stiff, trace fine gravel, trace fine to medium grained sands, minor rootlets, no odour. A2-TP10_0.0 0 Α FILL: silty Sandy CLAY: (CL) D 0 A2-TP10_0.2 Α \cap light brown and brown, dry, hard, fine grained sands, Silty CLAY: (CL) VSt SI. M brown mottled orange/brown and dark brown, slightly moist, very stiff, minor rootlets, no odour. pp (360, 340, 380) 0 Α A2-TP10_0.5 SI. M grey mottled orange/brown and red/brown, slightly moist, stiff, minor fine grained sands, no odour. pp (450, 500, 480) 0 A2-TP10_1.0 Α As above but firm, minor fine ironstone gravel and SI. M some fine grained sands. pp (350, 310, 340) 0 A2-TP10_2.0 Α F SI. M As above. pp (320, 350, 360) 0 Α A2-TP10_2.5 Test Pit terminated at 2.5 m bgl. Limit of Investigation. 7/7/16 FIELD DATA ABBREVIATIONS
Suv = Uncorrected vane shear (kPa)
Sup = Pocket penetrometer (kPa)
N = SPT blows per 300mm VISUAL RANKING FIELD DATA SYMBOLS DENSITY (N-value) CONSISTENCY (Su) No visible evidence of contamination Slight visible contamination = Shear vane test (very loose) <10 VS (very soft) < 12 kPa = Pocket Penetrometer test (loose) 10 - 20 S (soft) 12 - 25 2 Visible contamination
Significant visible contamination FPM = Field permeability
PID = Photoionisation detector = Standard Penetration Test (SPT top = start of N blowcount) MD (medium dense) 20 - 30 (firm) 25 - 50 D (dense) 30 - 50 St (stiff) 50 - 100 ODOUR RANKING reading (ppm, V/V) = SPT Spoon Sample (Pushed) (very stiff) VD (very dense) >50 VSt 100 - 200 No Non-Natural odours Slight Non-Natural odours A B GROUNDWATER SYMBOLS

= Undisturbed Tube Sample

= Disturbed Sample

= Bulk Sample

= Water level (static)

= Water level (during drilling)

= Outflow / Inflow

CO (compact)

MOISTURE CONDITION D = Dry M = Moist W = Wet

>50/150mn

Н

(hard)

> 200 kPa

SKM ENV 1 BANKSTOWN SITE 2.GPJ SKM_ENVL1.GDT

CD

Moderate Non-Natural odours Strong Non-Natural odours



RL:

Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 19/05/16 - 19/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass

Northings: mN Eastings:

Logged: BC Checked: MS

			FIEL	.D DATA				SOIL DESCRIPTION		OIL DITION	COMMENTS
(mdd)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, we construction, wate and additional observations
	0	Α		A2-TP11_0.0	С			FILL: Silty CLAY: (CL) dark brown/grey, dry, stiff, trace fine gravel, minor fine to medium grained sands, minor rootlets, no odour.	St	D	
	0	A		A2-TP11_0.2	С			FILL: sandy Silty CLAY: (CL) brown and grey/brown, dry, hard, some fine to medium grained sands, no odour.	H	D	
	0 0	A A		A2-TP11_0.5 A2-TP11_0.4 - 0.8	C	=		Silty CLAY: (CL) brown and orange/brown, slightly moist, stiff, minor rootlets, no odour.	St	SI. M	pp (350, 390 400)
								As above but grey mottled red/brown.	St	SI. M	
	0	А		A2-TP11_1.0	С	1_					pp (350, 310 350)
						_		Silty CLAY: (CL) orange/brown mottled grey and red/brown, slightly moist, firm, trace fine grained sands, no odour.	F	SI. M	
	0	A		A2-TP11_2.0	С	2_		As above but grey mottled orange/brown.	F	SI. M	pp (300, 300 330)
	0	А		A2-TP11_2.5	С	_		Test Pit terminated at 2.5 m bgl. Limit of Investigation.	-		pp (310, 340 310)
						3_					
				FIFED DATE	A.D.:						
0 1 2 3	No vis Slight Visible Signific ODO No No	visible o contam cant visi UR RAN n-Natura	lence of contamination ontamination ination ble contamination IKING al odours	FIELD DATA Suv = Uncorrect Sup = Pocket pe N = SPT blows FPM = Field pern PID = Photoionis reading (p GROUNDW	ed vertical ed ver	rane shear cometer (kF or 300mm bility on detector V/V) ER SYMBO	(kPa) Pa) >	7 = Standard Penetration Test (SPT top = start of N blowcount) V = SPT Spoon Sample (Pushed) VD (very dense) 20 VD (very dense) 20 VD (very dense) 20	0 - 20 - 30 - 50	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPi (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 20 (hard) > 200 kf
B C D	Moder	ate Non	tural odours -Natural odours atural odours	■ = Water level □ = Water level □ = Outfle	el (d	uring drillin	g)	• • • • • • • • • • • • • • • • • • • •	TION		(1.00.0) - 200 NI



RL:

Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 20/05/16 - 20/05/16 Rig: Backhoe

Driller: Ken Coles

Northings: mN

Bore dia: 450 mm

Surface Conditions: Grass

Eastings:

Logged: BC Checked: MS

			FIEL	D DATA				SOIL DESCRIPTION		OIL DITION	COMMENTS
PID (ppm)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, wel construction, water and additional observations
	1	A		A2-TP12_0.0	0	-		FILL: Silty CLAY: (CL) dark brown, dry, stiff, some fine to medium gravel, trace small fragments of sandstone and small to medium pieces of asphalt, minor fine grained sands, minor rootlets, no odour.	St	D	
	•			40 TD40 0 5		- -		FILL: sandy Silty CLAY: (CL) light brown and brown, dry, hard, fine grained sands, no odour.	Н	D	
	0	A		A2-TP12_0.5		-		Silty CLAY: (CL) brown mottled orange/brown, slightly moist, very stiff, minor rootlets, no odour.	VSt	SI. M	pp (520, 520 530)
	0	A		A2-TP12_1.0		1_		As above but brown mottled orange/brown and red/brown and stiff.	St	SI. M	pp (420, 450
	J	,		72 II 12_1.0		-					430)
						-					
						-		Silty CLAY: (CL) orange/brown mottled grey and red/brown, slightly moist, firm, no odour.	F	SI. M	
	0	А		A2-TP12_2.0	0	2_ -					pp (320, 340 320)
						-		As above but grey mottled orange/brown and trace fine grained sands.	F	SI. M	
	0	A		A2-TP12_2.5	0	-		Test Pit terminated at 2.5 m bgl. Limit of Investigation			pp (290, 310 320)
						-	-				
						3_					
						-					
0 1 2 3	No visi Slight v Visible Signific	visible o contam cant visil	ence of contamination ontamination ination ble contamination	Suv = Uncorrect Sup = Pocket pe N = SPT blow FPM = Field pern PID = Photoionis	ed vanetro netro s per neab satio	ane shear ometer (kP r 300mm oility n detector	(kPa)	7 = Standard Penetration Test MD (medium dense) 20	10 [°]) - 20	VS S F St	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100
A B C D	No Nor Slight I Modera	Non-Nat ate Non	IKING al odours tural odours -Natural odours atural odours	reading (p GROUNDW W = Water leve	pm, ATE el (st el (du	V/V) R SYMBOI atic) uring drillin		= SPT Spoon Sample (Pushed) VD (very dense) > CO (compact) > CO (compact)	50 50/150mr TION	VSt	(very stiff) 100 - 200 (hard) > 200 kP



RL:

Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 19/05/16 - 19/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass Northings: mN

Eastings: Logged: BC Checked: MS

			FIEL	.D DATA				SOIL DESCRIPTION		DIL	COMMENTS
PID (mdd)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, well construction, water and additional observations
	0	A A		A2-TP13_0.0 A2-TP13_0.2	0	-		FILL: Silty CLAY: (CL) brown, dry, stiff, minor fine to medium gravel, trace fine grained sands, minor rootlets, no odour. FILL: sandy Silty CLAY: (CL) light brown/grey, dry, hard, minor small to medium pieces of sandstone and aggregate, minor fine to	St H	D D	
	0	A		A2-TP13 0.5		- -		medium gravel, no odour. As above but brown and minor medium ironstone gravel. Silty CLAY: (CL)	H VSt	D SI. M	
						-		brown mottled orange/brown and grey/brown, slightly moist, very stiff, minor rootlets, no odour. As above but brown mottled red/brown and firm.	F	SI. M	pp (530, 490, 500)
	0	Α		A2-TP13_1.0	0	- 1_ - -					pp (290, 260, 300)
						- - -		Silty CLAY: (CL) orange/brown mottled grey and red/brown, slightly moist, firm, minor fine grained sands, no odour.	F	SI. M	
	0	Α		A2-TP13_2.0		2_ - -		As above but grey mottled orange/brown and trace fine ironstone gravel.	F	SI. M	pp (310, 330, 300)
	0	Α		A2-TP13_2.5	0	- - - -		Test Pit terminated at 2.5 m bgl. Limit of Investigation.			pp (280, 270, 260)
GF3 SNM_ENVEL.GD1 777.10						3_					
0 1 2 3 A B C D	No visi Slight v Visible Signific ODO No No Slight I Moder	visible co contami cant visib JR RAN n-Natura Non-Nati ate Non-	ence of contamination ontamination nation ole contamination	FIELD DATA Suv = Uncorrect Sup = Pocket pe N = SPT blow FPM = Field pern PID = Photoionis reading (p GROUNDW, W = Water leve W = Water leve W = Outfl	ed venetres per se per setico pm, ATE el (si el (d	vane shear (kPer 300mm bility on detector (VVV) ER SYMBOI tatic) uring drilling	(kPa)	= Standard Penetration Test (SPT top = start of N blowcount) SPT Spoon Sample (Pushed) UD (very dense) Spt Spoon Sample (Pushed) UD (very dense) Spt Spoon Sample CO (compact) Spt Spoon Sample Spt) - 20 - 30 - 50))/150mn	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 200 (hard) > 200 kPa

SKM ENV 1 BANKSTOWN SITE 2.GPJ SKM_ENVL1.GDT 7/7/16



Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700 Client: Bankstown Airport Limited Driller: Ken C Start - Finish Date: 19/05/16 - 19/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Rig: Backhoe Surface Conditions: Grass Northings: mN

Eastings: r

Logged: BC Checked: MS

			FIEL	D DATA				SOIL DESCRIPTION		OIL DITION	COMMENTS
PID (ppm)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, we construction, wate and additional observations
	1 0	A		A2-TP14_0.0 A2-TP14_0.3 A2-TP14_0.5	0	-		FILL: Sitty CLAY: (CL) brown, dry, stiff, minor fine to medium gravel and small to medium pieces of sandstone, trace small pieces of wire, minor medium grained sands, minor rootlets, no odour. FILL: Asphalt and Concrete. grey and dark grey, dry, hard, medium to large fragments and pieces of asphalt and concrete, no odour. FILL: Sitty CLAY: (CL) brown/grey, dry, hard, minor fine to medium gravel and medium pieces of sandstone and asphalt, some fine grained sands, no odour. Sitty CLAY: (CL) brown, slightly moist, stiff, minor rootlets, no odour. As above but minor small to medium tree roots.	St H H St	D D SI. M	pp (420, 420 380)
	0	A		A2-TP14_1.0	0	-		Silty CLAY: (CL) orange/brown mottled grey, slightly moist, firm, no odour.	F	SI. M	pp (230, 250 230)
	0	A		A2-TP14_2.0	0	2_ - -		As above but trace fine to medium ironstone gravel.	F	SI. M	pp (320, 340 340)
	0	A		A2-TP14_2.5		- - - - 3_		Test Pit terminated at 2.5 m bgl. Limit of Investigation.			pp (330, 310 310)
0 1 2 3 A B C D	No visi Slight v Visible Signific ODO No No Slight I Modera	visible of contame cant visil UR RAN n-Natura Non-Nat ate Non-	ence of contamination ontamination ination ble contamination	FIELD DATA Suv = Uncorrect Sup = Pocket pe N = SPT blow FPM = Field pern PID = Photoionis reading (p GROUNDW,	ed v netr s pe neation sation pm, ATE el (si	rane shear cometer (kP or 300mm bility on detector V/V) ER SYMBOI tatic) uring drilling	(kPa) a) >	7 = Standard Penetration Test (SPT top = start of N blowcount) 7 = SPT Spoon Sample (Pushed) 8 = Undisturbed Tube Sample CO (compact) >5	0 - 20 - 30 - 50 0 0/150mr	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPr (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 20 (hard) > 200 kF



Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700 Client: Bankstown Airport Limited Driller: Ken C Start - Finish Date: 19/05/16 - 19/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Rig: Backhoe Surface Conditions: Grass Northings: mN

Eastings: n

Logged: BC Checked: MS

			FIEL	D DATA				SOIL DESCRIPTION		DIL	COMMENTS
(mdd)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, w construction, wate and additional observations
	0	A A		A2-TP15_0.0 A2-TP15_0.2	0	-		FILL: Sitty CLAY: (CL) dark brown, dry, firm, minor medium gravel, minor fine to medium grained sands, minor rootlets, no odour. FILL sandy Sitty CLAY: (CL) light grey and grey, dry, hard, fine grained sands, no odour.	F H	D D	
		•		A2 TD45 0 5		_		Silty CLAY: (CL) brown, slightly moist, stiff, minor rootlets, no odour.	S	SI. M	pp (400, 38
	0	A		A2-TP15_0.5		- - -		As above but brown mottled grey and firm.	F	SI. M	360)
	0	Α		A2-TP15_1.0	0			Silty CLAY: (CL)	St	SI. M	pp (280, 28 260)
						- - - - - 2_		grey mottled orange/brown and red/brown, slightly moist, stiff, no odour.			
	0	Α		A2-TP15_2.0		- - -		As above but orange/brown mottled red/brown and grey, firm, minor fine grained sands and trace fine to medium ironstone gravel.	F	SI. M	pp (430, 43 410)
	0	A		A2-TP15_2.5		3		Test Pit terminated at 2.5 m bgl. Limit of Investigation.			pp (380, 36 340)
0 N 1 S 2 V 3 S	No visib Slight v Visible Signific ODOU	isible co contami ant visib JR RAN	ence of contamination ontamination ination ole contamination	FIELD DATA Suv = Uncorrec Sup = Pocket pe N = SPT blow FPM = Field perr PID = Photoioni reading (p	ted venetres pe neather neath sation opm,	rane shear (cometer (kPa r 300mm bility on detector V/V)	kPa) a) >	7 = Standard Penetration Test (SPT top = start of N blowcount) V = SPT Spoon Sample (Pushed) VD (very dense) >50 VD (very dense) >50	oʻ - 20 - 30 - 50	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kP (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 20
B S C N	Slight N Modera	lon-Nat ate Non-	rural odours -Natural odours atural odours	= Water lev	el (st el (d	tatic) uring drillind				n H	(hard) > 200 kl



Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700 Client: Bankstown Airport Limited Driller: Ken C Start - Finish Date: 20/05/16 - 20/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Rig: Backhoe Surface Conditions: Grass Northings: mN

Eastings: RL: Logged: BC Checked: MS

			FIEL	.D DATA				SOIL DESCRIPTION		DIL	COMMENTS
PID (ppm)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, we construction, wate and additional observations
	0	А		A2-TP16_0.0	0			FILL: Silty CLAY: (CL) dark brown, dry, stiff, minor fine gravel, minor fine grained sands, minor rootlets, no odour. As above but some fine gravel.	St St	D D	
	0	А		A2-TP16_0.3	0			FILL: sandy Silty CLAY: (CL) light brown and brown, dry, very stiff, fine grained sands, no odour.	VSt	D	
	0	А		A2-TP16_0.5	0	-		Silty CLAY: (CL) brown, slightly moist, very stiff, minor rootlets, no odour.	VSt	SI. M	pp (490, 52 510)
								As above but firm and no rootlets.	F	SI. M	
	0	А		A2-TP16_1.0	0	1_					pp (340, 35 320)
						-					
								Silty CLAY: (CL) brown mottled grey, slightly moist, soft, trace ironstone gravel, no odour.	S	SI. M	
	0	А		A2-TP16_2.0	0	2_					pp (230, 26 240)
		_						As above.	s	SI. M	pp (280, 28
	0	A		A2-TP16_2.5		_		Test Pit terminated at 2.5 m bgl. Limit of Investigation.			pp (280, 28 290)
						3_	<u> </u>				
0	No visi		ence of contamination	FIELD DATA Suv = Uncorrect Sup = Pocket pe	ed v netr	ane shear ometer (kF	(kPa) Pa) >	FIELD DATA SYMBOLS DENSITY (N-valu Shear vane test VL (very loose) <1	0	VS	CONSISTENCY (Su) (very soft) < 12 kP
1 2 3	Visible Signific	contam	ole contamination	N = SPT blow FPM = Field pern PID = Photoionis reading (p	s pe neak satio pm,	r 300mm bility on detector V/V)	7	7 = Standard Penetration Test MD (medium dense) 20	- 50	S F St VSt	(soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 10 (very stiff) 100 - 2
A B C D	Slight I Moder	Non-Nat	al odours rural odours -Natural odours atural odours	GROUNDW W = Water leve	ATE el (si el (d	R SYMBO tatic) uring drillin		= Undisturbed Tube Sample CO (compact) >5	0/150mr TION		(hard) > 200 k



Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 18/05/16 - 18/05/16 Rig: Backhoe

Driller: Ken Coles

Northings: mN

Logged: BC Eastings: Bore dia: 450 mm Surface Conditions: Grass Checked: MS RL:

			FIELD DATA					SOIL DESCRIPTION		DIL DITION	COMMENTS
PID (mdd)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, well construction, water and additional observations
	1	A		A2-TP17_0.0 A2-TP17_0.5	0	- - - -		FILL: Silty CLAY: (CL) grey/brown, dry, stiff, minor fine gravel, trace fine grained sands, minor rootlets, no odour. As above but brown and orange/brown and some fine grained sands. FILL: Silty CLAY: (CL) light brown and brown, dry, very stiff, minor small to medium fragments of ash/charcoal, fine grained sands, no odour. Silty CLAY: (CL) brown mottled orange/brown and dark brown, slightly moist, stiff, minor rootlets, no odour. As above but grey mottled red/brown and firm.	St St VSt St	D D SI. M	pp (320, 350, 330)
	0	A		A2-TP17_1.0	0	1_ - - - - -		Silty CLAY: (CL) grey mottled orange/brown and grey/brown, slightly moist, firm, trace fine grained sands, no odour.	F	SI. M	pp (270, 310, 300)
	0	A		A2-TP17_2.0 A2-TP17_2.5	0	2_ - - - -		As above but grey mottled orange/brown. Test Pit terminated at 2.5 m bgl. Limit of Investigation.	F	SI. M	pp (270, 290, 300) pp (290, 310, 310)
	VISU	AL RAN	KING	FIELD DATA	ABE	3 3		FIELD DATA SYMBOLS DENSITY (N-valu	e)		CONSISTENCY (Su)
0 1 2 3 A B C D	No visible evidence of contamination Slight visible contamination Visible contamination Visible contamination Significant visible contamination ODOUR RANKING No Non-Natural odours Slight Non-Natural odours Moderate Non-Natural odours Strong Non-Natural odours Strong Non-Natural odours Strong Non-Natural odours Strong Non-Natural odours Strong Non-Natural odours Strong Non-Natural odours Strong Non-Natural odours Strong Non-Natural odours Strong Non-Natural odours Sup = Douchrected vane sh Sup = Pocket penetrometer N = SPT blows per 300m FPM = Field permeability PID = Photoionisation determination GROUNDWATER SYM ■ Water level (static) ■ Water level (during d ■ ■ Outflow / Inflow							 Shear vane test Pocket Penetrometer test Standard Penetration Test (SPT top = start of N blowcount) ST Spoon Sample (Pushed) VL (very loose) (loose) MD (medium dense) D (dense) VD (very dense) VD (very dense) 	0 - 20 - 30 - 50 0 0/150mr	VS S F St VSt	(very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 200 (hard) > 200 kPa



Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 17/05/16 - 17/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass Northings: mN

Eastings: RL:

Logged: BC Checked: MS

			FIEL	LD DATA			SOIL DESCRIPTION	CONI	OIL DITION	COMMENTS	
PID (mdd)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, wel construction, water and additional observations
	0	A		A2-TP18_0.0	С			FILL: Sitty CLAY: (CL) brown dry, firm, minor fine gravel, minor fine grained sands, minor rootlets, no odour. FILL: sitty Sandy CLAY: light brown and brown, dry, very stiff, trace fine gravel, fine grained sands, no odour.	VSt	D	
	0	Α		A2-TP18_0.3	С	_		Test Pit terminated at 0.4 m bgl. Low Voltage Power Cable Encountered.			
							-				
							-				
	No visil		ence of contamination	FIELD DATA Suv = Uncorred Sup = Pocket pe	ed v	ane shear	(kPa)	FIELD DATA SYMBOLS DENSITY (N-val	ue) 10	VS	CONSISTENCY (Su) (very soft) < 12 kPa
1 2 3 3 3 4 A B C I	Slight v Visible Signific ODOL No Nor Slight N Modera	risible or contam ant visib JR RAN n-Natura Non-Nat ate Non-	ontamination ination ole contamination	Sup = Pocket per N = SPT blow FPM = Field perr PID = Photoioni reading (r GROUNDW ■ Water lew □ = Water lew ■ = Outfl	s pe neal satio pm ATE el (s	er 300mm bility on detector , V/V) ER SYMBO tatic) luring drillin	LS LS	= Pocket Penetrometer test 7 = Standard Penetration Test (SPT top = start of N blowcount) 7 = SPT Spoon Sample (Pushed) 8 = Undisturbed Tube Sample L (loose) 1 MD (medium dense) 2 D (dense) 3 VD (very dense) > CO (compact) >	0 - 50 50 50/150mr ITION	S F St VSt	(soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 20 (hard) > 200 kF



RL:

Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 20/05/16 - 20/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass Northings: mN Eastings:

Logged: BC Checked: MS

			FIEL	D DATA				SOIL DESCRIPTION	C		DIL DITION	COMM	IENTS
PID (mdd)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water denth (m)	graphic log	soil type, unified classification, colour, sparticle characteristics, minor compo	structure, onents	consistency/ density	moisture condition	drilling me constructi and add observ	on, wate ditional
	0	А		A2-TP19_0.0	0			FILL: Silty CLAY: (CL) brown, dry, stiff, minor fine gravel and fine g sands, minor rootlets, no odour. FILL: sandy Silty CLAY: (CL) light brown and brown, dry, very stiff, trace f	rained	St VSt	D D		
	0	А		A2-TP19_0.2, A2-QC03, A2-QC04	0			gravel, fine grained sands, no odour. Sitty CLAY: (CL) brown mottled red/brown, slightly moist, stiff		St	SI. M		
						-		rootlets, no odour.	, 1111101				
	0	A		A2-TP19_0.5	0			As above but grey mottled red/brown and fir rootlets.	rm, no	F	SI. M		
	0	А		A2-TP19_1.0	0	1		Test Pit terminated at 1.0 m bgl. Limit of Investigation.					
							_						
						-	_						
							- -						
0 1 2 3	No visi Slight Visible	visible o	lence of contamination ontamination	FIELD DATA Suv = Uncorrect Sup = Pocket pe N = SPT blow FPM = Field pern PID = Photoionis	netr s pe neat	ometer (kl r 300mm nilitv	Pa) /	 Shear vane test Pocket Penetrometer test Standard Penetration Test MD (mediu) 10 - 2 ım dense) 20 - 3	30	VS S F	CONSISTENC (very soft) (soft) (firm)	CY (Su) < 12 kP 12 - 25 25 - 50 50 - 100
A B C D	ODO No No Slight	UR RAN n-Natur Non-Na ate Non		reading (processing from the control of the control	pm, ATE el (st el (d	V/V) R SYMBC atic) uring drillir	LS	= SPT Spoon Sample (Pushed) VD (very d)	lense) >50	150mm DN	St VSt 1 H	(stiff) (very stiff) (hard)	50 - 100 100 - 20 > 200 ki



Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700 Client: Bankstown Airport Limited Driller: Ken C Start - Finish Date: 20/05/16 - 20/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Rig: Backhoe Surface Conditions: Grass Northings: mN

Eastings: mE RL: Logged: BC Checked: MS

			FIEL	D DATA					SOIL DESCRIPTION		DIL DITION	COMMENTS
(mdd)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests	ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, we construction, wate and additional observations
	1	A		A2-TP20_0.0	0)	-		FILL: Silty CLAY: (CL) brown, dry, stiff, some fine to medium gravel, minor small pieces of concrete and asphalt, minor fine grained sands, minor rootlets, no odour. As above but dark brown and very stiff.	St	D	
	0	A		A2-TP20_0.5	0)	-		Sitty CLAY: (CL) brown, slightly moist, firm, trace rootlets, no odour.	F	SI. M	
							-		Sandy CLAY: (CL) brown/grey mottled orange/brown, slightly moist, soft, fine grained sands, trace silt, no odour.	s	SI. M	
	0	A		A2-TP20_1.0	0)	1_		Test Pit terminated at 1.0 m bgl. Limit of Investigation.			
							-					
							-					
							-					
				FIELD ST			2	10.				
0 1 2 3	No visi Slight v Visible Signific ODOL No No	visible of contam cant visil UR RAN n-Natura	ence of contamination ontamination ination ble contamination IKING al odours	FIELD DATA Suv = Uncorrects Sup = Pocket per N = SPT blows FPM = Field perm PID = Photoionis reading (p GROUNDW/	netr s pe neak atio pm, ATE	rome er 300 bility on de , V/V ER S'	ter (kP Omm etector) YMBOL	a) / 1	7 = Pocket Penetrometer test CSPT top = start of N blowcount) D (dense) 20 (dense) SSPT Spoon Sample (Pushed) VD (very dense) SSPT Spoon S	10) - 20) - 30) - 50	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPi (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 20 (hard) > 200 kf
B C D	Slight I Modera	Non-Nat ate Non	tural odours -Natural odours atural odours	= Water leve	el (st el (de ow /	tatic) luring / Inflo	g drilling	-		TION	''	(11614) - 200 N



RI ·

Project: Contamination Investigation Location:Bankstown Airport - Site 2

Job No: IA110700

ODOUR RANKING

A B

CD

No Non-Natural odours Slight Non-Natural odours

Moderate Non-Natural odours Strong Non-Natural odours

reading (ppm, V/V)

GROUNDWATER SYMBOLS = Water level (static)

= Water level (during drilling)

= Outflow / Inflow

Client: Bankstown Airport Limited Start - Finish Date: 17/05/16 - 17/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass Northings: mN Eastings:

Logged: BC Checked: MS

(very stiff)

(hard)

100 - 200

> 200 kPa

VSt

Н

SOIL **COMMENTS** FIELD DATA SOIL DESCRIPTION CONDITION visual ranking sample type field tests ground water odour ranking consistency/ density soil type, unified classification, colour, structure, drilling method, well construction, water field test XRF (ppm) log sample ID depth (m) particle characteristics, minor components moisture condition graphic le and additional PID (ppm) observations FILL: Silty CLAY: (CL) brown, dry, stiff, minor fine gravel, trace fine to medium grained sands, no odour. \bigcirc 0 A2-TP21_0.0 Α FILL: sandy Silty CLAY: (CL) light brown and brown, dry, hard, trace fine gravel, fine grained sands, no odour. D Н 0 Α A2-TP21_0.2 SI. M Silty CLAY: (CL) brown mottled orange/brown and red/brown, slightly moist, very stiff, minor rootlets, no odour. 0 Α A2-TP21_0.5 Silty CLAY: (CL) SI. M grey mottled red/brown, slightly moist, firm, minor fine grained sands, minor rootlets, no odour. 0 A2-TP21_1.0 Test Pit terminated at 1.0 m bgl Limit of Investigation. 7/7/16 SKM ENV 1 BANKSTOWN SITE 2.GPJ SKM_ENVL1.GDT FIELD DATA ABBREVIATIONS
Suv = Uncorrected vane shear (kPa)
Sup = Pocket penetrometer (kPa)
N = SPT blows per 300mm CONSISTENCY (Su) VISUAL RANKING FIELD DATA SYMBOLS DENSITY (N-value) No visible evidence of contamination Slight visible contamination < 12 kPa × = Shear vane test VL (very loose) <10 VS (very soft) = Pocket Penetrometer test (loose) 10 - 20 S (soft) 12 - 25 2 Visible contamination
Significant visible contamination FPM = Field permeability
PID = Photoionisation detector = Standard Penetration Test (SPT top = start of N blowcount) MD (medium dense) 20 - 30 (firm) 25 - 50 D (dense) 30 - 50 St (stiff) 50 - 100

= SPT Spoon Sample (Pushed)

= Undisturbed Tube Sample

= Disturbed Sample

= Bulk Sample

VD (very dense)

CO (compact)

>50

MOISTURE CONDITION D = Dry M = Moist W = Wet

>50/150mm



Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 16/05/16 - 16/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass Northings: mN

Eastings: RL:

Logged: BC Checked: MS

		FIELD DATA					SOIL DESCRIPTION	SO	DIL DITION	COMMENTS
Old)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, well construction, water and additional observations
	0	А		A2-TP22_0.0	0		FILL: Sandy SILT: (MH) brown, dry, medium density, minor fine gravel, minor rootlets, no odour.	MD	D	
	0	А		A2-TP22_0.2	-		FILL: sandy Silty CLAY: (CL) light brown, dry, hard, fine grained sands, no odour	н	D	
	0	A		A2-TP22_0.5	_		Silty CLAY: (CL) brown mottled orange/brown, slightly moist, very stiff, trace fine ironstone gravel, trace rootlets, no odour.	VSt	SI. M	
				40.7700 1.5	-		As above but grey mottled red/brown and trace small roots.	VSt	SI. M	
	0	A		A2-TP22_1.0	- -		Test Pit terminated at 1.0 m bgl. Limit of Investigation.			
SKM_ENVL1.GDT 7/7/16					-					
KM ENV 1 BANKSTOWN STIE 2.GPJ SKM_ENVL1.GDT 777/16 G D B V C C C C C C C C C C C C C C C C C C	VISUAL RANKING No visible evidence of contamination Slight visible contamination Visible contamination Significant visible contamination ODOUR RANKING No Non-Natural odours Slight Non-Natural odours Moderate Non-Natural odours Strong Non-Natural odours No Non-Natural odours Strong Non-Natural odours Strong Non-Natural odours Strong Non-Natural odours					(kPa) a) >	7 = Standard Penetration Test (SPT top = start of N blowcount) 7 = SPT Spoon Sample (Pushed) 8 = Undisturbed Tube Sample CO (compact) >5	0 - 20 - 30 - 50 0 0/150mn	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 200 (hard) > 200 kPa



Project: Contamination Investigation Location:Bankstown Airport - Site 2

Client: Bankstown Airport Limited Start - Finish Date: 16/05/16 - 16/05/16 Rig: Backhoe

Driller: Ken Coles

Northings: mN Eastings:

Logged: BC Checked: MS

Job No: IA110700

Bore dia: 450 mm Surface Conditions: Grass RL:

			FIELD DATA					SOIL DESCRIPTION		OIL DITION	COMMENTS
PID (mad)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type field tests	ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, well construction, water and additional observations
	0	A		A2_TP23_0.0 A2_TP23_0.2	0	-		FILL: Sandy SILT: (MH) dark brown, dry, medium density, minor fine gravel, minor rootlets, no odour. FILL: sandy Silty CLAY: (CL) light brown and brown, dry, hard, fine grained sands, no odour.	MD H	D D	
	0	А		A2_TP23_0.5	0	- -		Silty CLAY: (CL) grey/brown mottled orange/brown, slightly moist, very stiff, no odour. As above but grey mottled orange/brown and red/brown and stiff.	VSt St	SI. M	pp (440, 470, 430)
	0	Α		A2_TP23_1.0	0	- 1_ - -					pp (410, 440, 420)
						- - - -		As above but firm.	F	SI. M	
	0	А		A2_TP23_2.0	0	2_ - -		As above but grey mottled red/brown.	F	SI. M	pp (330, 350, 340)
	0	Α		A2_TP23_2.5	0	-		Test Pit terminated at 2.5 m bgl. Limit of Investigation.			pp (310, 290, 320)
GF3 GAW_ENVEL.GDI 777.10						3_					
0 1 2 3 A B C D	No visi Slight v Visible Signific ODO No No Slight I Moder	visible contami contami cant visib JR RAN n-Natura Non-Nat ate Non-	ence of contamination ontamination ination ole contamination	FIELD DATA Suv = Uncorrect Sup = Pocket pe N = SPT blows FPM = Field perm PID = Photoionis reading (p GROUNDW, = Water leve = Water leve	netromes s per 30 neability sation de ppm, V/V ATER S el (station	eter (kPa 00mm / etector V) SYMBOL	a) 2 	7 = Standard Penetration Test (SPT top = start of N blowcount) 7 = SPT Spoon Sample (Pushed) 8 = Undisturbed Tube Sample CO (compact) >5	0 - 20 - 30 - 50 0 0/150mn	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 200 (hard) > 200 kPa



RI ·

Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700

No Non-Natural odours Slight Non-Natural odours

Moderate Non-Natural odours Strong Non-Natural odours

A B

CD

Client: Bankstown Airport Limited Start - Finish Date: 30/05/16 - 30/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass Northings: mN Eastings:

Logged: BC Checked: MS

SOIL COMMENTS **FIELD DATA** SOIL DESCRIPTION CONDITION visual ranking sample type field tests ground water odour ranking consistency/ density soil type, unified classification, colour, structure, drilling method, well construction, water field test XRF (ppm) log sample ID depth (m) particle characteristics, minor components moisture condition graphic le and additional PID (ppm) observations FILL: sandy Silty CLAY: (CL) brown, dry, very stiff, minor fine gravel, fine grained sands, no odour. A2-TP24_0.0 \bigcirc 0 Α Silty CLAY: (CL) brown mottled orange/brown, dry, very stiff, minor VSt D rootlets, no odour. As above but grey mottled orange/brown and red/brown, slightly moist and stiff. SI. M 0 Α A2-TP24_0.5 0 A2-TP24_1.0 Test Pit terminated at 1.0 m bgl Limit of Investigation. 7/7/16 SKM ENV 1 BANKSTOWN SITE 2.GPJ SKM_ENVL1.GDT FIELD DATA ABBREVIATIONS
Suv = Uncorrected vane shear (kPa)
Sup = Pocket penetrometer (kPa)
N = SPT blows per 300mm
FPM = Field permeability
PID = Photoionisation detector CONSISTENCY (Su) VISUAL RANKING FIELD DATA SYMBOLS DENSITY (N-value) No visible evidence of contamination Slight visible contamination < 12 kPa × = Shear vane test VL (very loose) <10 VS (very soft) = Pocket Penetrometer test (loose) 10 - 20 S (soft) 12 - 25 Visible contamination
Significant visible contamination = Standard Penetration Test (SPT top = start of N blowcount) D MD (medium dense) 20 - 30 (firm) 25 - 50 (dense) 30 - 50 St (stiff) 50 - 100 ODOUR RANKING reading (ppm, V/V) = SPT Spoon Sample (Pushed) (very stiff) VD (very dense) >50 VSt 100 - 200 GROUNDWATER SYMBOLS = Water level (static)

= Undisturbed Tube Sample

= Disturbed Sample

= Bulk Sample

= Water level (during drilling)

= Outflow / Inflow

CO (compact)

MOISTURE CONDITION D = Dry M = Moist W = Wet

>50/150mm

Н

(hard)

> 200 kPa



Project: Contamination Investigation Location:Bankstown Airport - Site 2

Moderate Non-Natural odours Strong Non-Natural odours

CD

Client: Bankstown Airport Limited Start - Finish Date: 31/05/16 - 31/05/16 Rig: Backhoe

Driller: Ken Coles

Northings: mN

Logged: BC

Checked: MS

Job No: IA110700

Bore dia: 450 mm Surface Conditions: Grass Eastings:

RI ·

SOIL **COMMENTS** FIELD DATA SOIL DESCRIPTION CONDITION visual ranking sample type field tests ground water odour ranking consistency/ density soil type, unified classification, colour, structure, drilling method, well construction, water field test XRF (ppm) log sample ID depth (m) particle characteristics, minor components moisture condition graphic le and additional PID (mdd) observations FILL: Silty CLAY: (CL) dark brown, dry, stiff, minor fine gravel, some fine grained sands, minor rootlets, no odour. A2-TP25_0.0 \bigcirc 0 Α FILL: silty Sandy CLAY: (CL) very light brown and brown, dry, very stiff, fine grained sands, no odour. D VSt A2-TP25_0.3, A2-QC05, A2-QC06 0 Α SI M Silty CLAY: (CL) St brown mottled orange/brown, slightly moist, stiff, minor rootlets, trace fine grained sands, no odour. \bigcirc 0 Α A2-TP25_0.5 Silty CLAY: (CL) grey mottled red/brown and orange/brown, slightly moist, firm, trace fine grained sands and rootlets, no F SI. M 0 A2-TP25_1.0 Test Pit terminated at 1.0 m bgl Limit of Investigation. 7/7/16 SKM ENV 1 BANKSTOWN SITE 2.GPJ SKM_ENVL1.GDT FIELD DATA ABBREVIATIONS
Suv = Uncorrected vane shear (kPa)
Sup = Pocket penetrometer (kPa)
N = SPT blows per 300mm CONSISTENCY (Su) VISUAL RANKING FIELD DATA SYMBOLS DENSITY (N-value) No visible evidence of contamination Slight visible contamination × = Shear vane test VL (very loose) <10 VS (very soft) < 12 kPa = Pocket Penetrometer test (loose) 10 - 20 S (soft) 12 - 25 2 Visible contamination
Significant visible contamination FPM = Field permeability
PID = Photoionisation detector = Standard Penetration Test (SPT top = start of N blowcount) MD (medium dense) 20 - 30 (firm) 25 - 50 D (dense) 30 - 50 St (stiff) 50 - 100 ODOUR RANKING reading (ppm, V/V) = SPT Spoon Sample (Pushed) (very stiff) VD (very dense) >50 VSt 100 - 200 No Non-Natural odours Slight Non-Natural odours GROUNDWATER SYMBOLS = Water level (static) A B = Undisturbed Tube Sample CO (compact) >50/150mm Н (hard) > 200 kPa

= Disturbed Sample

= Bulk Sample

MOISTURE CONDITION

D = Dry M = Moist W = Wet

= Water level (during drilling)

= Outflow / Inflow



Project: Contamination Investigation Location:Bankstown Airport - Site 2

Client: Bankstown Airport Limited

Driller: Ken Coles

Northings: mN Eastings:

Start - Finish Date: 31/05/16 - 31/05/16 Rig: Backhoe Job No: IA110700 Bore dia: 450 mm Surface Conditions: Grass

RL:

Logged: BC Checked: MS

			FIEL	.D DATA			SOIL DESCRIPTION		OIL DITION	COMMENTS
(mdd)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, wel construction, water and additional observations
	0	A		A2-TP26_0.0			FILL: clayey Sandy SILT: (MH) dark brown, dry, medium density, fine grained sands, some fine to medium gravel, minor rootlets, no odour. FILL: silty Clayey SAND: (SC) very light brown/grey and brown, dry, very dense, fine grained sands, no odour.	MD VD	O O	
	0	A		A2-TP26_0.4 A2-TP26_0.6	-		FILL: Silty CLAY: (CL) brown, dark brown and grey/brown, dry, very stiff, minor fine gravel, trace small to medium fragments of sandstone and medium to large fragments of ash/charcoal, no odour.	VSt	D	
	0	А		A2-TP26_1.0	0		Sitty CLAY: (CL) grey mottled orange/brown and red/brown, slightly moist, stiff, minor rootlets and medium roots, no odour.	St	SI. M	
						-	Test Pit terminated at 1.0 m bgl. Limit of Investigation.			
					-	-				
						-				
0 1 2 3	No visi Slight v Visible	isible o contam	lence of contamination ontamination intamination	Suv = Uncorrect Sup = Pocket pe	enetrometer (kF s per 300mm	(kPa) Pa)	= Pocket Penetrometer test L (loose) 10 = Standard Penetration Test MD (medium dense) 20	10 [°] 0 - 20	VS S F	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50
A B C D	ODOI No Noi Slight I Modera	JR RAN n-Natura Non-Nat ate Non-	ble contamination IKING al odours -Natural odours atural odours	PID = Photoionis reading (p GROUNDW. = Water leve	sation detector opm, V/V) ATER SYMBO el (static) el (during drillin		/ (SPT top = start of N blowcount) D (dense) 30 = SPT Spoon Sample (Pushed) VD (very dense) > CO (compact) > CO (compact)	0 - 50 50 50/150mr ITION	St VSt	(stiff) 50 - 100 (very stiff) 100 - 200 (hard) > 200 kP



RL:

Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 31/05/16 - 31/05/16 Rig: Backhoe

Driller: Ken Coles

Northings: mN

Bore dia: 450 mm

Surface Conditions: Grass

Eastings:

Logged: BC Checked: MS

			FIEL	.D DATA				SOIL DESCRIPTION		OIL DITION	COMMENTS
PID (mdd)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type field tests ground water	depth (m)	grapnic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, well construction, water and additional observations
	1	А		A2-TP27_0.0	0			FILL: Silty CLAY: (CL) dark brown, dry, stiff, some fine gravel, trace small to medium fragments of sandstone and ash/charcoal, trace medium aggregate, some fine grained sands, minor rootlets, no odour.	St	D	
	0	Α		A2-TP27_0.3	0			FILL: clayey Silty SAND: (SM) very light brown and brown, dry, compact, fine grained sands, no odour.	СО	D	
								Silty CLAY: (CL) brown mottled orange/brown, dry, very stiff, trace fine grained sands and rootlets, no odour.	VSt	D	
	0	А		A2-TP27_0.6				Silty CLAY: (CL) grey mottled red/brown, slightly moist, firm, trace rootlets, no odour.	F	SI. M	
	0	Α		A2-TP27_1.0	0	1		Test Pit terminated at 1.0 m bgl.			
								Limit of Investigation.			
						-					
	VIQU	AL RAN	IKING	FIELD DATA	ABBREVI	2 ATIONS		FIELD DATA SYMBOLS DENSITY (N-val	ile)		CONSISTENCY (Su)
0 1 2 3	No visi Slight v Visible Signific ODOL	ble evid visible o contam cant visil JR RAN	ence of contamination ontamination ination ble contamination IKING	Suv = Uncorrect Sup = Pocket pe N = SPT blow FPM = Field pern PID = Photoionis reading (p	ted vane shenetrometers per 300n meability sation deteopm, V/V)	ear (kPa) r (kPa) nm ctor	(a) × ⊥ ∇ ▼	= Shear vane test = Pocket Penetrometer test = Standard Penetration Test (SPT top = start of N blowcount) = SPT Spoon Sample (Pushed) VL (very loose) < L (loose) 11 MD (medium dense) 21 D (dense) 31 VD (very dense) >	10 0 - 20 0 - 30 0 - 50 50	VS S F St VSt	(very soft) < 12 kPa
A B C D	Slight I Modera	Non-Nat ate Non	al odours tural odours -Natural odours atural odours	GROUNDW We water leven	el (static) el (during d	rilling)	•	, , , , , , , , , , , , , , , , , , ,		m H	(hard) > 200 kP



Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700 Client: Bankstown Airport Limited Driller: Ken C Start - Finish Date:31/05/16 - 31/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Rig: Backhoe Surface Conditions:Grass Northings: mN

Eastings: r

Logged: BC Checked: MS

		FIELD DATA				SOIL DESCRIPTION		DIL DITION	COMMENTS	
PID (maa)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, well construction, water and additional observations
	1	А		A2-TP28_0.0	-		FILL: gravelly Sitty CLAY: (CL) dark brown, dry, stiff, fine to medium gravel, trace small fragments of sandstone, trace small to medium fragments of ash/charcoal, trace medium aggregate, some fine grained sands, minor rootlets, no odour.	St	D	
	0	A		A2-TP28_0.3	-		FILL: clayey Silty SAND: (SM) light brown and brown, dry, very dense, trace fine gravel, fine grained sands, no odour.	VD	D	
	0	A		A2-TP28_0.5	- O		Silty CLAY: (CL) brown mottled orange/brown and grey/brown, dry, stiff, minor rootlets, no odour.	St	D	
					-		Silty CLAY: (CL) grey mottled orange/brown and red/brown, slightly moist, stiff, trace fine grained sands and rootlets, no	St	SI. M	
	0	A		A2-TP28_1.0	-		odour.			
					-		Test Pit terminated at 1.0 m bgl. Limit of Investigation.			
					-					
					_					
					-					
JPJ GRIVE LIVE 1.0					-					
0123 ABCD	No v Slig Visil Sigr OE No I Slig	ht visible ble conta nificant vi DOUR RA Non-Natu ht Non-N	idence of contamination contamination mination sible contamination	▼ = Water leve	netrometer (kPa s per 300mm leability ation detector pm, V/V) ATER SYMBOL	a) X L S	7 = Standard Penetration Test (SPT top = start of N blowcount) 7 = SPT Spoon Sample (Pushed) 8 = Undisturbed Tube Sample CO (compact) 20 9 D (dense) 30 VD (very dense) >50 CO (compact) >50	0 - 20 - 30 - 50 0 0/150mn	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 200 (hard) > 200 kPa



Project: Contamination Investigation Location:Bankstown Airport - Site 2

Client: Bankstown Airport Limited Start - Finish Date: 31/05/16 - 31/05/16 Rig: Backhoe

Driller: Ken Coles

Northings: mN

Job No: IA110700

Bore dia: 450 mm Surface Conditions: Grass Eastings:

RL:

Logged: BC Checked: MS

			FIEL	D DATA				SOIL DESCRIPTION		OIL DITION	COMMENTS
(mdd)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, wel construction, water and additional observations
	1	Α		A2-TP29_0.0	0			FILL: Sandy CLAY: (CL) brown, dry, stiff, some fine to medium gravel, trace small to medium pieces of sandstone and ironstone, trace small fragments of glass, fine grained sands, minor rootlets, no odour.	St	D	
	0	A		A2-TP29 0.3	0			FILL: clayey silty SAND: (SM) very light brown and brown, dry, very dense, fine grained sands, no odour.	VD	D	
		,		72 11 20_010		-		Silty CLAY: (CL) brown and dark brown, dry, very stiff, minor rootlets, no odour.	VSt	D	
	0	A		A2-TP29_0.5	0			As above but brown mottled orange brown.	VSt	D	
								Silty CLAY: (CL) grey mottled red/brown, slightly moist, stiff, trace rootlets and medium roots, no odour.	St	SI. M	
	0	A		A2-TP29_1.0	0	1_		Test Pit terminated at 1.0 m bgl. Limit of Investigation.	_		
						-	-				
							-				
						_	-				
						-	-				
						-					
0 1 2 3	No visi Slight v Visible Signific	visible o contam cant visi	lence of contamination ontamination ination ble contamination	FIELD DATA Suv = Uncorrect Sup = Pocket pe N = SPT blow FPM = Field pern PID = Photoionis	ed va enetro s per neab sation	ane shear ometer (kP · 300mm ility n detector	(kPa)	= Standard Penetration Test MD (medium dense) 20 (SPT top = start of N blowcount) D (dense) 30	0 - 20 - 30 - 50	VS S F St	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100
A B C D	No No Slight I Modera	Non-Natate Non	NKING al odours tural odours I-Natural odours atural odours	reading (p GROUNDW. We water leve Water leve Water leve Water leve Water leve Water leve	ATEI el (sta el (du	R SÝMBO atic) ıring drillin		= SPT Spoon Sample (Pushed) VD (very dense) >5 = Undisturbed Tube Sample CO (compact) >5	50 50/150mr TION	VSt	(very stiff) 100 - 200 (hard) > 200 kP



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D = Dry M = Moist W = Wet

Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 31/05/16 - 31/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass Northings: mN Eastings:

Logged: BC Checked: MS

SOIL **COMMENTS** FIELD DATA SOIL DESCRIPTION CONDITION visual ranking sample type field tests ground water odour ranking consistency/ density soil type, unified classification, colour, structure, drilling method, well construction, water field test XRF (ppm) log sample ID depth (m) particle characteristics, minor components moisture condition graphic le and additional PID (ppm) observations FILL: Silty CLAY: (CL) brown/grey, dry, stiff, some fine gravel, minor fine grained sands, minor rootlets, no odour. \cap 0 A2-TP30_0.0 Α FILL: Sitty CLAY: (CL) grey, dry, very stiff to hard, minor fine medium gravel, some fine grained sands, trace rootlets, no odour. VSt D 0 Α A2-TP30_0.2 VSt D brown and grey/brown mottled orange/brown, dry, very stiff, trace rootlets, no odour. 0 Α A2-TP30_0.5 As above but grey mottled red/brown and orange/brown, slightly moist and stiff. St SI. M 0 A2-TP30_1.0 Test Pit terminated at 1.0 m bgl Limit of Investigation. 7/7/16 FIELD DATA ABBREVIATIONS
Suv = Uncorrected vane shear (kPa)
Sup = Pocket penetrometer (kPa)
N = SPT blows per 300mm CONSISTENCY (Su) VISUAL RANKING FIELD DATA SYMBOLS DENSITY (N-value) No visible evidence of contamination Slight visible contamination < 12 kPa × = Shear vane test VL (very loose) <10 VS (very soft) = Pocket Penetrometer test (loose) 10 - 20 S (soft) 12 - 25 Visible contamination
Significant visible contamination FPM = Field permeability
PID = Photoionisation detector = Standard Penetration Test (SPT top = start of N blowcount) MD (medium dense) 20 - 30 (firm) 25 - 50 D (dense) 30 - 50 St (stiff) 50 - 100 ODOUR RANKING reading (ppm, V/V) = SPT Spoon Sample (Pushed) (very stiff) VD (very dense) >50 VSt 100 - 200 No Non-Natural odours Slight Non-Natural odours GROUNDWATER SYMBOLS = Water level (static) A B = Undisturbed Tube Sample CO (compact) >50/150mm Н (hard) > 200 kPa Moderate Non-Natural odours Strong Non-Natural odours = Disturbed Sample CD = Water level (during drilling) MOISTURE CONDITION

= Bulk Sample

= Outflow / Inflow

SKM ENV 1 BANKSTOWN SITE 2.GPJ SKM_ENVL1.GDT



Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 31/05/16 - 31/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Surface Conditions: Grass Northings: mN

Eastings:

Logged: BC Checked: MS RL:

			FIEL	.D DATA			SOIL DESCRIPTION		OIL DITION	COMMENTS
(mdd)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type field tests ground water	depth (m) graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, wel construction, water and additional observations
	0	А		A2-TP31_0.0, A2-QC07, A2-QC08	0	-	FILL: Sitty CLAY: (CL) dark brown, dry, very stiff, some fine to medium gravel, trace fine ironstone gravel, trace fine grained sands, minor rootlets, no odour.	VSt	D	
							FILL: clayey Silty SAND: (SM) brown, dry, compact, trace fine gravel, fine to medium grained sands, no odour.	CO	D	
	0	А		A2-TP31_0.5	0	_	As above but very light grey and brown.	СО	D	
							Silty CLAY: (CL) grey mottled orange/brown, slightly moist, stiff, trace rootlets and medium roots, no odour	_ St	SI. M	
	0	A		A2-TP31_1.0	0					
						_	Test Pit terminated at 1.0 m bgl. Limit of Investigation.			
						-				
						- - -				
0 1 2 3	No visi Slight v Visible Signific	visible o contam	ence of contamination ontamination ination ble contamination	FIELD DATA Suv = Uncorrect Sup = Pocket pe N = SPT blow FPM = Field perm PID = Photoionis	ed vane she enetrometer (s per 300mn neability sation detect	ar (kPa) kPa) 1	L = Pocket Penetrometer test	10 [°] 0 - 20 0 - 30 0 - 50	VS S F St	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100
A B C D	No No Slight I Modera	n-Natura Non-Nat ate Non	IKING al odours tural odours -Natural odours atural odours	reading (p GROUNDW. W = Water leve W = Water leve W = Outfle	ATER SYME el (static) el (during dri					(very stiff) 100 - 200 (hard) > 200 kP



Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700 Client: Bankstown Airport Limited Driller: Ken C Start - Finish Date: 31/05/16 - 31/05/16 Rig: Backhoe

Bore dia: 450 mm

Driller: Ken Coles Rig: Backhoe Surface Conditions: Grass Northings: mN

Eastings: mE RL: Logged: BC Checked: MS

				FIEL	D DATA			SOIL DESCRIPTION	SOI CONDI		COMMENTS
	PID (ppm)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components		moisture condition	drilling method, well construction, water and additional observations
		0	Α		A2-TP32_0.0			FILL: Sitty CLAY: (CL) brown, dry, stiff, minor fine gravel, trace small to medium aggregate, trace fine grained sands, minor rootlets, no odour.	St VD	D	
		0	Α		A2-TP32_0.2	-		FILL: clayey Silty SAND: (SM) light brown and brown, dry, very dense, fine grained sands, no odour. Silty CLAY: (CL)		SI. M	
						-		brown mottled orange/brown and red/brown, slightly moist, firm, minor fine grained sands, trace rootlets, no odour.		OI. IVI	
		0	A		A2-TP32_0.5	-		As above but light grey mottled orange/brown and red/brown and trace fine ironstone gravel.	F :	SI. M	
						-					
		0	Α		A2-TP32_1.0	1_		Test Pit terminated at 1.0 m bgl. Limit of Investigation.			
						-					
						_					
						_					
VL1.GDT 7/7/16						-					
2.GPJ SKM_ENVL1.GDT 7/7/16		Mou	AL DAN'	KINC	FIELD DATA		NS T	EIELD DATA CYMPOLIC DENOTE ALL			CONCICTEMOV (C.A
IV 1 BANKSTOWN	0 1 2 3 A B C D	Slight visible contamination Visible contamination Visible contamination Significant visible contamination ODOUR RANKING No Non-Natural odours Slight Non-Natural odours Moderate Non-Natural odours Moderate Non-Natural odours Water level (during drilling) Visible contamination No = FPT blows per 300mm FPM = Field permeability PID = Photoionisation detector reading (ppm, V/V) GROUNDWATER SYMBO Water level (during drilling)				ed vane shear (netrometer (kP; s per 300mm neability sation detector pm, V/V) ATER SYMBOL el (static)	(kPa) a) >	7 = Standard Penetration Test (SPT top = start of N blowcount) V = SPT Spoon Sample (Pushed) Selection = SPT Spoon Selection = SPT S) - 20 - 30 - 50))/150mm	VS S F St VSt H	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 200 (hard) > 200 kPa



FIELD DATA

BOREHOLE No. A2-TP33

Project: Contamination Investigation Location:Bankstown Airport - Site 2

Client: Bankstown Airport Limited Start - Finish Date: 31/05/16 - 31/05/16 Rig: Backhoe

Driller: Ken Coles

SOIL DESCRIPTION

Northings: mN

Eastings:

SOIL

Job No: IA110700

Bore dia: 450 mm Surface Conditions: Grass RL:

Logged: BC Checked: MS COMMENTS CONDITION

PID (ppm)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure, particle characteristics, minor components	consistency/ density	moisture condition	drilling method, wel construction, water and additional observations
	1	Α		A2-TP33_0.0	0	-		FILL: gravelly Sandy SILT: (MH) dark brown/grey, dry, medium density, fine gravel, trace small to medium fragments of asphalt and aggregate, fine to medium grained sands, minor rootlets, no odour.	MD VD	D D	
	0	A		A2-TP33_0.2	0	-		FILL: clayey Silty SAND: (SM) light brown and brown, dry, very dense, fine grained sands, no odour.			
						-		Silty CLAY: (CL) brown mottled orange/brown, slightly moist, stiff, trace rootlets, no odour.	St	SI. M	
	0	A		A2-TP33_0.5	0	_		Burnt tree root observed.			
						-		As above but grey mottled red/brown and	F	SI. M	
						-		orange/brown, firm and trace small to medium tree roots.	, '	Oi. W	
	0	А		A2-TP33_1.0	0	1_					
						-	_	Test Pit terminated at 1.0 m bgl. Limit of Investigation.			
						-	-				
						-	_				
						_	-				
						-					
						-	_				
	1,000	AL ST	III/INO	EIEI D DATA	VD.	2	DNG 1	FIELD DATA OWNOCLO			OONGOTENS: (2)
0 1 2 3	No visi Slight v Visible Signific	visible o contam cant visil	ence of contamination ontamination ination ble contamination	FIELD DATA Suv = Uncorrect Sup = Pocket pe N = SPT blow FPM = Field pern PID = Photoionis	netr s pe neat satio	rometer (kP er 300mm pility on detector	°a) 2	= Standard Penetration Test (SPT top = start of N blowcount) D (dense) 20	0 - 20 - 30 - 50	VS S F St	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100
A B C D	No Nor Slight I Modera	Non-Nat ate Non	IKING al odours tural odours -Natural odours atural odours	reading (p GROUNDW. W = Water leve W = Water leve Outfle	ЛТГ	D CYMDO		= Undisturbed Tube Sample CO (compact) >5	0/150mr TION	VSt n H	(very stiff) 100 - 20 (hard) > 200 kF



RL:

Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 1/06/15 - 1/06/15

Bore dia: 450 mm

Driller: Ken Coles Rig: Backhoe Surface Conditions: Grass

Northings: mN Eastings:

Logged: BC Checked: MS

			FIEL	D DATA				SOIL DESCRIPTION		DITION	COMMENTS
(ppm)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structur particle characteristics, minor components	consistency/	moisture condition	drilling method, we construction, wate and additional observations
	1	A		A2-TP34_0.0	С			FILL: Sitty CLAY: (CL) brown/grey, dry, stiff, minor fine to medium gravel, trace medium to large aggregate, fine ironstone gravel and small fragments of ash/charcoal, some fine grained sands, minor rootlets, no odour. FILL: Sitty CLAY: (CL) grey, brown and red/brown, dry, hard, trace small to medium ironstone gravel, trace fine grained sands, minor rootlets, no odour.	St H	D	
	0	A		A2-TP34_0.3	С	-		FILL: silty Clayey SAND: (SC) very light brown and brown, dry, compact, fine grained sands, no odour.	со	D	
	0	А		A2-TP34_0.5	С	-		Silty CLAY: (CL)	St	SI. M	
								brown and dark brown, slightly moist, stiff, trace rootlets and small to medium roots, no odour.			
				40 TD04 40				As above but grey mottled orange/brown and red/brown.	St	SI. M	
	0	A		A2-TP34_1.0		1_		Test Pit terminated at 1.0 m bgl. Limit of Investigation.			
						-	-				
						_	-				
						-	-				
	VISU	AL RAN	IKING	FIELD DATA Suv = Uncorrect	ABI	2 BREVIATIO	NS (kBa)	FIELD DATA SYMBOLS DENSITY (N-	value)		CONSISTENCY (Su)
0 1 2 3	Slight v Visible Signific ODO	visible on contame cant visil UR RAN	ble contamination IKING	Sup = Pocket pe N = SPT blows FPM = Field perm PID = Photoionis reading (p	neti s pe neal satio pm,	rometer (kF er 300mm pility on detector , V/V)	'a)		<10 10 - 20 20 - 30 30 - 50 >50	VS S F St VSt	(very soft) < 12 kP (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 20
A B C D	Slight I Moder	Non-Nat ate Non	al odours tural odours -Natural odours atural odours	GROUNDW. Water level Water level Water level GROUNDW.	el (s el (d	tatic) uring drillin		= Undisturbed Tube Sample CO (compact)	>50/150m NDITION	ım H	(hard) > 200 kl



RL:

Project: Contamination Investigation Location:Bankstown Airport - Site 2 Job No: IA110700

Client: Bankstown Airport Limited Start - Finish Date: 1/06/15 - 1/06/15

Bore dia: 450 mm

Driller: Ken Coles Rig: Backhoe Surface Conditions: Grass

Northings: mN Eastings:

Logged: BC Checked: MS

			FIEL	D DATA				SOIL DESCRIPTION		OIL DITION	COMMENTS
PID (ppm)	visual ranking	odour ranking	field test XRF (ppm)	sample ID	sample type	field tests ground water depth (m)	graphic log	soil type, unified classification, colour, structure particle characteristics, minor components	consistency/ density	moisture condition	drilling method, we construction, wate and additional observations
	0	A		A2-TP35_0.0 A2-TP35_0.2	0		-	FILL: Silty CLAY: (CL) brown/grey, dry, stiff, some fine to medium gravel, trace fine ironstone gravel and small to medium fragments of ash/charcoal, some fine to medium grained sands, minor rootlets, no odour. FILL: silty Clayey SAND: (SC) very light grey/brown and brown, dry, compact, trace large tree root, fine grained sands, no odour.	St CO	D	
	0	А		A2-TP35_0.5	0	-		Silty CLAY: (CL) brown mottled grey/brown and orange/brown, slightly moist, very stiff, minor rootlets and trace small roots, no odour.	VSt	SI. M	
	0	A		A2-TP35_1.0	0	1		Silty CLAY: (CL) grey mottled red/brown, slightly moist, firm to stiff, trace rootlets, no odour.	F - St	SI. M	
						_	_	Test Pit terminated at 1.0 m bgl. Limit of Investigation.			
						-	-				
							-				
0 1 2 3	No visi Slight v Visible Signific ODO	visible o contam cant visi UR RAN	lence of contamination ontamination ination ble contamination IKING	FIELD DATA Suv = Uncorrect Sup = Pocket pe N = SPT blow FPM = Field pern PID = Photoionis reading (p	ed v netr s pe neat satio pm,	rane shear ometer (kl r 300mm bility n detector V/V)	(kPa)	L = Pocket Penetrometer test = Standard Penetration Test (SPT top = start of N blowcount) = SPT Spoon Sample (Pushed) L (loose) MD (medium dense) D (dense) VD (very dense)	<10 10 - 20 20 - 30 80 - 50 >50	VS S F St VSt	CONSISTENCY (Su) (very soft) < 12 kPa (soft) 12 - 25 (firm) 25 - 50 (stiff) 50 - 100 (very stiff) 100 - 20
A B C D	Slight I Moder	Non-Nat ate Non	al odours tural odours -Natural odours atural odours	GROUNDW. = Water leve = Water leve = Outfle	el (st el (d	atic) uring drillir		= Undisturbed Tube Sample			(hard) > 200 kf

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

HOLE NO : A2-BH1 FILE / JOB NO : IA110700 SHEET : 1 OF 2

POSITION : SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 19/5/16 DATE COMPLETED: 19/5/16 DATE LOGGED : 19/5/16 LOGGED BY: MG CHECKED BY: JK

			ILLIN		Т		7	MATERIAL		l.	I
& CASING DO	WATER SS	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	, DЕРТН (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
A H					0.0			Silty CLAY: brown, low to medium plasticity, trace of rootlets	D		FILL
				0.50m		× ×		0.30m Silty CLAY: pale grey, medium plasticity, trace of rootlets			ALLUVIUM
				SPT 5,6,7 N=13] .	×		At 0.6m, as above but grey, brown, trace of organics			
				0.95m	-	× ×	CI		D - M		
					1.0 —	×					
						×					
				1.50m SPT 5,6,9 N=15	┧.	X		1.50m Silty CLAY: grey, brown, high plasticity			
					-						
				1.95m	2.0 —	× ×					
					-	× -					
						×					
				3.00m SPT	3.0 -	<u> </u>					
				SPT 4,4,7 N=11	-	×					
		VE		3.45m	-	× ×					
			ved		-	X				St	
			Not Observed		4.0 -						
AD/T —			ž			×	СН				
<u>ح</u> ا				4.50m		x					
				SPT 4,6,8 N=14	-	x		At 4.5m, as above but trace of ironstone gravel	М		
				4.95m	5.0 -	X			I WI		
					3.0						
						x					
					-	x					
				6.00m	-						
				SPT 3,6,7 N=13	6.0						
				6.45m		×					
] .	× -					
					7.0 —			7.00m Sandy CLAY: grey, high plasticity, medium to coarse grained sand			
					-						
		Е		7.50m SPT 5.11.18	[cs			VSt	
				5,11,18 N=29							
				7.95m	8.0-						

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

SHEET: 2 OF 2

HOLE NO : A2-BH1

FILE / JOB NO: IA110700

POSITION: SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

CONTRACTOR: Epoca Environmental DRILLER: DF

DATE LOGGED: 19/5/16 LOGGED BY: MG CHE RIG TYPE : Geoprobe 7822DT MOUNTING : Track DATE STARTED : 19/5/16 DATE COMPLETED

DATE STARTED: 19/5/16	DATE COMPLETED: 19/5/16	DATE LOGGED: 19/5/16	LOGGED BY : MG	CHECKED BY: JK	
					Т
					_

00000	00		ILLIN Ľ		1		z	MATERIAL		>	
& CASING WATER	WAIEK	PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	0.8 0.0 DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL		MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
					-	x x x	CS	8.10m Silty CLAY: grey, red-brown, high plasticity, with ironstone gravel		VSt	ALLUVIUM
į		E	Not Observed		9.0 —	X X X X X	СН		М	St	
				9.50m SPT 4,6,8 N=14		X X X X X X X X _		9.95m End of borehole at 9.95m, target depth			
					-						
					11.0 —						
					12.0 —						
					13.0 —						
					- 14.0 — -						
					- 15.0 — -						
	nlana	atony	Note: ations	s for	16.0	-					

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

FILE / JOB NO : IA110700 SHEET : 1 OF 2 ANGLE FROM HORIZONTAL: 90°

HOLE NO : A2-BH2

POSITION : SURFACE ELEVATION:

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 17/5/16 DATE COMPLETED: 17/5/16 DATE LOGGED : 17/5/16 LOGGED BY: MG CHECKED BY: JK

		RILLIN					MATERIAL			
& CASING WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	5 DEРТН (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
N .				0.0			0.10m Silty CLAY: pale brown, low plasticity, trace of fine to medium grained sand and rootlets Silty SAND: pale brown, fine to medium grained sand, trace of clay and rootlets	D		TOPSOIL FILL
			0.50m SPT	-			0.50m			ALLUVIUM
			SPT 3,5,5 N=10	-			Silty CLAY: grey, red-brown, low plasticity			ALLOVION
			0.95m	1.0 —	×					
				-	- ×					
			1.50m SPT	-	×	-	At 1.5m, as above but clay is low to medium plasticity			
			SPT 4,7,9 N=16	-	×	CL-CI				
			1.95m	2.0 —	x					
				-	×	-				
				_						
				-	×					
			3.00m SPT 3,4,6 N=10	3.0 —	^ ====================================		3.00m Silty CLAY: grey, brown, high plasticity			
				-	×					
			3.45m	-	×	-				
		Not Observed		-						
	VE	Not O		4.0 —	×					
				_				М	St	
			4.50m SPT 4,5,7 N=12	-	x		At 4.5m, as above but trace of ironstone gravel			
			4.95m	-						
				5.0 —	×					
				-	<u>x</u>					
				-	×	СН				
			6.00m	-						
			SPT 3,5,7 N=12	6.0 -	<u>×</u>					
			6.45m	-	x					
				-	× ×					
				7.0 —	<u>×</u>					
				-	×					
			7.50m	-	<u> </u>		At 7 Fee and about his to see the second of			
			SPT 4,5,8 N=13	-			At 7.5m, as above but grey, red-brown, trace of ironstone gravel			
			7.95m	8.0	x					

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

SHEET: 2 OF 2

HOLE NO : A2-BH2

FILE / JOB NO: IA110700

POSITION : SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 17/5/16 DATE COMPLETED: 17/5/16 DATE LOGGED: 17/5/16 LOGGED BY: MG CHECKED BY: JK

Not Observed GROUNDWATER LEVELS & SAMPLES & SAMPLES & FIELD TESTS	9.0 - 9.0 - 9.12 - 9.12 - 9.12 -	X	TOBINAS	Soil Type, Col Seco	MATERIAL DESCRIPTI lour, Plasticity or Partic pondary and Minor Comp own, high plasticity (cont own, high plasticity the plasticity (cont own, high plasticity the plastici	cle Characteristic ponents	MOISTURE CONDITION	CONSISTENCY TO CONSIS	STRUCTURE & Other Observations ALLUVIUM
9.50m SPT 6.9.12 N=21	9.0 – 50m PT 912 9-21 95m 10.0 –	X	CH			tinued)		St	ALLUVIUM
9.50m SPT 6,9,12 N=21	50m PT 9.12 =21 95m 10.0 –				.95m, target depth			VSt	
		-							
	12.0 -	- - -							
	13.0 -	- - - -							
	14.0 -	- - - - -							
	15.0 -	- - - -							
		15.0 -	15.0 —	15.0 —	15.0—	15.0 —	15.0—	15.0 —	15.0 —

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

SHEET: 1 OF 2

HOLE NO : A2-BH3

FILE / JOB NO: IA110700

POSITION: SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 17/5/16 DATE COMPLETED: 17/5/16 DATE LOGGED: 17/5/16 LOGGED BY: MG CHECKED BY: JK DRILLING MATERIAL PROGRESS OF STATE OF NO N

0 ~		S S	ES.	ے ت	분인	ICATI BOL	MATERIAL DESCRIPTION	JE PE	NE SEE	STRUCTURE
& CASING WATER	DRILLING	GROUNDWATE	SAMPLES (FIELD TEST	DEPTH (m	GRAPHIC	CLASSIFICATIC SYMBOL	Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENC RELATIVE DENSITY	& Other Observations
∞ <u></u>		- 0	- ""	0.0		ō	Silty CLAY: pale brown, low plasticity, with rootlets		0	FILL
				-	$\langle \rangle \rangle$			D		
			0.50	.			0.50			
			0.50m SPT 3,4,5 N=9	┪.	××		0.50m Silty CLAY: grey, brown, low to medium plasticity			ALLUVIUM
			N=9	١.	× ×					
			0.95m		×					
				1.0 —	×					
				-	×					
			1.50m	-	<u></u>					
			SPT 2,4,5 N=9		×		At 1.5m, as above but clay is medium plasticity, trace of rootlets			
			N-9	-	<u> </u>	CL-CI				
			1.95m 2.00m	2.0 -	× ×					
			U	.	×					
					X					
			2.50m		×					
				-	<u> </u>					
				-	×					
	VE		3.00m SPT 3,4,7	3.0 -			3.00m Silty CLAY: grey, red-brown, high plasticity, trace of medium to coarse	_		
			3,4,7 N=11	.	×		grained sand			
			3.45m	.	<u> </u> ×_×					
				1	<u> </u>					
		٥	:		<u></u>	СН				
		PayaesdO toN		'	<u>_</u>					
		Į to		4.0 —						
				-	× -			М	St	
			4.50m	-	×		4.50m			
			SPT 4,5,6 N=11] -	X		Silty CLAY: grey, red-brown, high plasticity			
			N=11	.	×					
			4.95m	5.0 —	×					
					×					
					×					
				-	×					
				'	×					
				-	×					
		-	6.00m SPT	6.0 -	×					
			SPT 3,6,7 N=13	-	<u> </u> ××	СН				
			6.45m	-	x					
				Ī.	×					
					×	1				
					<u> </u>]				
	E			7.0 —		-				
				-	× ×					
			7.50m] -	×	-				
			SPT 3,5,9 N=14	-	×		At 7.5m, as above but trace of ironstone gravel			
				.	<u> </u>	-				
			7.95m	Ⅎ 8.0−	×					

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

ANGLE FROM HORIZONTAL: 90°

HOLE NO : A2-BH3

FILE / JOB NO : IA110700 SHEET : 2 OF 2

POSITION : SURFACE ELEVATION:

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 17/5/16 DATE COMPLETED: 17/5/16 DATE LOGGED: 17/5/16 LOGGED BY: MG CHECKED BY: JK

			RILLIN		1		-	MATERIAL		I.	I
& CASING OS	WATER SSE	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	, DEРТН (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
					8.0 —	<u>× _</u>		Silty CLAY: grey, red-brown, high plasticity (continued)			ALLUVIUM
					-						
			þ		-	× _ ×		At 8.5m, as above but brown, red-brown			
AD/T —		E	Not Observed		-		СН		м	St	
AC		_	N		9.0 —	×	Сп		IVI		
				9.50m	-	× -					
				SPT 6,9,12 N=21	-	^ - x - x				VSt	
V				9.95m	10.0 —	× _		9.95m			
					-	-		End of borehole at 9.95m, target depth			
					-	-					
					-						
					11.0 —						
					-	-					
					-	1					
					-						
					12.0 —	-					
					-	1					
					-						
					-						
					13.0 —	-					
					-]					
					-	-					
					14.0 —	1					
					-	-					
					-	-					
					15.0 —						
					-	-					
					-	-					
					16.0	_					
ee l etai	Explai	natory obbrev descri	Note iation	s for s	10.0						

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

FILE / JOB NO : IA110700 SHEET : 1 OF 2

HOLE NO : A2-BH4

SURFACE ELEVATION: POSITION : ANGLE FROM HORIZONTAL: 90° CONTRACTOR: Epoca Environmental DRILLER: DF

RIG TYPE: Geoprobe 7822DT MOUNTING : Track DATE STARTED: 19/5/16 DATE COMPLETED: 19/5/16 DATE LOGGED : 19/5/16 LOGGED BY: MG CHECKED BY: JK

			ILLIN				,	MATERIAL	,		
& CASING WATER	SS	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
H HA					- 0.0			Silty CLAY: brown, low to medium plasticity, with rootlets 0.30m Silty CLAY: grey, medium plasticity, trace of rootlets	D		FILL
*				0.50m SPT 4,7,7 N=14	-	x x x x	CI	0.80m Silty CLAY: grey, brown, high plasticity, trace of rootlets	D - M		
				1.50m	1.0 —	x x x					
				SPT 3,6,6 N=12	2.0 —	× × × × ×					
		VE			-	 x x x	СН		м	St	
				3.00m SPT 3,5,7 N=12	3.0 —	X X X X X X X X _					
				3.45m	- -	 					
—— AD/I				4.50m	4.0 —			4.50m			
		E		SPT 7,12,14 N=26 4.95m	5.0 —		SM	Silty SAND: grey, brown, medium to coarse grained sand, trace of clay	M - W	MD	
					-			5.30m Silty CLAY: grey, red-brown, high plasticity			
				6.00m SPT 4,6,8 N=14	- - 6.0 —	- x - x - x - x					
		VE		6.45m	7.0 —	X X X X X X X X X _ X	CH		м	St	
				7.50m SPT 3,5,8 N=13	-						

NON-CORE DRILL HOLE - GEOLOGICAL LOG

SURFACE ELEVATION:

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

ANGLE FROM HORIZONTAL: 90°

HOLE NO : A2-BH4

FILE / JOB NO: IA110700 SHEET: 2 OF 2

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 19/5/16 DATE COMPLETED: 19/5/16 DATE LOGGED: 19/5/16 LOGGED BY: MG CHECKED BY: JK

PENETRATION GROUNDWATER	SAMPLES & FIELD TESTS	9.0 —	COST COST COST COST COST COST COST COST	T CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components Silty CLAY: grey, red-brown, high plasticity (continued)	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
	9.50m SPT 5,9,10 N=19	9.0 —						ALLUVIUM
		10.0 —	×	1	9.50m Silty CLAY: grey, high plasticity, trace of ironstone gravel and organics			
		-		. CH	9.95m End of borehole at 9.95m, target depth		VSt	
		11.0 —						
		- 12.0 — - -	-					
		13.0 —						
		14.0						
		15.0 —						
tc	pry Nit	ory Notes for eviations criptions.	12.0 — 12.0 — 13.0 — 14.0 — 15.0 — 16.0 — 16.0 —	12.0 —	12.0 —	12.0— 13.0— 14.0— 15.0— 16.0	12.0— 13.0— 14.0— 15.0— 16.0	12.0 —

NON-CORE DRILL HOLE - GEOLOGICAL LOG

SURFACE ELEVATION:

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

FILE / JOB NO : IA110700 SHEET : 1 OF 2 ANGLE FROM HORIZONTAL: 90°

HOLE NO : A2-BH5

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 16/5/16 DATE COMPLETED: 16/5/16 DATE LOGGED : 16/5/16 LOGGED BY: MG CHECKED BY: JK

		RILLIN				7	MATERIAL	ı	. '	
& CASING WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
				0.0 —			0.15m Silty SAND: pale brown, fine to medium grained sand			TOPSOIL
			0.50m SPT 7,5,4 N=9	- 1.0 —			Clayey SAND: brown, fine to coarse grained sand, trace of fine to coarse gravel 1.00m	D		FILL
	VE		1.50m SPT 3,4,8 N=12	- 2.0 —	x	СІ-СН	Silty CLAY: grey, brown, medium to high plasticity	D - M		ALLUVIUM
		_	3.00m SPT 6,7,9	- - - 3.0 —	x		3.00m Silty CLAY: grey, brown, high plasticity, trace of ironstone gravel		St	
			N=16 3.45m	4.0 —						
		<u>-</u>	4.50m SPT 13,10,10 N=20 4.95m	5.0	-X	At 4.5m, as above but grey, red-brown, with sand				
	Е		6.00m SPT	- - 6.0 —	X X X X X X X X X _ X		6.10m	М	VSt	
			SPT 3,5,7 N=12 6.45m	7.0 —	X	CI-CH	Silty CLAY: grey, brown, medium to high plasticity, trace of ironstone gravel		St	
			7.50m SPT 4,8,12 N=20	_	- ^ - * - * - *	СН	7.50m Silty CLAY: grey, brown, high plasticity, with ironstone gravel	-	VSt	

NON-CORE DRILL HOLE - GEOLOGICAL LOG

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

SURFACE ELEVATION:

ANGLE FROM HORIZONTAL: 90°

HOLE NO : A2-BH5

FILE / JOB NO : IA110700 SHEET : 2 OF 2

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 16/5/16 DATE COMPLETED: 16/5/16 DATE LOGGED : 16/5/16 LOGGED BY: MG CHECKED BY: JK

			ILLIN		ī	1	7	MATERIAL	1		
& CASING 00	WATER SSE	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
					8.0 —	<u>× _</u>	-	Silty CLAY: grey, brown, high plasticity, with ironstone gravel (continued)			ALLUVIUM
					-	<u>×</u>				VSt	
					-	×					
— AD/T –		Е			9.0 —		СН		М		
					-	× ×					
				9.50m SPT 4,5,7 N=12	-	×				St	
<u>v</u>				9.95m	10.0 —	×		9.95m End of borehole at 9.95m, target depth			
					-	-		Solonolo di Soloni, angoi dopui			
					-						
					-						
					11.0 —						
					-						
					-						
					12.0 —	-					
					-						
					-	-					
					12.0						
					13.0 —						
					-						
					-						
					14.0 —						
					-						
					-						
					15.0 —						
					-						
					-						
					-						
ee l	Explai	natory bbrev descri	Note	s for	16.0 —	-	I		1		1

NON-CORE DRILL HOLE - GEOLOGICAL LOG

SURFACE ELEVATION:

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

ANGLE FROM HORIZONTAL: 90°

HOLE NO : A2-BH6

FILE / JOB NO : IA110700 SHEET : 1 OF 2

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 17/5/16 DATE COMPLETED: 17/5/16 DATE LOGGED : 17/5/16 LOGGED BY: MG CHECKED BY: JK

DRILLING							MATERIAL			
OGRESS				(m)	HIC	CATION	MATERIAL DESCRIPTION	URE	ENCY TY	CTDUCTURE
& CASING WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DЕРТН (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
*		-		0.0 —	X/A		0.10m Silty CLAY: pale brown, low plasticity, trace of rootlets		_	TOPSOIL
				-			Silty CLAY: pale brown, low to medium plasticity, trace of rootlets	D		FILL
			0.50m	-		}	0.50m			
			SPT 5,6,7 N=13] -	<u>×</u> _ ×		Silty CLAY: brown, grey, medium plasticity			ALLUVIUM
			N=13	_	×	1				
			0.95m	1.0 —	× ×					
					×					
					<u> </u>	-				
			1.50m SPT		<u> </u>					
			3,4,4 N=8	-	x					
			1.95m	-	<u> </u>	-				
				2.0 —	×					
				-	<u></u>	СІ-СН			St	
				-	×					
				-	×					
				-	×	-				
			3.00m	3.0 —	× ×					
			SPT 3,5,7 N=12		×		At 3.0m, as above but clay is high plasticity			
					×					
			3.45m		<u> </u>					
					×	1				
				-	<u>x</u>					
	VE			4.0 —	×		4.00m Silty SAND: grey, brown, medium to coarse grained sand, with clay	1		
				-	×			М		
			4.50m	_	×	SM			MD	
		_	SPT 10,10,6 N=16	-	^ ×					
				-	×		4.85m			
			4.95m	5.0 —	<u> </u>	-	Silty CLAY: grey, brown, high plasticity, trace of sand			
				-	<u>× </u>					
				_	×	-				
				_	×	СН				
						"				
			6.00m		<u> </u>					
			SPT 4,5,7 N=12	6.0 —	×]			_	
			IN-12	-	×		6.35m		St	
			6.45m	-	× ×		Silty CLAY: grey, high plasticity			
				-	×					
				-	<u></u>	-				
				7.0 —	X					
				-	<u> </u>	СН				
			7.50	-	×					
			7.50m SPT 10,11,14 N=25	_	×				\vdash	
			N=25	_	 	-			VSt	
			7.95m	8.0	×					
e Expla	natory	Note	s for	J.U —						

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

FILE / JOB NO : IA110700 SHEET : 2 OF 2

HOLE NO : A2-BH6

POSITION : SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 17/5/16 DATE COMPLETED: 17/5/16 DATE LOGGED: 17/5/16 LOGGED BY: MG CHECKED BY: JK

DRILLING PENETRATION	GROUND WATER TO LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION	TURE	TENCY TIVE TITY	STRUCTURE
DRILLING	GROUND WATI LEVELS	SAMPLES	PTH (m	APHIC -0G	FICATI(ABOL	MATERIAL DESCRIPTION	Land In	ĬŽŽĘ	STDI ICTI IDE
				GR	CLASSII	Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOIST	CONSISTENCY RELATIVE DENSITY	& Other Observations
Е		9.00m D	- 8.0 — - - - - 9.0 —		СН	Silty CLAY: grey, high plasticity (continued)	м	VSt	ALLUVIUM
			- 10.0 — -			End of borehole at 9.5m, borehole collapse.			9.50: SPT unable to be performed due to wall collapse. Refusal at 7.3m
			11.0 —						
			- 12.0 — - -						
			13.0 —						
			14.0 —						
			15.0 —						
			9.00m D	9.50m 9.50m 10.0 — 11.0 —	9.50m 10.0 — X — X — X — X — X — X — X — X — X —	9.50m 10.0 — 11.0 — 12.0 — 13.0 — 14.0 —	9.50m End of borehole at 9.5m, borehole collapse. 10.0— 11.0— 13.0— 14.0— 14.0— 14.0— 15.00 15.00 16.00 17.00 17.00 18.00 19.50m 19.50m 19.50m 10.00 10.	10.0 — Som End of borehole at 9.5m, borehole collapse.	0 9.0m

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

FILE / JOB NO : IA110700 SHEET : 1 OF 2

HOLE NO : A2-BH7

POSITION : SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 18/5/16 DATE COMPLETED: 19/5/16 DATE LOGGED : 19/5/16 LOGGED BY: MG CHECKED BY: JK

	-		RILLIN		1		_	MATERIAL	1	1.													
& CASING	WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations												
~ {					0.0 -		,	Silty CLAY: brown, low to medium plasticity, with rootlets			FILL												
				0.50m SPT 6,5,5	-	× ×		0.40m Silty CLAY: pale grey, medium plasticity, trace of rootlets	D		ALLUVIUM												
				0.95m	-	×																	
				0.0011	1.0 -	- x	CI-CH	At 0.9m, as above but grey, brown, clay is medium to high plasticity															
			1.5 SF	1.50m SPT 3.4.5 N=9 - 1.95m 2.0 —	SPT 3,4,5 N=9	 		1.50m Silty CLAY: grey, brown, high plasticity															
						1.95m	1.95m	1.95m									-	×		City GEAT groy, Brown, high publicity			
																	1.95m	1.95m		2.0	 		
					-	<u>×</u>																	
					-																		
				3.00m SPT 3,3,6 N=9	3.0 —					St													
				3.45m	-	 																	
			Not Observed		-		СН																
AD/T		VE	Not O		4.0	 																	
AC 				4.50m SPT	-	<u>-</u> ×			М														
								SPT 4,5,6 N=11	-														
							4.55111	5.0	- ×														
					-																		
					-																		
				6.00m SPT 5,7,10 N=17	6.0	×		6.00m Silty CLAY: grey, high plasticity, trace of ironstone gravel															
				6.45m	-	X																	
					-	^_				VSt													
					7.0 —	×	СН																
				7.50m SPT	-																		
				4,6,9 N=15 7.95m	_					St													

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

HOLE NO : A2-BH7

FILE / JOB NO : IA110700 SHEET : 2 OF 2

POSITION : SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 18/5/16 DATE COMPLETED: 19/5/16 DATE LOGGED: 19/5/16 LOGGED BY: MG CHECKED BY: JK

			ILLIN		1		_	MATERIAL		1.	
& CASING	WATER SSE	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
~		VE	•	_	8.0 —	<u>× _</u>	-	Silty CLAY: grey, high plasticity, trace of ironstone gravel (continued)		St	ALLUVIUM
		V L			-	<u>×</u>		WOF		- Oi	
			served		-	×		At 8.5m, as above but brown, grey			
AD/T -			Not Observed		9.0 —	x	СН		М		
		Е			-	×				VSt	
				9.50m SPT 6,10,12 N=22	١.	×					
•				9.95m	10.0 —	×		9.95m End of borehole at 9.95m, target depth			
					-			· · · · · · · · · · · · · · · · · · ·			
					-						
					-						
					11.0 —						
					-						
					-						
					12.0 —	-					
					-						
					-	-					
					13.0 —						
					-	-					
					-						
					-	-					
					14.0 —						
					-	-					
					-						
					15.0 —	-					
					-						
					-	-					
					-	-					
ee E etail	Explar s of a	natory bbrev descri	Note	s for	16.0 —						

NON-CORE DRILL HOLE - GEOLOGICAL LOG

SURFACE ELEVATION:

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

FILE / JOB NO : IA110700 SHEET : 1 OF 2

HOLE NO : A2-BH8

ANGLE FROM HORIZONTAL: 90°

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 18/5/16 DATE COMPLETED: 18/5/16 DATE LOGGED: 18/5/16 LOGGED BY: MG CHECKED BY: JK

			ILLIN				7	MATERIAL	_	I.	<u> </u>						
& CASING O	WATER SSE	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations						
1					0.0			0.10m Silty CLAY: brown, low plasticity, with rootlets			TOPSOIL FILL						
HA-					-	\otimes		Silty CLAY: brown, pale brown, low plasticity, trace of rootlets	D		FILE						
				0.50m	-	$\langle \rangle \rangle$		0.50m									
Å				SPT 4,5,6	1.			Silty CLAY: grey, brown, medium to high plasticity, trace of rootlets			ALLUVIUM						
				N=11		×											
				0.95m	-												
					1.0 -	<u></u>			D - M								
						<u></u>											
						×											
				1.50m SPT	-	× -		At 1.5m, as above but clay is high plasticity									
				3,4,6 N=10	-	×		At 1.511, as above but day is high plasticity									
					-		CI-CH										
				1.95m 2.00m U	2.0 -	<u> </u>											
				ľ		×											
						- ^				St							
				2.50m		×											
					-	× -											
						×			М								
				3.00m		×		3.00m									
				SPT 5,6,7	3.0 -	× ,		Silty CLAY: grey, high plasticity	1								
			Ì		N=13 .	- X											
				3.45m] .	×											
						X	CH										
			/E 4.0 —			×											
		VE		1		4	4.0 —	4.0	4.0 —	4.0 —	4.0 —	× —		4.00m Silty SAND: grey, medium to coarse grained sand, with clay			
_ <u>_</u>					-	×		Silly SAND. grey, medium to coarse grained sand, with day	M - W								
— AD/T						× × sı	SM			/ MD							
				4.50m SPT	×												
				9,6,8 N=14	-	×		4.75m									
					-	×		Silty CLAY: grey, high plasticity									
				4.95m	5.0 -	X											
						×											
						×											
					-												
					-												
						× -											
				6.00m		×											
				SPT 4,7,8 N=15	6.0 -												
				N=15	-	<u> </u>											
				6.45m] .	×	СН		М	St							
] .	<u>×</u>											
						×											
					-	× ×											
					7.0 —	<u></u>											
						×											
						× ×											
				7.50m	-	×		NATE OF THE STATE									
				SPT 4,6,10 N=16	-			At 7.5m, as above but trace of ironstone gravel									
					-	L											
				7.95m	8.0-	×											

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

SHEET: 2 OF 2 ANGLE FROM HORIZONTAL: 90°

HOLE NO : A2-BH8

FILE / JOB NO: IA110700

POSITION : SURFACE ELEVATION:

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 18/5/16 DATE COMPLETED: 18/5/16 DATE LOGGED: 18/5/16 LOGGED BY: MG CHECKED BY: JK

20.5	2565		r CILLIN		1		z	MATERIAL		<u></u>	
& CASING	WATER SS	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	.8 DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
AD/I		VE			9.0 —		СН	Silty CLAY: grey, high plasticity (continued) 9.50m	М	St	ALLUVIUM
V				10.00m SPT 4,5,6 N=11	- - - - - - - -		CS	Sandy CLAY: grey, brown, high plasticity, medium to coarse grained sand, trace of ironstone gravel 10.45m End of borehole at 10.45m, target depth			
					11.0 —						
					12.0 — - - - 13.0 —						
					- - 14.0 — -						
					- 15.0 — - -						
ee E	Explai	natory abbrev descri	Note	s for	16.0 —						

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

HOLE NO : A2-BH9

FILE / JOB NO : IA110700 SHEET : 1 OF 2

POSITION : RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 16/5/16 DATE COMPLETED: 16/5/16 DATE LOGGED : 16/5/16 LOGGED BY: MG/JK CHECKED BY: JK

200	000		RILLIN		1		z	MATERIAL		>	1
& CASING	WATER SSE	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	, DЕРТН (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
П					0.0	Ž/Z		0.10m Silty SAND: pale brown, fine to medium grained sand, with rootlets			TOPSOIL ALLUVIUM
				0.50m SPT 5,7,8 N=15	1.0-	X		Silty CLAY: grey, red-brown, medium plasticity			
		VE		1.50m SPT 3.6,8 N=14	- - - 2.0-	x	СІ-СН	At 1.5m, as above but clay is high plasticity	D	St	
				3.00m SPT 4,6,10 N=16	- - - 3.0 -	X X X X X X X X _		At 3.0m, as above but trace of fine gravel	M		
			∇	4.50m	4.0	X	SM	4.00m Silty SAND: grey, red-brown, medium to coarse grained sand, trace of clay	w	MD	
		E		SPT 6,8,7 N=15 4.95m	5.0 —	×	cs	Sandy CLAY: grey, red-brown, high plasticity, medium to coarse grained sand			
				6.00m SPT 3,6,7 N=13	6.0	 		6.00m Silty CLAY: grey, high plasticity	М	St	
					7.0 —	X X X X X	CH	7.00m Silty CLAY: grey, red-brown, high plasticity, trace of ironstone gravel			
				7.50m SPT 4,8,11 N=19	- 8.0	X X	СН			VSt	

NON-CORE DRILL HOLE - GEOLOGICAL LOG

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

FILE / JOB NO : IA110700 SHEET : 2 OF 2

HOLE NO : A2-BH9

POSITION : SURFACE ELEVATION: ANGLE FROM HORIZONTAL: 90°

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 16/5/16 DATE COMPLETED: 16/5/16 DATE LOGGED : 16/5/16 LOGGED BY: MG/JK CHECKED BY: JK

	-		ILLIN		1	<u> </u>	7 1	MATERIAL		I.	
& CASING SO	WATER SSE	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
8		н	0	- 1	- 8.0 — - -	<u>× _</u> × ×		Silty CLAY: grey, red-brown, high plasticity, trace of ironstone gravel (continued)			ALLUVIUM
AD/T		E		9.00m	- - 9.0 —	× × × × × × × × _	CH	9.00m	м	VSt	
				9.50m SPT	-		SC	Clayey SAND: grey, red-brown, medium to coarse grained sand		MD	
1				SPT 6,10,10 N=20 9.95m	10.0 —		!	9.95m End of borehole at 9.95m, target depth			
					-	-					
					11.0 —	_					
					-	-					
					12.0 —	-					
					-	-					
					13.0 —	-					
					-	-					
					14.0 —	-					
					-	-					
					15.0 —	-					
					-	-					
ee	Explai	natory bbrev descri	Note	s for	16.0 —						

POSITION :

NON-CORE DRILL HOLE - GEOLOGICAL LOG

SURFACE ELEVATION:

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

ANGLE FROM HORIZONTAL: 90°

HOLE NO : A2-BH10

FILE / JOB NO : IA110700 SHEET : 1 OF 2

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 16/5/16 DATE COMPLETED: 16/5/16 DATE LOGGED: 16/5/16 LOGGED BY: MG/JK CHECKED BY: JK

ROGRESS		RILLIN				z	MATERIAL	-	<u> </u>	
& CASING WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	0.0 DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components		CONSISTENCY RELATIVE DENSITY	
				0.0	×		0.10m Silty SAND: pale brown, fine to medium grained sand, with rootlets Silty CLAY: grey, red-brown, medium to high plasticity	D		TOPSOIL ALLUVIUM
			0.50m SPT 4,4,6 N=10	- - - - -			Only GEAT. grey, recordwit, mediant to high plasticity			
			1.50m SPT 2,4,6 N=10	1.0	XXX XXXX XX X					
	VE		N=10 1.95m	2.0	X	сі-сн		M	St	
			3.00m SPT 5,7,8 N=15	3.0	- X - X - X - X - X - X - X		At 2.5m, as above but clay is high plasticity			
——————————————————————————————————————		-		4.0 —	X					
		_ <u>▽</u>	4.50m SPT 4,8,12 N=20	5.0 —	× × × ×		4.65m Silty SAND: pale grey, medium to coarse grained sand, trace of clay			
				-	× × × × × × × × ×	SM		w	MD	
	Е		6.00m SPT 3,5,8 N=13	6.0 -	× × × × × × × × × × × × × × × × × × ×		6.20m Silty CLAY: grey, red-brown, high plasticity, trace of ironstone gravel			
				7.0 —	x x	СН		М	St	
			7.50m SPT 5,7,8 N=15	-	X					

POSITION :

NON-CORE DRILL HOLE - GEOLOGICAL LOG

SURFACE ELEVATION:

JACOBS PROJECT : Bankstown Airport - Geotechnical Investigation LOCATION : Site 2

ANGLE FROM HORIZONTAL: 90°

HOLE NO : A2-BH10

FILE / JOB NO : IA110700 SHEET : 2 OF 2

RIG TYPE: Geoprobe 7822DT MOUNTING : Track CONTRACTOR: Epoca Environmental DRILLER: DF

DATE STARTED: 16/5/16 DATE COMPLETED: 16/5/16 DATE LOGGED: 16/5/16 LOGGED BY: MG/JK CHECKED BY: JK

		RILLIN				7	MATERIAL		L	I
& CASING WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
8				- 8.0 - - -	x x x x	CH	Silty CLAY: grey, red-brown, high plasticity, trace of ironstone gravel (continued)			ALLUVIUM
ADVI	E		9.50m SPT	9.0 —	x x x x	GIT	9.50m Sandy CLAY: grey, brown, medium plasticity, fine grained sand	М	St	
<u> </u>			SPT 5.5.6 N=11 9.95m	- 10.0 — -		CS	9.95m End of borehole at 9.95m, target depth			
				- 11.0 — -	- - - -					
				12.0 —	-					
				13.0 —	-					
				14.0 —	-					
				- 15.0 — -	-					
ee Expla etails of a	anatory	Note	s for	- - 16.0 —	-					

JACOBS

Hole ID

SHEET : 1 OF 1

A2-GW1

CLIENT : Bankstown Airport Limited **POSITION** : Site 2 CONTRACTOR: Epoca Environmental **EASTING**

: Geotechnical Investigation : Bankstown Airport PROJECT **NORTHING**

COORD. SYS.: MGA94 Zone 56 LOCATION

PROJECT No. : IA110700 GROUND RL: **STATUS**

LOGGED BY: MG DRILL DATE: 01/06/2016

PRC	JJEC	INC).	: IA1	10700	GROU	ND RL :						
Method	Drilling Water	Depth (m)	()	Elevation (m AHD)	Graphic Log	Soil / Rock Description	ID A2-GW1 S	Type Standpipe Piezomete	Stick Up 8	& RL	Tip De	JCTION DETAILS pth & RL Installation Dat 01/06/2016	e Static Water Leve
Met	Drill	- Der	ì	(a Ele	Gra	Silty CLAY: brown, low plasticity, with rootlets, dry (topsoil)			F 6 4	A2-GW1		Concrete	
		-				Sitty CLAY: brown, medium plasticity, trace of fine grained sand and rootlets, moist (fill)						← Grout	
		-	1			Clayey GRAVEL: grey, dark brown, fine to medium gravel, with clay, trace of fine to medium grained san moist (fill)						■ Bentonite	
		_			X	Silty CLAY: brown, grey, high plasticity, moist (alluvia	1.50 m					—— 50mm, UPVC Clas Casing	ss 18
		 - - :	2		x x x								
		_			x x								
			3		× ·								
		-			x x	From 3.0-3.5m, as above but trace of ironstone grave	el					—— 50mm UPVC Clas	s 18
П		-			× _ x							slotted screen	3 10
AD/T		-	4		X								
		_			x x							2mm graded Sand	
		- '	5		x x	Sity CLAY: grey, red-brown, high plasticity, with ironstone gravel, trace of fine to medium gravel, mois (alluvial)	t						
		-			^ x								
		- '	6		x x x	At 6.0m, as above but trace of fine grained sand							
					x x								
		_ ·	7		x :	Silty CLAY: grey, brown, high plasticity, moist (alluvia)	04/08/2046	91,02,010				
		-			x x			A2-GW1					
			8-		× ×	End of borehole at 8.0m, target depth	8.00 m						
		-											
	INATIO	: : NC :				CHECKED BY : JK CHECKED DATE : 09/06/2016 APPROVED BY : SR	REMAR	RK					

HOLE DIA.

APPROVED BY APPROVED DATE : **JACOBS**

Hole ID

A2-GW2

CLIENT : Bankstown Airport Limited CONTRACTOR : Epoca Environmental

EASTING :

: Site 2

POSITION

SHEET : 1 OF 1 STATUS :

PROJECT : Geo LOCATION : Bar

AZIMUTH

HOLE DIA

APPROVED BY

APPROVED DATE

: SR

: Geotechnical Investigation NORTHING : : Bankstown Airport COORD. SYS. : MGA94 Zone 56 LOGGED BY: MG DRILL DATE: 01/06/2016

PROJECT No. : IA110700 GROUND RL :

PIEZOMETER CONSTRUCTION DETAILS Tip Depth & RL 7.50 m Туре Stick Up & RL Installation Date Static Water Level **Drilling Water** A2-GW2 Standpipe Piezometer 01/06/2016 Graphic Log Depth (m) Elevation (m AHD) Soil / Rock Description Method Silty CLAY: brown, pale brown, low plasticity, with rootlets, dry (topsoil) Concrete Grout Silty CLAY: brown, medium plasticity, trace of rootlets, dry to moist (alluvial) Silty CLAY: grey, red-brown, high plasticity, moist (alluvial) 50mm, UPVC Class 18 Casing 1.50 m 2 At 2.5m, as above but trace of fine to medium grained 3 Sandy CLAY: brown, high plasticity, fine to medium grained sand, moist (alluvial) 50mm UPVC Class 18 slotted screen Silty CLAY: grey, brown, high plasticity, moist (alluvial) AD/T 4 2mm graded Sand 5 From 5.0-6.5m, as above but grey, red-brown, with ironstone gravel $\,$ 6 Sandy CLAY: grey, brown, high plasticity, medium to coarse grained sand, moist (alluvial) A2-GW2 7 Clayey SAND: red-brown, medium to coarse grained sand, moist to wet (alluvial) 7.50 m End of borehole at 7.5m, target depth 8 RIG CHECKED BY : JK REMARK INCLINATION: : 09/06/2016 CHECKED DATE

JACOBS

Hole ID

A2-GW3

SHEET

CLIENT : Bankstown Airport Limited CONTRACTOR : Epoca Environmental PROJECT : Geotechnical Investigation

EASTING : NORTHING :

POSITION

STATUS : LOGGED BY : MG

: 1 OF 1

LOCATION : Bankstown Airport

COORD. SYS.: MGA94 Zone 56

: Site 2

DRILL DATE: 01/06/2016

PROJECT No. : IA110700 GROUND RL: PIEZOMETER CONSTRUCTION DETAILS Tip Depth & RL 5.60 m Туре Stick Up & RL Installation Date Static Water Level **Drilling Water** A2-GW3 Standpipe Piezometer 01/06/2016 Graphic Log Depth (m) Elevation (m AHD) Soil / Rock Description Method Silty CLAY: brown, pale grey, low plasticity, with fine to medium gravel and rootlets, dry (topsoil) - Concrete - Grout Silty CLAY: brown, pale grey, low plasticity, trace of rootlets, dry (alluvium) Silty CLAY: brown, orange-brown, medium to high plasticity, dry to moist (alluvium) Bentonite Silty CLAY: grey, red-brown, high plasticity, moist (alluvium) 1 10 m 50mm, UPVC Class 18 Casing 2 50mm UPVC Class 18 slotted screen A2-GW3 AD/T 3 2mm graded Sand Sandy CLAY: grey, high plasticity, medium grained sand, moist to wet (alluvium) \subseteq Clayey SAND: red-brown, medium to coarse grained sand, moist to wet (alluvium) Silty CLAY: grey, high plasticity, moist (alluvium) 5 5.60 m End of borehole at 6.0m, target depth REMARK

RIG : INCLINATION : AZIMUTH :

HOLE DIA

CHECKED BY : JK
CHECKED DATE : 09/06/2016
APPROVED BY : SR
APPROVED DATE :

REMARK



Appendix C – Groundwater Field Data Sheets

WELL DEVELOPMENT, GAUGING AND SAMPLING DATA SHEET

WELL No : AZ-GUI JACOBS

Gaugi								-		
30.29		1			Porfe	ormed By:	880			
Cal	Date : uging Method :				Penc	Timed by		Well	Diameter :	
Gal	Time:			Во	ore Depth:				L Present: Y / N	140
	SWL:			Depth t	o LNAPL:_				hickness):	
	Comments:								L Present: Y / N thickness):	
	of mire 8						Visual conf		ith bailer : Y / N	
	ance required : Photo Number :						Vidual soli			
F	-lloto Indiliber			-3.00			ه دیارت	A A 2		
Purging / De					A Dec		V Training	Well Dian	neter: 50 m	100
	Date : Purge Method :		sible Pu		ormed By :_	BC		WCII DIAII	301	105
ŀ	: Time Started		SWL (start) :		Volume I	Removed:	3.56	Bore De	epth (start): 7.97	5
-	Time Stopped:	-	SWL (end):		 Discha 	arge Rate :			epth (end):	-
	Comments :		own, ho	ally furt	od, no	odour	sheen	1	PL Present: Y / (N	9.1
		Tight won	m, m	39- Ingl	time	dily, n	o odou	(If yes,	thickness) :	
Samp	aling	A I DAY OF THE						THE LOCK		
	Date :				ormed By:	BC		Well Diar	neter: 50 n	0 14
San		Percesta		P*				- 4		_
	Time Started :	1241		*			ling Depth :		Z 1	
	Time Stopped:						SWL (start) :		(0)	
	Tubing Type	Water an	م طبلیہ	cremeter	a take	^	ter sow			
	Comments	Marer dy	rand b	CACIFICIO	, , , , , ,					
	Duplicate Sam	nple Collected?	Y/100		Duplicate S	Sample ID :			10	
					100		ALC: UNKNOWN			
Field An		; # (6);		(Kanja	Redox	Ethoriotoxo	dufflow corons		leme la miximi	
THE PARTY	Volume					E SSOWE	unoxygen	SWE	Comments (colour turb)	
	Remover (s)	.ms/mil	.oH	(G)	I E		tiro)aygjen	(m)	Comments (colour, turb) orthins Sittervelol	
acui	Removed (5)	(mstem)	7.05	(6)	((UM))	(p)m) 4.42	50.2	W. 100	Very light brown	Jon furbeli
OCH		(1,036m) EOPS			((iOM))	(gaid)	Who St	W. 100	Very light brown	
dop					((iOM))	(gaid)	Who St	W. 100	Very light brown	Jon furbeli
COPI					((iOM))	(gaid)	Who St	W. 100	Very light brown	Jon furbeli
1400					((iOM))	(gaid)	Who St	W. 100	Very light brown	Jon furbal
DC#I					((iOM))	(gaid)	Who St	W. 100	Very light brown	Jon furbeli
1400					((iOM))	(gaid)	Who St	W. 100	Very light brown	Jon furbeli
OOU					((iOM))	(gaid)	Who St	W. 100	Very light brown	Jon furbeli
1400					((iOM))	(gaid)	Who St	W. 100	Very light brown	Jon furbeli
1400					((iOM))	(gaid)	Who St	W. 100	Very light brown	Jon furbeli
1400					((iOM))	(gaid)	Who St	W. 100	Very light brown	Jon furbeli
1400					((iOM))	(gaid)	Who St	W. 100	Very light brown	Jon furbeli
0041					((iOM))	(gaid)	Who St	W. 100	Very light brown	Jon furbeli
0041					((iOM))	(gaid)	Who St	W. 100	Very light brown	Jon furbeli
004					((iOM))	(gaid)	Who St	W. 100	Very light brown	Jon furbeli
004					((iOM))	(gaid)	Who St	W. 100	Very light brown schoul, no	Jon furbeli
1400			7.05		((iOM))	(gaid)	Who St	W. 100	Very light brown	Jon furbeli
1400			7.05		((iOM))	(gaid)	Who St	W. 100	Very light brown schoul, no	Jon furbeli
hilisation Crit	0.(7.05		((iOM))	4.42 4.42	Who St	W. 100	Very light brown schoul, no	Jon furbeli
Dilisation Crit	0.(15403	7.05		El-3	4.42 4.42	\$0.2	W. 100	Very light brown schoul, no	Jon furbeli
bilisation Crit	tena	15403	7.05		El-3	4.42 4.42	\$0.2	W. 100	Very light brown schoul, no	Tow turboli sheen

TOTAL WELL DEPTH (-) WATER LEVEL (=) WATER COLUMN

WATER COLUMN (X) CONVERSION FACTOR (=) LITRES PER WELL VOLUME
____(X) ____(=) ____L

5.64 L

WELL DEVELOPMENT, GAUGING AND SAMPLING DATA SHEET

TA110700

Project No :

Gauging

WELL No : AZ-GWZ JACOBS

Bankstown Airport - Site 2

Gauging Method :	=			Well Diamete	ri
Time :		Bore Depth:		LNAPL Presen	it:Y/N
SWL:		Depth to LNAPL:		(If yes, thickness):
Comments:	8		(*	DNAPL Presen	t: Y / N
				(If yes, thickness):
Maintainance required:			Visual conf	irmation with baile	r: Y / N
Photo Number:					
Purging / Development					-
Date :		Performed By:	BC	Well Diameter:	SOM
Purge Method :		imp			
Time Started :	1470 SWL (start	t): 2.427 Volume Re	emoved: 25L	Bore Depth (start): 7.55
		Se The Land			
Time Stopped:	makes and the same of the same	- Section Section	ge Rate :	Bore Depth (end	
	1505 SWL (end	i): DM Dischar	gerRate:):
Time Stopped :	1505 SWL (end	Dischar		Bore Depth (end	t: Y / (N)
Time Stopped :	1505 SWL (end	Dischar		Bore Depth (end NAPL Presen	t: Y / (N)
Time Stopped : Comments :	Brown, mad-highly to	Dischar	ha", no shew	Bore Depth (end NAPL Presen): t:Y / (N):
Time Stopped Comments :	Brown, mad-highly to	i): Dry Dischar willed money Who		Bore Depth (end NAPL Presen (If yes, thickness): t:Y / (N):
Time Stopped Comments : Sampling Date	Bipun, highly to Brown, mad-highly 20/06/16 Perastaltic purn	i): Dry Dischar willed money Who	BC BC	Bore Depth (end NAPL Presen (If yes, thickness) Well Diameter): t:Y / (N):
Time Stopped Comments : Sampling Date : Sampling Method :	Brown, mod highly to Brown, mod highly 20/06/16 Perastaltic pum	i): Dry Dischar willed money Who	ha", no shew	Bore Depth (end NAPL Presen (If yes, thickness Well Diameter :): t:Y / (N):
Time Stopped : Comments : Sampling Date : Sampling Method : Time Started :	Brown, mad-highly 20/06/16 Perastaltic pum 1418	i): Dry Dischar willed money Who	BC Sampling Depth:	Bore Depth (end NAPL Presen (If yes, thickness) Well Diameter): t:Y / (N)
Time Stopped : Comments : Sampling Date : Sampling Method : Time Started : Time Stopped :	Down, highly to Brown, mad-highly 20/06/16 Perastaltic pum 1418	i): Dry Dischar willed money Who	Sampling Depth: SWL (start):	Bore Depth (end NAPL Presen (If yes, thickness Well Diameter): t:Y / (N)
Time Stopped : Comments : Sampling Date : Sampling Method : Time Started : Time Stopped : Tubing Type :	Down, highly to Brown, mad-highly 20/06/16 Perastaltic pum 1418	i): Dry Dischar willed money Who	Sampling Depth: SWL (start):	Bore Depth (end NAPL Presen (If yes, thickness Well Diameter): t:Y / (N):
Time Stopped : Comments : Sampling Date : Sampling Method : Time Started : Time Stopped : Tubing Type : Comments :	Down, highly to Brown, mad-highly 20/06/16 Perastaltic pum 1418	i): Dry Dischar willed money Who	Sampling Depth: SWL (start): SWL (end):	Bore Depth (end NAPL Presen (If yes, thickness Well Diameter): t:Y / (N):
Time Stopped : Comments : Sampling Date : Sampling Method : Time Started : Time Stopped : Tubing Type : Comments :	Down highly to Brown mod-highly 120/06/16 Perastaltic pum 1418	Performed By:	Sampling Depth: SWL (start): SWL (end):	Bore Depth (end NAPL Presen (If yes, thickness Well Diameter	t: Y / (N)

Project Name:

рH ws/ein/ 1427 1428 1434 0.1 21211 3.996 6.47 19.4 72-3 2.31 27.3 Char Hanspure v. light ho 2.12 2.27 2.26 2.32 21134 24.9 4.084 0.5 19.1 P-101 ow, no sheen 5.72 though, no oc 5.63 5.57 5.56 76.5 29.1 76.6 0.1 109.8 20927 4.148 18.7 4.237 Clear Hransparent V. light brown hope 4.279 no octour, no sheen. 1.5 1440 20997 116.6 19.1 19.4 1446 21191 21157 5.55 116.4 1452 2.5 27.4 Stabilisation Criteria +/- 3% +/- 0.05 +/- 10mV

 Well Volume Calculations

 Casing Diameter
 25mm
 50mm
 100mm
 125mm
 150mm
 200mm
 250mm
 300mm

 Conversion-Factor
 0.98
 1.96
 7.85
 31.4
 49.1
 70.7
 125.7
 196.3

TOTAL WELL DEPTH (-) W	ATER LEVEL (=)	WATER COLUMN
m (-)	(=)

WATER COLUMN (X) CONVERSION FACTOR (=) LITE	RES PER WEI	L VOLUME
(X)	(=)	10.05	L

30.2 4

15 POUR IN

WELL DEVELOPMENT, GAUGING AND SAMPLING DATA SHEET

WELL No : AZ-GUS JACOBS

	Date				Pe	rformed By	1			- Market	
	Gauging Method Time				David David				ell Diameter:		
	SWL			Dep	Bore Depth th to LNAPL				APL Present : Y	/ N	
	Comments						2		s, thickness) : APL Present : Y	/ N	
Mointa	inance required	-						(If yes	s, thickness):		
IVIAIIILA	Photo Number					//	Visual co	onfirmation	with bailer: Y	/ N	
aina (I	Development			-65							
ging / L	Development Date :	16/05	5 lib	Pr	erformed By	- BA		Mall Di			
	Purge Method ;	Submers	ille Pun	0	on on near by			_ vveii Dia	ameter: 5	MMO	
	Time Started :		SWL (start)	2.27	2 Volume	Removed	: 37L	Bore [Depth (start): 5	5.557	
	Time Stopped : Comments :		SWL (end)			narge Rate				237	
		Red I how	1 77	and to	while I		w/she		PL Present : Y	(N)	
		11.01.00	10.0	120	1.	to osto	ul ola	(If yes	, thickness) :		
San	pling		and the	2017		2007		o de la filo		w. Line	
Sa	Date : : mpling Method		tic pum	_ Pe	erformed By :	BC		Well Dia	meter: 5	Omm	
	Time Started :	135	Prim	''	,	Sami	plina Denth	:~5.0	80		
	Time Stopped :				-			2-14			
	Tubing Type:				= ==			2.29			
	Comments:										
	Duplicate Sam	ple Collected?	⊘ /N		Duplicate:	Sample ID:	. 67-	POOP			
						outhpio ID.	110	SE 625			
	- CONTRACTOR	Charles Inc. Co.	-				7				
Field A	nalyses	2.				10 KW	SOL MI				
	nalyses एकाकार रकाकारमञ्जाल	iğ, (USam)	12.8	iting.	Redox		ail(ல)(ழந் _]	swi	Communis (colour,	turbidity,	
ie	Volume	(dsep)	38 63 110	(9)	((iTN))	((arata))	(might)	(100)	क्षिणहें डोएक	(a(a)	
o S	Vојшта Вотичајија) О. 1 О. 5	1808S 18366	4.74 4.50			3.06 (mm))	34.4	(m) 2-174	Clear Hrans	parent,	, low
0 5	Мајите вотеманца) О. 1 О. 5'	18085 18366 18485	4.74 4.50 4.47	17.2	149.9 200.6 23.7	3,06 2.78 2.81	(might)	2-174 2-208	Clear Hrans	parent, i	
0 3 5	Мајиле комиченија) О. 1 О. 5' I. О	18085 18366 18485 18497	4.74 4.50 4.47 4.46	17.2 17.4 17.3	149.9 2006 203.7 224.4	3.06 2.78 2.81 2.87	34.4 31.8 31.7 32.5	2-174 2-208 2-216 2-242	Clear Hrans	parent, v	. lou
0 3	Мајите вотеманца) О. 1 О. 5'	18085 18366 18485	4.74 4.50 4.47	17.2	149.9 200.6 23.7	3,06 2.78 2.81	34.4	2-174 2-208	Clear Hrans	parent, v	. lou
0 \$ 0	Мајиле комиченија) О. 1 О. 5' I. О	18085 18366 18485 18497	4.74 4.50 4.47 4.46	17.2 17.4 17.3	149.9 2006 203.7 224.4	3.06 2.78 2.81 2.87	34.4 31.8 31.7 32.5	2-174 2-208 2-216 2-242	Clear Hrans	parent, v	. lou
0 \$ 0	Мајиле комиченија) О. 1 О. 5' I. О	18085 18366 18485 18497	4.74 4.50 4.47 4.46	17.2 17.4 17.3	149.9 2006 203.7 224.4	3.06 2.78 2.81 2.87	34.4 31.8 31.7 32.5	2-174 2-208 2-216 2-242	Clear Hrans	parent, v	. lou
0 \$ 0	Мајиле комиченија) О. 1 О. 5' I. О	18085 18366 18485 18497	4.74 4.50 4.47 4.46	17.2 17.4 17.3	149.9 2006 203.7 224.4	3.06 2.78 2.81 2.87	34.4 31.8 31.7 32.5	2-174 2-208 2-216 2-242	Clear Hrans	parent, v	. lou
0 \$ 0	Мајиле комиченија) О. 1 О. 5' I. О	18085 18366 18485 18497	4.74 4.50 4.47 4.46	17.2 17.4 17.3	149.9 2006 203.7 224.4	3.06 2.78 2.81 2.87	34.4 31.8 31.7 32.5	2-174 2-208 2-216 2-242	Clear Hrans	parent, v	. lou
0 \$ 0	Мајиле комиченија) О. 1 О. 5' I. О	18085 18366 18485 18497	4.74 4.50 4.47 4.46	17.2 17.4 17.3	149.9 2006 203.7 224.4	3.06 2.78 2.81 2.87	34.4 31.8 31.7 32.5	2-174 2-208 2-216 2-242	Clear Hrans	parent, v	. lou
0 3 0	Мајиле комиченија) О. 1 О. 5' I. О	18085 18366 18485 18497	4.74 4.50 4.47 4.46	17.2 17.4 17.3	149.9 2006 203.7 224.4	3.06 2.78 2.81 2.87	34.4 31.8 31.7 32.5	2-174 2-208 2-216 2-242	Clear Hrans	parent, v	. lou
0 \$ 0	Мајиле комиченија) О. 1 О. 5' I. О	18085 18366 18485 18497	4.74 4.50 4.47 4.46	17.2 17.4 17.3	149.9 2006 203.7 224.4	3.06 2.78 2.81 2.87	34.4 31.8 31.7 32.5	2-174 2-208 2-216 2-242	Clear Hrans	parent, v	. lou
0 \$ 0	Мајиле комиченија) О. 1 О. 5' I. О	18085 18366 18485 18497	4.74 4.50 4.47 4.46	17.2 17.4 17.3	149.9 2006 203.7 224.4	3.06 2.78 2.81 2.87	34.4 31.8 31.7 32.5	2-174 2-208 2-216 2-242	Clear Hrans	parent, v	. lou
0 \$ 0	Мајиле комиченија) О. 1 О. 5' I. О	18085 18366 18485 18497	4.74 4.50 4.47 4.46	17.2 17.4 17.3	149.9 2006 203.7 224.4	3.06 2.78 2.81 2.87	34.4 31.8 31.7 32.5 32.1	2-174 2-208 2-216 2-242	Clear Hrans	parent, v	. lou
0 \$ 0	Мајиле комиченија) О. 1 О. 5' I. О	18085 18366 18485 18497	4.74 4.50 4.47 4.46	17.2 17.4 17.3	149.9 2006 203.7 224.4	3.06 2.78 2.81 2.87	34.4 31.8 31.7 32.5 32.1	2-174 2-208 2-216 2-242	Clear Hrans	parent, v	. lou
0 \$ 0	Мајиле комиченија) О. 1 О. 5' I. О	18085 18366 18485 18497	4.74 4.50 4.47 4.46	17.2 17.4 17.3	149.9 2006 203.7 224.4	3.06 2.78 2.81 2.87	34.4 31.8 31.7 32.5 32.1	2-174 2-208 2-216 2-242	Clear Hrans	parent, v	. lou
0 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Volume Romovain(1) O. (O. 5) (-0 (-5) 2.0	18085 18366 18485 18497	4.74 4.50 4.47 4.46	17.2 17.4 17.3	149.9 2006 203.7 224.4	3.06 2.78 2.81 2.87	34.4 31.8 31.7 32.5 32.1	2-174 2-208 2-216 2-242	Clear Hrans	parent, v	. lou
0 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Volume Romovain(1) O. (O. 5) (-0 (-5) 2.0	18085 18366 18485 18497	4.74 4.50 4.47 4.46	17.2 17.4 17.3	149.9 2006 203.7 224.4	3.06 2.78 2.81 2.87 2.84	34.4 31.8 31.7 32.5 32.1	2-174 2-208 2-216 2-242	Clear Hrans	parent, v	. lou
O S O O O O O O O O O O O O O O O O O O	Volume Romoverium) O. (O. 5' (O O O O O O O O O O O O O O O O O O	18088 18366 18488 18497 18540	4.74 4.50 4.47 4.46 443	17.2 17.4 17.3	149.9 200.6 203.7 2244 230.8	3.06 2.78 2.81 2.87	34.4 31.8 31.7 32.5 32.1	2-174 2-208 2-216 2-242	Clear Hrans	parent, v	. lou
O S O O O O O O O O O O O O O O O O O O	Volume Removative) O. (O.5 (18088 18366 18488 18497 18540	4.74 4.50 4.47 4.46 443	17.2 17.4 17.3	149.9 200.6 203.7 2244 230.8	3.06 2.78 2.81 2.87 2.84	34.4 31.8 31.7 32.5 32.1	2-174 2-208 2-216 2-242	Clear Hrans	parent, v	. lou

WATER COLUMN (X) CONVERSION FACTOR (=) LITRES PER WELL VOLUME

(X) _____ (=) ____ 5.59 ___ L

16.8 L



Appendix D – Calibration Certificate

Multi Parameter Water Meter

Instrument

YSI Quatro Pro Plus

Serial No.

12D100012



Air-Met Scientific Pty Ltd 1300 137 067

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

Certificate of Calibration

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

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle	Instrument Reading
0011001	001101111111111111111111111111111111111			Number	
1. pH 7.00		pH 7.00		NH1818	pH 7.02
2. pH 4.00		pH 4.00		NF1636	pH 4.09
3. pH 10.00		pH 10.00		NH1870	pH 10.09
4. mV		228.5mV		NH1934/NH1935	228.6mV
5. EC		2.76mS		NF2056	2.76mS
6. D.O		0.00ppm		4005	0.00ppm
7. Temp		22.7°C		MultiTherm	22.5°C

Lin Wang

Calibrated by:

Calibration date:

17/06/2016

Next calibration due:

17/07/2016



Appendix E – Laboratory Certificates



Jacobs Group (Australia) P/L NSW Level 4, 100 Christie St St Leonards NSW 2065 Ilac-MRA



Certificate of Analysis

NATA Accredited Accreditation Number 1261 Site Number 18217

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

Attention: Blair Cummings

Report 501183-S

Project name BANKSTOWN AIRPORT - SITE 2

Project ID IA110700
Received Date May 18, 2016

Client Sample ID			A2_TP07_0.0	A2_TP07_0.5	A2_TP08_0.3	A2_TP22_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My19681	S16-My19683	S16-My19685	S16-My19686
Date Sampled			May 16, 2016	May 16, 2016	May 16, 2016	May 16, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX	'	1 0 0				
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	81	74	78	78
Total Recoverable Hydrocarbons - 2013 NEPM	Fractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons	·					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluorantheneN07	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5



	1					
Client Sample ID			A2_TP07_0.0	A2_TP07_0.5	A2_TP08_0.3	A2_TP22_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My19681	S16-My19683	S16-My19685	S16-My19686
Date Sampled			May 16, 2016	May 16, 2016	May 16, 2016	May 16, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	98	88	97	103
p-Terphenyl-d14 (surr.)	1	%	104	95	106	107
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	-	-	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	-	-	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	-	-	< 0.05
a-BHC	0.05	mg/kg	< 0.05	-	-	< 0.05
Aldrin	0.05	mg/kg	< 0.05	-	-	< 0.05
b-BHC	0.05	mg/kg	< 0.05	-	-	< 0.05
d-BHC	0.05	mg/kg	< 0.05	=	=	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	=	=	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	-	-	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	-	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	-	< 0.05
Endrin	0.05	mg/kg	< 0.05	-	-	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	-	-	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	-	-	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	=	=	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	-	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	-	-	< 0.2
Toxaphene	1	mg/kg	< 1	-	-	< 1
Dibutylchlorendate (surr.)	1	%	87	-	-	112
Tetrachloro-m-xylene (surr.)	1	%	83	-	-	95
Polychlorinated Biphenyls (PCB)		_				
Aroclor-1016	0.5	mg/kg	< 0.5	-	-	< 0.5
Aroclor-1232	0.5	mg/kg	< 0.5	-	-	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	-	-	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	-	-	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	-	-	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	-	-	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	-	-	< 0.5
Dibutylchlorendate (surr.)	1	%	87	-	-	112
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
PFOS/PFOA/6:2FTS						
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	< 0.005	-	-	N090.006
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	< 0.005	-	-	< 0.005
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	< 0.01	-	-	< 0.01
13C-PFHxA (surr.)	1	%	94	-	-	105
13C8-PFOS (surr.)	1	%	101	-	-	108



Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	A2_TP07_0.0 Soil S16-My19681 May 16, 2016	A2_TP07_0.5 Soil S16-My19683 May 16, 2016	A2_TP08_0.3 Soil S16-My19685 May 16, 2016	A2_TP22_0.0 Soil S16-My19686 May 16, 2016
% Moisture	1	%	16	25	18	20
Heavy Metals						
Arsenic	2	mg/kg	3.2	6.0	2.4	7.6
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	0.8
Chromium	5	mg/kg	8.0	19	6.6	13
Copper	5	mg/kg	13	8.8	< 5	9.1
Lead	5	mg/kg	32	8.1	11	35
Mercury	0.05	mg/kg	0.17	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	5.4	< 5	< 5	5.6
Zinc	5	mg/kg	37	< 5	< 5	23

Client Sample ID			A2_TP22_0.5	A2_TP23_0.0	A2_TP23_0.2	A2_BH10_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My19688	S16-My19689	S16-My19690	S16-My19691
Date Sampled			May 16, 2016	May 16, 2016	May 16, 2016	May 16, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM	Fractions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	79	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	79	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	80	78	71	79
Total Recoverable Hydrocarbons - 2013 NEPM	Fractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2)N01	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5



Client Sample ID			A2_TP22_0.5	A2_TP23_0.0	A2_TP23_0.2	A2_BH10_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My19688	S16-My19689	S16-My19690	S16-My19691
Date Sampled			May 16, 2016	May 16, 2016	May 16, 2016	May 16, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	100	94	85	94
p-Terphenyl-d14 (surr.)	1	%	105	102	87	103
Organochlorine Pesticides	•	•				
Chlordanes - Total	0.1	mg/kg	-	< 0.1	-	-
4.4'-DDD	0.05	mg/kg	-	< 0.05	-	-
4.4'-DDE	0.05	mg/kg	-	< 0.05	-	-
4.4'-DDT	0.05	mg/kg	_	< 0.05	-	-
a-BHC	0.05	mg/kg	_	< 0.05	-	-
Aldrin	0.05	mg/kg	-	< 0.05	-	-
b-BHC	0.05	mg/kg	-	< 0.05	-	-
d-BHC	0.05	mg/kg	_	< 0.05	-	_
Dieldrin	0.05	mg/kg	_	< 0.05	-	_
Endosulfan I	0.05	mg/kg	-	< 0.05	-	-
Endosulfan II	0.05	mg/kg	_	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	_	< 0.05	-	-
Endrin	0.05	mg/kg	-	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	-	< 0.05	-	-
Endrin ketone	0.05	mg/kg	-	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	-	-
Heptachlor	0.05	mg/kg	-	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	-	-
Methoxychlor	0.2	mg/kg	-	< 0.2	-	-
Toxaphene	1	mg/kg	-	< 1	-	-
Dibutylchlorendate (surr.)	1	%	-	108	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	94	-	-
Polychlorinated Biphenyls (PCB)	'	_				
Aroclor-1016	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1232	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1242	0.5	mg/kg	_	< 0.5	-	-
Aroclor-1248	0.5	mg/kg	_	< 0.5	-	_
Aroclor-1254	0.5	mg/kg	_	< 0.5	-	-
Aroclor-1260	0.5	mg/kg	_	< 0.5	-	-
Total PCB*	0.5	mg/kg	_	< 0.5	-	-
Dibutylchlorendate (surr.)	1	%	_	108	-	_
Total Recoverable Hydrocarbons - 2013 NEPM Fra				100		
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C34 TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100



Client Sample ID Sample Matrix			A2_TP22_0.5 Soil	A2_TP23_0.0 Soil	A2_TP23_0.2 Soil	A2_BH10_0.5 Soil
Eurofins mgt Sample No.			S16-My19688	S16-My19689	S16-My19690	S16-My19691
Date Sampled			May 16, 2016	May 16, 2016	May 16, 2016	May 16, 2016
Test/Reference	LOR	Unit				
PFOS/PFOA/6:2FTS						
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	-	< 0.005	-	-
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	-	< 0.005	-	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	-	< 0.01	-	-
13C-PFHxA (surr.)	1	%	-	94	=	-
13C8-PFOS (surr.)	1	%	-	94	-	-
% Moisture	1	%	22	15	17	18
Heavy Metals						
Arsenic	2	mg/kg	4.7	3.5	3.8	5.3
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	16	9.1	11	13
Copper	5	mg/kg	7.1	15	6.0	12
Lead	5	mg/kg	8.8	41	16	13
Mercury	0.05	mg/kg	< 0.05	0.10	< 0.05	< 0.05
Nickel	5	mg/kg	< 5	6.7	< 5	< 5
Zinc	5	mg/kg	< 5	38	12	< 5

Client Sample ID			A2_BH9_0.0	A2_BH5_0.5	A2_BH3_1.5	A2_BH2_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My19692	S16-My19693	S16-My19694	S16-My19695
Date Sampled			May 16, 2016	May 16, 2016	May 17, 2016	May 17, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM F	ractions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	82	76	85	82
Total Recoverable Hydrocarbons - 2013 NEPM F	ractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2)N01	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5



Client Sample ID			A2_BH9_0.0	A2_BH5_0.5	A2_BH3_1.5	A2_BH2_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My19692	S16-My19693	S16-My19694	S16-My19695
Date Sampled			May 16, 2016	May 16, 2016	May 17, 2016	May 17, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons	<u>'</u>	1				
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	96	94	91	103
p-Terphenyl-d14 (surr.)	1	%	98	96	94	106
Total Recoverable Hydrocarbons - 2013 NEPM	/ Fractions	•				
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
% Moisture	1	%	8.8	12	18	5.0
Heavy Metals						
Arsenic	2	mg/kg	5.0	4.7	4.0	< 2
Cadmium	0.4	mg/kg	< 0.4	1.7	< 0.4	< 0.4
Chromium	5	mg/kg	9.6	12	8.6	< 5
Copper	5	mg/kg	6.4	< 5	14	< 5
Lead	5	mg/kg	22	12	12	7.5
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	15	200	5.2	< 5

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled			A2_BH6_0.5 Soil S16-My19696 May 17, 2016	A2_TP03_0.3 Soil S16-My19697 May 17, 2016	A2_TP04_0.0 Soil S16-My19698 May 17, 2016	A2_TP04_0.5 Soil S16-My19699 May 17, 2016
Test/Reference	LOR	Unit	Indy 11, 2010	may 17, 2010	may 17, 2010	may 17, 2010
Total Recoverable Hydrocarbons - 1999 NEPM Fract	tions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50



Client Semale ID			40 540 05	40 7000 00	40 7704 00	40 7004 05
Client Sample ID			A2_BH6_0.5	A2_TP03_0.3	A2_TP04_0.0	A2_TP04_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My19696	S16-My19697	S16-My19698	S16-My19699
Date Sampled			May 17, 2016	May 17, 2016	May 17, 2016	May 17, 2016
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	83	83	80	78
Total Recoverable Hydrocarbons - 2013 NEPM F	ractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2)N01	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluorantheneN07	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	92	97	106	94
p-Terphenyl-d14 (surr.)	1	%	95	101	110	98
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	-	< 0.1	-
4.4'-DDD	0.05	mg/kg	-	-	< 0.05	-
4.4'-DDE	0.05	mg/kg	-	-	< 0.05	-
4.4'-DDT	0.05	mg/kg	-	-	< 0.05	-
а-ВНС	0.05	mg/kg	-	-	< 0.05	-
Aldrin	0.05	mg/kg	-	-	< 0.05	-
b-BHC	0.05	mg/kg	-	-	< 0.05	-
d-BHC	0.05	mg/kg	-	-	< 0.05	-
Dieldrin	0.05	mg/kg	-	-	< 0.05	-
Endosulfan I	0.05	mg/kg	-	-	< 0.05	-
Endosulfan II	0.05	mg/kg	-	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	-	-	< 0.05	-
Endrin	0.05	mg/kg	-	-	< 0.05	-



Client Sample ID			A2_BH6_0.5	A2_TP03_0.3	A2_TP04_0.0	A2_TP04_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My19696	S16-My19697	S16-My19698	S16-My19699
Date Sampled			May 17, 2016	May 17, 2016	May 17, 2016	May 17, 2016
Test/Reference	LOR	Unit				
Organochlorine Pesticides	'	<u>'</u>				
Endrin aldehyde	0.05	mg/kg	-	-	< 0.05	-
Endrin ketone	0.05	mg/kg	-	-	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	-	-	< 0.05	-
Heptachlor	0.05	mg/kg	-	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	-	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	-	-	< 0.05	-
Methoxychlor	0.2	mg/kg	-	-	< 0.2	-
Toxaphene	1	mg/kg	-	-	< 1	-
Dibutylchlorendate (surr.)	1	%	-	-	101	-
Tetrachloro-m-xylene (surr.)	1	%	-	-	99	-
Polychlorinated Biphenyls (PCB)		_				
Aroclor-1016	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1232	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1242	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1248	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1254	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1260	0.5	mg/kg	-	-	< 0.5	-
Total PCB*	0.5	mg/kg	-	-	< 0.5	-
Dibutylchlorendate (surr.)	1	%	-	-	101	-
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions	•				
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
PFOS/PFOA/6:2FTS		1 5 5				
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	-	-	< 0.005	-
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	-	-	< 0.005	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	-	-	< 0.01	-
13C-PFHxA (surr.)	1	%	-	-	108	-
13C8-PFOS (surr.)	1	%	-	-	120	-
% Moisture	1	%	18	5.2	14	21
Heavy Metals						
Arsenic	2	mg/kg	5.8	3.9	4.9	4.3
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	11	5.4	17	17
Copper	5	mg/kg	9.3	< 5	12	6.6
Lead	5	mg/kg	9.3	10	27	12
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	< 5	< 5	9.6	< 5
Zinc	5	mg/kg	< 5	< 5	30	< 5



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Client Sample ID			A2_TP05_0.0	A2_TP06_0.0	A2_TP06_0.2	A2_TP18_0.0
Sample Matrix	l		Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My19700	S16-My19701	S16-My19702	S16-My19703
Date Sampled			May 17, 2016	May 16, 2016	May 16, 2016	May 17, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM F	ractions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	60
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	96
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	156
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	78	82	82	80
Total Recoverable Hydrocarbons - 2013 NEPM F		,		1		
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons	1 00	ing/kg	100	100	100	100
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (inediam bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	94	102	96	96
p-Terphenyl-d14 (surr.)	1	%	93	102	95	95
Organochlorine Pesticides		, ,0	55	102		
Chlordanes - Total	0.1	mg/kg	_	< 0.1	-	< 0.1
4.4'-DDD	0.05	mg/kg	-	< 0.1	-	< 0.1
4.4'-DDE	0.05	mg/kg	-	< 0.05	-	< 0.05
4.4'-DDT	0.05	mg/kg	-	< 0.05	-	< 0.05
a-BHC	0.05	mg/kg	-	< 0.05	-	< 0.05
Aldrin	0.05	mg/kg	-	< 0.05	-	< 0.05
b-BHC	0.05	mg/kg	-	< 0.05	-	< 0.05



	1			1	1	1
Client Sample ID			A2_TP05_0.0	A2_TP06_0.0	A2_TP06_0.2	A2_TP18_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My19700	S16-My19701	S16-My19702	S16-My19703
Date Sampled			May 17, 2016	May 16, 2016	May 16, 2016	May 17, 2016
Test/Reference	LOR	Unit				
Organochlorine Pesticides		•				
d-BHC	0.05	mg/kg	-	< 0.05	-	< 0.05
Dieldrin	0.05	mg/kg	-	< 0.05	-	< 0.05
Endosulfan I	0.05	mg/kg	-	< 0.05	-	< 0.05
Endosulfan II	0.05	mg/kg	-	< 0.05	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	-	< 0.05
Endrin	0.05	mg/kg	-	< 0.05	-	< 0.05
Endrin aldehyde	0.05	mg/kg	-	< 0.05	-	< 0.05
Endrin ketone	0.05	mg/kg	_	< 0.05	-	< 0.05
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	-	< 0.05
Heptachlor	0.05	mg/kg	_	< 0.05	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	_	< 0.05	_	< 0.05
Hexachlorobenzene	0.05	mg/kg	_	< 0.05	-	< 0.05
Methoxychlor	0.03	mg/kg	_	< 0.2	-	< 0.2
Toxaphene	1	mg/kg	_	< 1	_	< 1
Dibutylchlorendate (surr.)	1	%	_	98	_	109
Tetrachloro-m-xylene (surr.)	1	%	_	99	_	88
Polychlorinated Biphenyls (PCB)	1	/0		99	-	00
	0.5			.0.5		.05
Aroclor-1016	0.5	mg/kg	-	< 0.5	-	< 0.5
Aroclor-1232	0.5	mg/kg	-	< 0.5	-	< 0.5
Aroclor-1242	0.5	mg/kg	-	< 0.5	-	< 0.5
Aroclor-1248	0.5	mg/kg	-	< 0.5	-	< 0.5
Aroclor-1254	0.5	mg/kg	-	< 0.5	-	< 0.5
Aroclor-1260	0.5	mg/kg	-	< 0.5	-	< 0.5
Total PCB*	0.5	mg/kg	-	< 0.5	-	< 0.5
Dibutylchlorendate (surr.)	1 1	%	-	98	-	109
Total Recoverable Hydrocarbons - 2013 NEPM Frac						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	140
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
PFOS/PFOA/6:2FTS						
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	-	< 0.005	-	N090.005
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	-	< 0.005	-	< 0.005
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	-	< 0.01	-	< 0.01
13C-PFHxA (surr.)	1	%	-	99	-	148
13C8-PFOS (surr.)	1	%	-	92	-	116
% Moisture	1	%	18	10	4.6	14
Heavy Metals						
Arsenic	2	mg/kg	6.2	10	2.0	3.9
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	10	32	7.8	10
Copper	5	mg/kg	5.5	6.0	< 5	7.7
Lead	5	mg/kg	20	28	14	23
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	0.07
Nickel	5	mg/kg	< 5	5.6	< 5	5.4
Zinc	5	mg/kg	8.7	22	6.3	33



011 10 115				T	 	1
Client Sample ID			A2_TP21_0.0	A2_TP21_0.2	A2_TP17_0.0	A2_TP17_2.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My19705	S16-My19706	S16-My19707	S16-My19708
Date Sampled			May 17, 2016	May 17, 2016	May 18, 2016	May 18, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM	Fractions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	78	77	80	76
Total Recoverable Hydrocarbons - 2013 NEPM						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons	1 00	ing/kg	100	100	100	100
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	0.8	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	1.1	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.4	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	0.7	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	0.6	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	0.6	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	2.0	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	1.2	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	1.9	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	7	< 0.5
2-Fluorobiphenyl (surr.)	1	%	98	94	91	94
p-Terphenyl-d14 (surr.)	1	%	100	95	93	98
Organochlorine Pesticides	· · ·					
Chlordanes - Total	0.1	mg/kg	< 0.1	-	< 0.1	_
4.4'-DDD	0.05	mg/kg	< 0.05	-	< 0.05	_
4.4'-DDE	0.05	mg/kg	< 0.05	-	< 0.05	_
4.4'-DDT	0.05	mg/kg	< 0.05	-	< 0.05	_
a-BHC	0.05	mg/kg	< 0.05	-	< 0.05	_
Aldrin	0.05	mg/kg	< 0.05	-	< 0.05	_
b-BHC	0.05	mg/kg	< 0.05	-	< 0.05	_



		1	I	1	1	
Client Sample ID			A2_TP21_0.0	A2_TP21_0.2	A2_TP17_0.0	A2_TP17_2.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My19705	S16-My19706	S16-My19707	S16-My19708
Date Sampled			May 17, 2016	May 17, 2016	May 18, 2016	May 18, 2016
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
d-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Dieldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan I	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan II	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin ketone	0.05	mg/kg	< 0.05	-	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	< 0.05	-
Methoxychlor	0.2	mg/kg	< 0.2	-	< 0.2	-
Toxaphene	1	mg/kg	< 1	-	< 1	-
Dibutylchlorendate (surr.)	1	%	110	-	94	-
Tetrachloro-m-xylene (surr.)	1	%	91	-	86	-
Polychlorinated Biphenyls (PCB)	•	•				
Aroclor-1016	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1232	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1242	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1248	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1254	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1260	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PCB*	0.5	mg/kg	< 0.5	-	< 0.5	=
Dibutylchlorendate (surr.)	1	%	110	-	94	-
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions	•				
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
PFOS/PFOA/6:2FTS	1	199				
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	< 0.005	_	< 0.005	_
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	< 0.005	_	< 0.005	_
1H.1H.2H.perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	< 0.01	-	< 0.01	_
13C-PFHxA (surr.)	1	%	133	-	106	-
13C8-PFOS (surr.)	1	%	118	-	124	_
Toda i i da (daii.)			110		1	
% Clay	1	%	-	-	-	58
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	_	_	_	990
pH (units)(1:5 soil:CaCl2 extract)	0.1	pH Units	-	_	-	7.2
% Moisture	1	%	13	10	7.2	21
Ion Exchange Properties	<u> </u>	,,,		1	1	
Cation Exchange Capacity	0.05	meq/100g	-	-	-	16
Heavy Metals	, 5.00	154/ 1009				1
Arsenic	2	mg/kg	4.1	4.4	9.4	3.4
Cadmium	0.4	mg/kg	< 0.4	< 0.4	0.5	< 0.4
Chromium	5	mg/kg	11	17	18	6.6
Copper	5	mg/kg	5.6	5.8	11	15
Lead	5	mg/kg	17	7.9	61	15
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05



011 4 0 1 10				1	1	1
Client Sample ID			A2_TP21_0.0	A2_TP21_0.2	A2_TP17_0.0	A2_TP17_2.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My19705	S16-My19706	S16-My19707	S16-My19708
Date Sampled			May 17, 2016	May 17, 2016	May 18, 2016	May 18, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Nickel	5	mg/kg	< 5	< 5	6.0	< 5
Zinc	5	mg/kg	13	5.6	49	14

Client Sample ID			A2_BH7_0.0	A2_BH8_0.5
Sample Matrix			Soil	Soil
Eurofins mgt Sample No.			S16-My19709	S16-My19710
Date Sampled			May 18, 2016	May 18, 2016
Test/Reference	LOR	Unit	,, 10, 2010	, 10, 2010
Total Recoverable Hydrocarbons - 1999 NEPM	<u> </u>	Offic		
TRH C6-C9	20	mg/kg	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50
BTEX	1 00	ı mg/ng	100	100
Benzene	0.1	mg/kg	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.1
o-Xylene	0.1	mg/kg	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	77	76
Total Recoverable Hydrocarbons - 2013 NEPM		70	,,,	70
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50
Polycyclic Aromatic Hydrocarbons	1 30	ilig/kg	\ 30	\ 30
Benzo(a)pyrene TEQ (lower bound) *	0.5	ma/ka	4 O F	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	< 0.5	0.6
	0.5	mg/kg	1.2	1.2
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	< 0.5	< 0.5
Acenaphthylone	0.5	mg/kg	< 0.5	< 0.5
Acenaphthylene Anthracene	0.5	mg/kg	< 0.5	< 0.5
	0.5	mg/kg	< 0.5	< 0.5
Benz(a)anthracene Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5
Benzo(g.h.i)perylene		mg/kg	< 0.5	
10 /1	0.5	mg/kg		< 0.5
Benzo(k)fluoranthene	0.5 0.5	mg/kg mg/kg	< 0.5	< 0.5 < 0.5
Chrysene Dibenz/a hlanthracene	0.5		< 0.5 < 0.5	
Dibenz(a.h)anthracene Fluoranthene	0.5	mg/kg		< 0.5
	0.5	mg/kg	< 0.5	< 0.5 < 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5
Naphthalene		mg/kg	< 0.5	
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5
Pyrene Total DALI*	0.5	mg/kg	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5



Client Sample ID			A2_BH7_0.0	A2_BH8_0.5
Sample Matrix			Soil	Soil
Eurofins mgt Sample No.			S16-My19709	S16-My19710
Date Sampled			May 18, 2016	May 18, 2016
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons				
2-Fluorobiphenyl (surr.)	1	%	87	98
p-Terphenyl-d14 (surr.)	1	%	90	103
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions			
TRH >C10-C16	50	mg/kg	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100
% Moisture	1	%	5.1	19
Heavy Metals				
Arsenic	2	mg/kg	2.0	5.6
Cadmium	0.4	mg/kg	0.8	< 0.4
Chromium	5	mg/kg	10	17
Copper	5	mg/kg	8.8	9.9
Lead	5	mg/kg	21	9.0
Mercury	0.05	mg/kg	< 0.05	< 0.05
Nickel	5	mg/kg	8.6	< 5
Zinc	5	mg/kg	33	6.5



Sample History

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

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	May 20, 2016	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Sydney	May 20, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	May 20, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Sydney	May 20, 2016	14 Day
- Method: E007 Polyaromatic Hydrocarbons (PAH)			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	May 20, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Sydney	May 20, 2016	28 Day
- Method: LTM-MET-3040_R0 TOTAL AND DISSOLVED METALS AND MERCURY IN WATERS BY ICP-MS			
Eurofins mgt Suite B13			
Organochlorine Pesticides	Sydney	May 20, 2016	14 Day
- Method: E013 Organochlorine Pesticides (OC)			
Polychlorinated Biphenyls (PCB)	Sydney	May 20, 2016	28 Day
- Method: E013 Polychlorinated Biphenyls (PCB)			
PFOS/PFOA/6:2FTS	Brisbane	May 20, 2016	14 Day
- Method: LTM-ORG-2100 Analysis of PFCs in environmental samples by LC-MS/MS			
% Clay	Brisbane	May 20, 2016	6 Day
- Method: LTM-GEN-7040			
pH (units)(1:5 soil:CaCl2 extract)	Sydney	May 23, 2016	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
Conductivity (1:5 aqueous extract at 25°C)	Sydney	May 20, 2016	7 Day
- Method: LTM-INO-4030			
Ion Exchange Properties	Melbourne	May 23, 2016	
% Moisture	Sydney	May 19, 2016	14 Day
- Method: LTM-GEN-7080 Moisture			



Melbourne

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

Received:

Priority:

Contact Name:

Due:

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

May 18, 2016 7:20 PM

May 26, 2016

Blair Cummings

5 Day

ABN - 50 005 085 521 e.mail: EnviroSales@eurofins.com web : www.eurofins.com.au

Order No.:

Report #:

Phone:

Fax:

IA110700

02 9928 2100

02 9928 2504

501183

Company Name: Jacobs Group (Australia) P/L NSW

Address: Level 4, 100 Christie St

> St Leonards NSW 2065

Project Name:

Project ID: IA110700

BANKSTOWN AIRPORT - SITE 2

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Melb	ourne Laborato	ory - NATA Site	# 1254 & 142	271										Х	
Sydi	ney Laboratory	- NATA Site # 1	8217				Х	Х	Х	Х		Х	Х	Х	Х
	Brisbane Laboratory - NATA Site # 20794										Х				
	rnal Laboratory	1		1											
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID										
1	A2_TP07_0.0	May 16, 2016		Soil	S16-My19681						Х	Х	Х		Х
2	A2_TP07_0.1	May 16, 2016		Soil	S16-My19682		Х								
3	A2_TP07_0.5	May 16, 2016		Soil	S16-My19683								Х		Х
4	A2_TP08_0.0	May 16, 2016		Soil	S16-My19684		Х								
5	A2_TP08_0.3	May 16, 2016		Soil	S16-My19685								Х		Х
6	A2_TP22_0.0	May 16, 2016		Soil	S16-My19686						Х	Х	Х		Χ
7	A2_TP22_0.2	May 16, 2016		Soil	S16-My19687		Х								
8	A2_TP22_0.5	May 16, 2016		Soil	S16-My19688								Х		Х
9	A2_TP23_0.0	May 16, 2016		Soil	S16-My19689						Х	Х	Х		Χ
10	A2_TP23_0.2	May 16, 2016		Soil	S16-My19690		Χ						Χ		Χ

Eurofins | mgt Unit F3, Building F, 16 Mars Road, Lane Cove West, NSW, Australia, 2066 ABN: 50 005 085 521 Telephone: +61 2 9900 8400 Facsimile: +61 2 9420 2977

Page 16 of 35 Report Number: 501183-S



ABN - 50 005 085 521 e.mail : EnviroSales@eurofins.com

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Melbourne 2-5 Kingston Town Close Oakleigh VIC 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400 NATA # 1261 Site # 18217

Eurofins | mgt Analytical Services Manager : Andrew Black

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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 18, 2016 7:20 PM

Address: Level 4, 100 Christie St Report #: 501183 Due: May 26, 2016

> St Leonards Phone: 02 9928 2100 Priority: 5 Day **Contact Name:** Fax: 02 9928 2504

Blair Cummings NSW 2065

Project Name: **BANKSTOWN AIRPORT - SITE 2** Project ID: IA110700

Sample Detail						% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Mell	oourne Laborato	ory - NATA Site	# 1254 & 142	71										Х	
Syd	ney Laboratory	- NATA Site # 1	8217				Χ	Х	Χ	Χ		Х	Х	Χ	Х
Bris	bane Laboratory	y - NATA Site #	20794			Х					Х				
Exte	Brisbane Laboratory - NATA Site # 20794 X External Laboratory														
11	A2_BH10_0.5	May 16, 2016		Soil	S16-My19691								Х		Х
12	A2_BH9_0.0	May 16, 2016		Soil	S16-My19692								Х		Х
13	A2_BH5_0.5	May 16, 2016		Soil	S16-My19693								Х		Х
14	A2_BH3_1.5	May 17, 2016		Soil	S16-My19694								Х		Х
15	A2_BH2_0.0	May 17, 2016		Soil	S16-My19695								Х		Х
16	A2_BH6_0.5	May 17, 2016		Soil	S16-My19696								Х		Х
17	A2_TP03_0.3	May 17, 2016		Soil	S16-My19697								Χ		Х
18	A2_TP04_0.0	May 17, 2016		Soil	S16-My19698		Х				Х	Х	Х	<u> </u>	Х
19	A2_TP04_0.5	May 17, 2016		Soil	S16-My19699								Χ		Х
20	A2_TP05_0.0	May 17, 2016		Soil	S16-My19700								Х		Х
21	A2_TP06_0.0 May 16, 2016 Soil S16-My19701									Χ	Х	Х		Х	



IA110700

Project ID:

A2_TP07_2.0

May 16, 2016

ABN - 50 005 085 521

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

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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 18, 2016 7:20 PM

Х

 Address:
 Level 4, 100 Christie St
 Report #:
 501183
 Due:
 May 26, 2016

St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 Contact Name: Blair Cummings

Project Name: BANKSTOWN AIRPORT - SITE 2

% Clay HOLD Eurofins | mgt Suite Moisture Cation Exchange Capacity Eurofins | mgt Suite Asbestos - WA guidelines CANCELLED pH (units)(1:5 soil:CaCl2 extract) PFOS/PFOA/6:2FTS Set Sample Detail B13 В7 Χ Melbourne Laboratory - NATA Site # 1254 & 14271 Χ Sydney Laboratory - NATA Site # 18217 Χ Χ Χ Χ Χ Χ Х Brisbane Laboratory - NATA Site # 20794 Χ Χ **External Laboratory** A2_TP06_0.2 | May 16, 2016 Χ Χ Soil S16-My19702 Χ Χ Х Х A2_TP18_0.0 | May 17, 2016 Soil S16-My19703 A2_TP18_0.3 | May 17, 2016 Soil Χ S16-Mv19704 A2_TP21_0.0 May 17, 2016 Soil Χ Х Х Χ S16-My19705 A2_TP21_0.2 | May 17, 2016 Soil S16-My19706 Χ Х Х Soil Χ Х Х Χ Χ A2_TP17_0.0 May 18, 2016 S16-My19707 Χ Χ Χ Soil Χ Χ A2_TP17_2.5 | May 18, 2016 S16-My19708 Χ A2_BH7_0.0 May 18, 2016 Soil S16-My19709 Х A2_BH8_0.5 May 18, 2016 Soil S16-My19710 Х Χ A2_TP07_1.0 May 16, 2016 Soil S16-My19711 Χ

S16-My19712

Soil

Eurofins | mgt Analytical Services Manager : Andrew Black



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Eurofins | mgt Analytical Services Manager : Andrew Black

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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 18, 2016 7:20 PM

 Address:
 Level 4, 100 Christie St
 Report #:
 501183
 Due:
 May 26, 2016

St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 Contact Name: Blair Cummings

Project Name: BANKSTOWN AIRPORT - SITE 2
Project ID: IA110700

Sample Detail						% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Melk	ourne Laborato	ory - NATA Site	# 1254 & 142	271										Х	
Syd	ney Laboratory	- NATA Site # 1	8217				Х	Х	Χ	Х		Х	Χ	Х	Х
	bane Laboratory		20794			Х					Х				
Exte	rnal Laboratory														
33	A2_TP07_2.5	May 16, 2016		Soil	S16-My19713				Х						
34	A2_TP08_0.5	May 16, 2016		Soil	S16-My19714				Х						
35	A2_TP08_1.0	May 16, 2016		Soil	S16-My19715				Χ						
36	A2_TP08_2.0	May 16, 2016		Soil	S16-My19716				Χ						
37	A2_TP08_2.5	May 16, 2016		Soil	S16-My19717				Х						
38	A2_TP22_1.0	May 16, 2016		Soil	S16-My19718				Χ						
39	A2_TP23_0.5	May 16, 2016		Soil	S16-My19719				Χ						
40	A2_TP23_1.0	May 16, 2016		Soil	S16-My19720				Χ						
41	A2_TP23_1.0	May 16, 2016		Soil	S16-My19721			Х							
42	A2_TP23_2.5	May 16, 2016		Soil	S16-My19722				Χ						
43	A2_BH10_0.0	May 16, 2016		Soil	S16-My19723				Х						



External Laboratory

44 A2 BH10 1.5 May 16, 2016

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

Eurofins | mgt Analytical Services Manager : Andrew Black

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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 18, 2016 7:20 PM

Address: Level 4, 100 Christie St Report #: 501183 Due: May 26, 2016

> St Leonards Phone: 02 9928 2100 Priority: 5 Day

Contact Name: Blair Cummings NSW 2065 Fax: 02 9928 2504

Project Name: BANKSTOWN AIRPORT - SITE 2 Project ID: IA110700

Sample Detail	% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271									Х	
Sydney Laboratory - NATA Site # 18217		Χ	Х	Χ	Х		Х	Х	Х	Х
Brisbane Laboratory - NATA Site # 20794	Х					Х				
		l	ı	ı	1		1	1	1	1 '

		,,							
45	A2_BH9_0.5	May 16, 2016	Soil	S16-My19725		Х			
46	A2_BH9_1.5	May 16, 2016	Soil	S16-My19726		Х			
47	A2_BH5_0.0	May 16, 2016	Soil	S16-My19727		Х			
48	A2_BH5_1.5	May 16, 2016	Soil	S16-My19728		Х			
49	A2_BH3_0.0	May 17, 2016	Soil	S16-My19729		Х			
50	A2_BH3_0.5	May 17, 2016	Soil	S16-My19730		Х			
51	A2_BH2_0.5	May 17, 2016	Soil	S16-My19731		Х			
52	A2_BH2_1.5	May 17, 2016	Soil	S16-My19732		Х			
53	A2_BH6_0.0	May 17, 2016	Soil	S16-My19733		Х			
54	A2_BH6_1.5	May 17, 2016	Soil	S16-My19734		Х			

Soil



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501183

02 9928 2100

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Report #:

Phone:

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Address: Level 4, 100 Christie St

> St Leonards NSW 2065

Project Name: **BANKSTOWN AIRPORT - SITE 2**

Project ID: IA110700

Due: May 26, 2016 Priority: 5 Day

Contact Name: Blair Cummings

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Mell	Melbourne Laboratory - NATA Site # 1254 & 14271													Х	
Syd	ney Laboratory	- NATA Site # 1	8217				Χ	Х	Х	Х		Х	Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794			Х					Х				
Exte	rnal Laboratory	'		,											
55	A2_TP03_0.0	May 17, 2016		Soil	S16-My19735				Χ						
56	A2_TP03_0.5	May 17, 2016		Soil	S16-My19736				Χ						
57	A2_TP03_1.0	May 17, 2016		Soil	S16-My19737				Χ						
58	A2_TP04_0.2	May 17, 2016		Soil	S16-My19738				Χ						
59	A2_TP04_1.0	May 17, 2016		Soil	S16-My19739				Х						
60	A2_TP05_0.3	May 17, 2016		Soil	S16-My19740				Х						
61	A2_TP05_0.5	May 17, 2016		Soil	S16-My19741				Χ						
62	A2_TP05_1.0	May 17, 2016		Soil	S16-My19742				Χ						
63	A2_TP05_2.0	May 17, 2016		Soil	S16-My19743				Χ						
64	A2_TP05_2.5	May 17, 2016		Soil	S16-My19744				Χ						
65	A2_TP06_0.5	May 17, 2016		Soil	S16-My19745				Χ						



IA110700

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NATA # 1261 Site # 20794

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Address: Level 4, 100 Christie St Report #: 501183 Due: May 26, 2016

> St Leonards Phone: 02 9928 2100 Priority: 5 Day

Contact Name: Blair Cummings NSW 2065 Fax: 02 9928 2504

Project Name: **BANKSTOWN AIRPORT - SITE 2**

Sample Detail							Asbestos - WA guidelines	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271														Х	
Sydney Laboratory - NATA Site # 18217							Х	Х	Х	Х		Х	Х	Х	Х
Brisbane Laboratory - NATA Site # 20794						Х					Х			<u> </u>	\square
External Laboratory														<u> </u>	
66	A2_TP06_1.0	May 17, 2016		Soil	S16-My19746				Х						Ш
67	A2_TP06_2.0	May 17, 2016		Soil	S16-My19747				Х						Ш
68	A2_TP06_2.5	May 17, 2016		Soil	S16-My19748				Х						Ш
69		May 17, 2016		Soil	S16-My19749				Х						Ш
70	A2_TP21_1.0	May 17, 2016		Soil	S16-My19750				Х					ļ	
71	A2_TP17_0.5	May 18, 2016		Soil	S16-My19751				Х					ļ	
72	A2_TP17_1.0	May 18, 2016		Soil	S16-My19752				Χ						
73	A2_TP17_2.0	May 18, 2016		Soil	S16-My19753				Х						
74	A2_BH7_0.5	May 18, 2016		Soil	S16-My19754				Х						Ш
75	A2_BH7_1.5	May 18, 2016		Soil	S16-My19755				Х						Ш
76	A2_BH8_0.0	May 18, 2016		Soil	S16-My19756				Х						



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> St Leonards Phone: 02 9928 2100 Priority: 5 Day

Contact Name: Blair Cummings NSW 2065 Fax: 02 9928 2504

Project Name: **BANKSTOWN AIRPORT - SITE 2** Project ID: IA110700

Sample Detail						% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271														Χ	
Sydney Laboratory - NATA Site # 18217							Х	Х	Х	Х		Х	Х	Х	Х
Brisbane Laboratory - NATA Site # 20794						Х					Х				
External Laboratory															
77	A2_BH8_1.5	May 18, 2016		Soil	S16-My19757				Х						
78	A2_TP23_2.0	May 16, 2016		Soil	S16-My20037				Х						
Test	Test Counts						9	1	47	1	8	8	26	1	26



Internal Quality Control Review and Glossary

General

- 1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 4. Results are uncorrected for matrix spikes or surrogate recoveries.
- 5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise
- 6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

Units

 mg/kg: milligrams per Kilogram
 mg/l: milligrams per litre

 ug/l: micrograms per litre
 ppm: Parts per million

 ppb: Parts per billion
 %: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry Where a moisture has been determined on a solid sample the result is expressed on a dry basis.

LOR Limit of Reporting.

SPIKE Addition of the analyte to the sample and reported as percentage recovery.

RPD Relative Percent Difference between two Duplicate pieces of analysis.

LCS Laboratory Control Sample - reported as percent recovery
CRM Certified Reference Material - reported as percent recovery

Method Blank In the case of solid samples these are performed on laboratory certified clean sands

In the case of water samples these are performed on de-ionised water.

Surr - Surrogate The addition of a like compound to the analyte target and reported as percentage recovery.

DuplicateA second piece of analysis from the same sample and reported in the same units as the result to show comparison.

Batch Duplicate A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.

Batch SPIKE Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.

USEPA United States Environmental Protection Agency

APHA American Public Health Association

TCLP Toxicity Characteristic Leaching Procedure

COC Chain of Custody
SRA Sample Receipt Advice

CP Client Parent - QC was performed on samples pertaining to this report

NCP Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within

TEQ Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

QC Data General Comments

- 1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxaphene is not added to the Spike.
- 5. Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- 6. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time.

 Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- 8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- 9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Report Number: 501183-S



Quality Control Results

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Method Blank					
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	mg/kg	< 20	20	Pass	
TRH C10-C14	mg/kg	< 20	20	Pass	
TRH C15-C28	mg/kg	< 50	50	Pass	
TRH C29-C36	mg/kg	< 50	50	Pass	
Method Blank					
BTEX					
Benzene	mg/kg	< 0.1	0.1	Pass	
Toluene	mg/kg	< 0.1	0.1	Pass	
Ethylbenzene	mg/kg	< 0.1	0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2	0.2	Pass	
o-Xylene	mg/kg	< 0.1	0.1	Pass	
Xylenes - Total	mg/kg	< 0.3	0.3	Pass	
Method Blank	1			1 5.55	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene	mg/kg	< 0.5	0.5	Pass	
TRH C6-C10	mg/kg	< 20	20	Pass	
Method Blank	ı mg/ng	120		1 466	
Polycyclic Aromatic Hydrocarbons				T	
Acenaphthene	mg/kg	< 0.5	0.5	Pass	
Acenaphthylene	mg/kg	< 0.5	0.5	Pass	
Anthracene	mg/kg	< 0.5	0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5	0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5	0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5	0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5	0.5	Pass	
Benzo(k)fluoranthene	1	< 0.5	0.5	Pass	
• •	mg/kg		0.5	Pass	
Chrysene	mg/kg	< 0.5		_	
Dibenz(a.h)anthracene	mg/kg	< 0.5	0.5	Pass	
Fluoranthene	mg/kg	< 0.5	0.5	Pass	-
Fluorene	mg/kg	< 0.5	0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5	0.5	Pass	
Naphthalene	mg/kg	< 0.5	0.5	Pass	
Phenanthrene	mg/kg	< 0.5	0.5	Pass	
Pyrene	mg/kg	< 0.5	0.5	Pass	
Method Blank		T T		Т	
Organochlorine Pesticides				+_	
Chlordanes - Total	mg/kg	< 0.1	0.1	Pass	-
4.4'-DDD	mg/kg	< 0.05	0.05	Pass	
4.4'-DDE	mg/kg	< 0.05	0.05	Pass	-
4.4'-DDT	mg/kg	< 0.05	0.05	Pass	
a-BHC	mg/kg	< 0.05	0.05	Pass	
Aldrin	mg/kg	< 0.05	0.05	Pass	
b-BHC	mg/kg	< 0.05	0.05	Pass	
d-BHC	mg/kg	< 0.05	0.05	Pass	
Dieldrin	mg/kg	< 0.05	0.05	Pass	
Endosulfan I	mg/kg	< 0.05	0.05	Pass	
Endosulfan II	mg/kg	< 0.05	0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05	0.05	Pass	
Endrin	mg/kg	< 0.05	0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05	0.05	Pass	



			Acceptance	Pass	Qualifying
Test	Units	Result 1	Limits	Limits	Code
Endrin ketone	mg/kg	< 0.05	0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05	0.05	Pass	
Heptachlor	mg/kg	< 0.05	0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05	0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05	0.05	Pass	
Methoxychlor	mg/kg	< 0.2	0.2	Pass	
Toxaphene	mg/kg	< 1	1	Pass	
Method Blank					
Polychlorinated Biphenyls (PCB)					
Aroclor-1016	mg/kg	< 0.5	0.5	Pass	
Aroclor-1232	mg/kg	< 0.5	0.5	Pass	
Aroclor-1242	mg/kg	< 0.5	0.5	Pass	
Aroclor-1248	mg/kg	< 0.5	0.5	Pass	
Aroclor-1254	mg/kg	< 0.5	0.5	Pass	
Aroclor-1260	mg/kg	< 0.5	0.5	Pass	
Total PCB*	mg/kg	< 0.5	0.5	Pass	
Method Blank					
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	i e				
TRH >C10-C16	mg/kg	< 50	50	Pass	
TRH >C16-C34	mg/kg	< 100	100	Pass	
TRH >C34-C40	mg/kg	< 100	100	Pass	
Method Blank					
PFOS/PFOA/6:2FTS					
Perfluorooctanesulfonic acid (PFOS)	mg/kg	< 0.005	0.005	Pass	
Perfluorooctanoic acid (PFOA)	mg/kg	< 0.005	0.005	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	mg/kg	< 0.01	0.01	Pass	
Method Blank					
% Clay	%	< 1	1	Pass	
Conductivity (1:5 aqueous extract at 25°C)	uS/cm	< 5	5	Pass	
Method Blank					
Ion Exchange Properties					
Cation Exchange Capacity	meg/100g	< 0.05	0.05	Pass	
Method Blank					
Heavy Metals					
Arsenic	mg/kg	< 2	2	Pass	
Cadmium	mg/kg	< 0.4	0.4	Pass	
Chromium	mg/kg	< 5	5	Pass	
Copper	mg/kg	< 5	5	Pass	
Lead	mg/kg	< 5	5	Pass	
Mercury	mg/kg	< 0.05	0.05	Pass	
Nickel	mg/kg	< 5	5	Pass	
Zinc	mg/kg	< 5	5	Pass	
LCS - % Recovery				, uss	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	%	94	70-130	Pass	
TRH C10-C14	%	117	70-130	Pass	
LCS - % Recovery	70		70 100	, aoo	
BTEX					
Benzene	%	91	70-130	Pass	
Toluene	%	95	70-130	Pass	
Ethylbenzene	%	96	70-130	Pass	
m&p-Xylenes	%	99	70-130	Pass	
παρ-λγιστισο				г d55	
o-Xylene	%	99	70-130	Pass	



Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery					
Total Recoverable Hydrocarbons - 2013 NEPM Fra	ctions				
Naphthalene	%	119	70-130	Pass	
TRH C6-C10	%	86	70-130	Pass	
LCS - % Recovery					
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	%	95	70-130	Pass	
Acenaphthylene	%	91	70-130	Pass	
Anthracene	%	98	70-130	Pass	
Benz(a)anthracene	%	100	70-130	Pass	
Benzo(a)pyrene	%	84	70-130	Pass	
Benzo(b&j)fluoranthene	%	104	70-130	Pass	
Benzo(g.h.i)perylene	%	87	70-130	Pass	
Benzo(k)fluoranthene	%	91	70-130	Pass	
Chrysene	%	106	70-130	Pass	
Dibenz(a.h)anthracene	%	81	70-130	Pass	
Fluoranthene	%	94	70-130	Pass	
Fluorene	%	91	70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	82	70-130	Pass	
Naphthalene	%	96	70-130	Pass	
Phenanthrene	%	96	70-130	Pass	
Pyrene	%	93	70-130	Pass	
LCS - % Recovery				ı	
Organochlorine Pesticides					
Chlordanes - Total	%	109	70-130	Pass	
4.4'-DDD	%	112	70-130	Pass	
4.4'-DDE	%	111	70-130	Pass	
4.4'-DDT	%	120	70-130	Pass	
a-BHC	%	109	70-130	Pass	
Aldrin	%	114	70-130	Pass	
b-BHC	%	105	70-130	Pass	
d-BHC	%	113	70-130	Pass	
Dieldrin	%	110	70-130	Pass	
Endosulfan I	%	115	70-130	Pass	
Endosulfan II	%	113	70-130	Pass	
Endosulfan sulphate	%	113	70-130	Pass	
Endrin	%	111	70-130	Pass	
Endrin aldehyde	%	112	70-130	Pass	
Endrin ketone	%	110	70-130	Pass	
g-BHC (Lindane)	%	109	70-130	Pass	
Heptachlor	%	118	70-130	Pass	
Heptachlor epoxide	%	108	70-130	Pass	
Hexachlorobenzene	%	113	70-130	Pass	
Methoxychlor	%	101	70-130	Pass	
LCS - % Recovery					
Polychlorinated Biphenyls (PCB)	1				
Aroclor-1260	%	97	70-130	Pass	
LCS - % Recovery					
Total Recoverable Hydrocarbons - 2013 NEPM Fra					
TRH >C10-C16	%	115	70-130	Pass	
LCS - % Recovery					
PFOS/PFOA/6:2FTS	T				
Perfluorooctanesulfonic acid (PFOS)	%	99	50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	100	50-150	Pass	<u> </u>



T			11-16-	D 1/ 4		Acceptance	Pass	Qualifying
Test			Units	Result 1		Limits	Limits	Code
1H.1H.2H.2H-perfluorooctanesulfor	nic acid (6:2 FTS)		%	110		50-150	Pass	
LCS - % Recovery					T		ı	
% Clay			%	105		70-130	Pass	
LCS - % Recovery					T T		_	
Heavy Metals								
Arsenic			%	98		70-130	Pass	
Cadmium			%	106		70-130	Pass	
Chromium			%	104		70-130	Pass	
Copper			%	82		70-130	Pass	
Lead			%	95		70-130	Pass	
Mercury			%	103		70-130	Pass	
Nickel			%	98		70-130	Pass	
Zinc			%	84		70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery						1	1	
Organochlorine Pesticides				Result 1				
Chlordanes - Total	S16-My19681	CP	%	95		70-130	Pass	
4.4'-DDD	S16-My23468	NCP	%	120		70-130	Pass	
4.4'-DDE	S16-My19681	CP	%	100		70-130	Pass	
4.4'-DDT	S16-My19681	CP	%	80		70-130	Pass	
a-BHC	S16-My19681	CP	%	91		70-130	Pass	
Aldrin	S16-My19681	CP	%	94		70-130	Pass	
b-BHC	S16-My19681	CP	%	88		70-130	Pass	
d-BHC	S16-My19681	CP	%	98		70-130	Pass	
Dieldrin	S16-My19681	CP	%	106		70-130	Pass	
Endosulfan I	S16-My19681	CP	%	101		70-130	Pass	
Endosulfan II	S16-My19681	CP	%	107		70-130	Pass	
Endosulfan sulphate	S16-My19681	CP	%	113		70-130	Pass	
Endrin	S16-My19681	CP	%	96		70-130	Pass	
Endrin aldehyde	S16-My19681	CP	%	111		70-130	Pass	
Endrin ketone	S16-My19681	CP	%	129		70-130	Pass	
g-BHC (Lindane)	S16-My19681	CP	%	92		70-130	Pass	
Heptachlor	S16-My19681	СР	%	100		70-130	Pass	
Heptachlor epoxide	S16-My19681	СР	%	98		70-130	Pass	
Hexachlorobenzene	S16-My19681	СР	%	92		70-130	Pass	
Methoxychlor	S16-My19681	СР	%	93		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	S16-My19681	СР	%	90		70-130	Pass	
Cadmium	S16-My19681	CP	%	93		70-130	Pass	
Chromium	S16-My19681	СР	%	96		70-130	Pass	
Copper	S16-My19681	СР	%	99		70-130	Pass	
Lead	S16-My19681	СР	%	89		70-130	Pass	
Mercury	S16-My19681	СР	%	94		70-130	Pass	
Nickel	S16-My19681	СР	%	91		70-130	Pass	
Zinc	S16-My19681	СР	%	89		70-130	Pass	
Spike - % Recovery	·							
PFOS/PFOA/6:2FTS				Result 1				
Perfluorooctanesulfonic acid (PFOS)	S16-My19686	СР	%	89		50-150	Pass	
Perfluorooctanoic acid (PFOA)	S16-My19686	СР	%	101		50-150	Pass	
1H.1H.2H.2H- perfluorooctanesulfonic acid (6:2								
FTS)	S16-My19686	CP	%	111		50-150	Pass	
Spike - % Recovery								



Test	Lab Sample ID	QA Source	Units	Result 1	Accepta Limits		Qualifying Code
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1			
TRH C6-C9	S16-My19689	CP	%	80	70-130	Pass	
TRH C10-C14	S16-My19689	СР	%	103	70-130	Pass	
Spike - % Recovery							
BTEX				Result 1			
Benzene	S16-My19689	СР	%	85	70-130) Pass	
Toluene	S16-My19689	СР	%	82	70-130	Pass	
Ethylbenzene	S16-My19689	СР	%	81	70-130		
m&p-Xylenes	S16-My19689	СР	%	85	70-130		
o-Xylene	S16-My19689	CP	%	85	70-130		
Xylenes - Total	S16-My19689	CP	%	85	70-130	1	
Spike - % Recovery	010 WJ 10000	<u> </u>	70	1 00 1	1 70 100	7 1 400	
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1			
Naphthalene	S16-My19689	CP	%	89	70-130) Pass	
TRH C6-C10	S16-My19689	CP	%	81	70-130		_
Spike - % Recovery	3 10-Wy 19009	CF	/0	01	10-130) Fass	
Total Recoverable Hydrocarbons -	2013 NEDM Erce	ione		Result 1			
TRH >C10-C16	S16-My19689	CP	%	99	70-130) Pass	
Spike - % Recovery	3 10-IVIY 19069	LCP	70	99	10-130	Pass	
				Decut 4			
Heavy Metals	040 M 40004	0.0	0/	Result 1	70.40	D	-
Arsenic	S16-My19694	CP	%	79	70-130		-
Cadmium	S16-My19694	CP	%	94	70-130		
Chromium	S16-My19694	CP	%	87	70-130	1	
Copper	S16-My19694	CP	%	81	70-130	1	
Lead	S16-My19694	CP	%	91	70-130	1	-
Mercury	S16-My19694	CP	%	99	70-130	1	_
Nickel	S16-My19694	CP	%	91	70-130	1	
Zinc	S16-My19694	CP	%	86	70-130) Pass	
Spike - % Recovery							
Polychlorinated Biphenyls (PCB)	1			Result 1			
Aroclor-1260	S16-My19698	CP	%	91	70-130) Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1			
TRH C6-C9	S16-My19699	CP	%	78	70-130) Pass	
TRH C10-C14	S16-My19699	CP	%	94	70-130	Pass	
Spike - % Recovery							
BTEX				Result 1			
Benzene	S16-My19699	CP	%	83	70-130	Pass	
Toluene	S16-My19699	CP	%	81	70-130	Pass	
Ethylbenzene	S16-My19699	СР	%	79	70-130	Pass	
m&p-Xylenes	S16-My19699	CP	%	82	70-130	Pass	
o-Xylene	S16-My19699	СР	%	81	70-130	Pass	
Xylenes - Total	S16-My19699	СР	%	82	70-130		
Spike - % Recovery							
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1			
Naphthalene	S16-My19699	СР	%	83	70-130) Pass	
TRH C6-C10	S16-My19699	CP	%	77	70-130		
Spike - % Recovery			,,,		, , , , , , ,		
Polycyclic Aromatic Hydrocarbons				Result 1			
Acenaphthene	S16-My19699	СР	%	89	70-130) Pass	
Acenaphthylene	S16-My19699	CP	%	88	70-130		<u> </u>
Anthracene	S16-My19699	CP	%	93	70-130		
Benz(a)anthracene	S16-My19699	CP	%	92	70-130		_
	S16-My19699 S16-My19699	CP	%	84	70-130		-
Benzo(a)pyrene	1 O 10-IVIY 19099	UP'	/0	04	1 70-130	, Fass	



Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Benzo(b&j)fluoranthene	S16-My19699	СР	%	85	70-130	Pass	
Benzo(g.h.i)perylene	S16-My19699	СР	%	93	70-130	Pass	
Benzo(k)fluoranthene	S16-My19699	СР	%	93	70-130	Pass	
Chrysene	S16-My19699	СР	%	99	70-130	Pass	
Dibenz(a.h)anthracene	S16-My19699	СР	%	86	70-130	Pass	
Fluoranthene	S16-My19699	СР	%	89	70-130	Pass	
Fluorene	S16-My19699	СР	%	89	70-130	Pass	
Indeno(1.2.3-cd)pyrene	S16-My19699	СР	%	89	70-130	Pass	
Naphthalene	S16-My19699	СР	%	91	70-130	Pass	
Phenanthrene	S16-My19699	СР	%	92	70-130	Pass	
Pyrene	S16-My19699	СР	%	87	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbons	s - 2013 NEPM Fract	ions		Result 1			
TRH >C10-C16	S16-My19699	СР	%	99	70-130	Pass	
Spike - % Recovery		,				,	
Heavy Metals				Result 1			
Arsenic	S16-My19705	CP	%	90	70-130	Pass	
Cadmium	S16-My19705	CP	%	99	70-130	Pass	
Chromium	S16-My19705	CP	%	97	70-130	Pass	
Copper	S16-My19705	CP	%	77	70-130	Pass	
Lead	S16-My19705	CP	%	89	70-130	Pass	
Mercury	S16-My19705	CP	%	97	70-130	Pass	
Nickel	S16-My19705	CP	%	94	70-130	Pass	
Zinc	S16-My19705	СР	%	95	70-130	Pass	
Spike - % Recovery	1 2 12 11 11 12 12		7-		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 2.22	
Total Recoverable Hydrocarbons	s - 1999 NEPM Fract	ions		Result 1			
TRH C6-C9	S16-My19710	СР	%	79	70-130	Pass	
TRH C10-C14	S16-My19710	CP	%	108	70-130	Pass	
Spike - % Recovery	, , , , , , , , , , , , ,		7-		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 2.22	
BTEX				Result 1			
Benzene	S16-My19710	СР	%	86	70-130	Pass	
Toluene	S16-My19710	CP	%	84	70-130	Pass	
Ethylbenzene	S16-My19710	CP	%	80	70-130	Pass	
m&p-Xylenes	S16-My19710	CP	%	84	70-130	Pass	
o-Xylene	S16-My19710	CP	%	83	70-130	Pass	
Xylenes - Total	S16-My19710	CP	%	84	70-130	Pass	
Spike - % Recovery	C10 My 107 10	U.	,,,	<u> </u>	70 100	1 400	
Total Recoverable Hydrocarbons	s - 2013 NFPM Fract	ions		Result 1			
Naphthalene	S16-My19710	CP	%	72	70-130	Pass	
TRH C6-C10	S16-My19710	CP	%	72	70-130	Pass	
Spike - % Recovery	C10 My 107 10	U.	,,,	1 12	70 100	1 400	
Polycyclic Aromatic Hydrocarbo	ns			Result 1			
Acenaphthene	S16-My19710	СР	%	88	70-130	Pass	
Acenaphthylene	S16-My19710	CP	%	86	70-130	Pass	
Anthracene	S16-My19710	CP	<u> </u>	92	70-130	Pass	
Benz(a)anthracene	S16-My19710	CP	<u> </u>	98	70-130	Pass	
Benzo(a)pyrene	S16-My19710	CP	<u> </u>	80	70-130	Pass	
Benzo(b&j)fluoranthene	S16-My19710	CP	%	84	70-130	Pass	
		CP	<u>%</u> %	80	70-130	Pass	
Benzo(g.h.i)perylene	S16-My19710	CP					
Benzo(k)fluoranthene	S16-My19710	CP	%	85	70-130	Pass	

%

%

%

%

96

78

88

87

CP

СР

CP

CP

S16-My19710

S16-My19710

S16-My19710

S16-My19710

Dibenz(a.h)anthracene

Chrysene

Fluorene

Fluoranthene

Pass Pass

Pass

Pass

70-130

70-130

70-130

70-130



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Indeno(1.2.3-cd)pyrene	S16-My19710	СР	%	81			70-130	Pass	
Naphthalene	S16-My19710	СР	%	89			70-130	Pass	
Phenanthrene	S16-My19710	CP	%	91			70-130	Pass	
Pyrene	S16-My19710	СР	%	88			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1					
TRH >C10-C16	S16-My19710	СР	%	108			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
PFOS/PFOA/6:2FTS				Result 1	Result 2	RPD			
Perfluorooctanesulfonic acid (PFOS)	S16-My19681	СР	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	S16-My19681	СР	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
1H.1H.2H.2H- perfluorooctanesulfonic acid (6:2 FTS)	S16-My19681	СР	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S16-My19681	СР	%	16	15	4.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C6-C9	S16-My19688	СР	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S16-My19688	СР	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S16-My19688	СР	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S16-My19688	СР	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S16-My19688	СР	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S16-My19688	СР	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S16-My19688	СР	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S16-My19688	СР	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S16-My19688	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S16-My19688	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate		<u> </u>	9,9	1 0.0	1 0.0	1.	0070		
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1	Result 2	RPD			
Naphthalene	S16-My19688	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S16-My19688	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate	1 0 10 Wy 10000	Ų,	mg/ng	1 20	\ <u>Z</u> 0		3070	1 455	
Polycyclic Aromatic Hydrocarbons	3			Result 1	Result 2	RPD			
Acenaphthene	S16-My19688	СР	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S16-My19688	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S16-My19688	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S16-My19688	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S16-My19688	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&i)fluoranthene	S16-My19688	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S16-My19688	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S16-My19688	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S16-My19688	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S16-My19688	CP		< 0.5	< 0.5	<1 <1	30%	Pass	
Fluoranthene	S16-My19688	CP	mg/kg	< 0.5	< 0.5	<1 <1	30%	Pass	
Fluoranthene	S16-My19688	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
	•	CP	mg/kg						
Indeno(1.2.3-cd)pyrene	S16-My19688	CP	mg/kg	< 0.5	< 0.5	<u><1</u> -1	30%	Pass	
Naphthalene	S16-My19688		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S16-My19688	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S16-My19688	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	



Duplicate									
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH >C10-C16	S16-My19688	СР	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S16-My19688	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S16-My19688	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate	1 2 10 111, 10000	<u> </u>	199	1.00	1.00		0070	1 . 0.00	
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S16-My19689	СР	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S16-My19689	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S16-My19689	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S16-My19689	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S16-My19689	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S16-My19689	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S16-My19689	CP	mg/kg	< 0.05	< 0.05	<u> </u>	30%	Pass	
d-BHC	S16-My19689	CP	mg/kg	< 0.05	< 0.05	<u> </u>	30%	Pass	
Dieldrin	S16-My19689	CP	mg/kg	< 0.05	< 0.05	<u> </u>	30%	Pass	
Endosulfan I	S16-My19689	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S16-My19689	CP	mg/kg	< 0.05	< 0.05	<u><1</u>	30%	Pass	
Endosulfan sulphate	S16-My19689	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S16-My19689	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S16-My19689	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S16-My19689	CP		< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S16-My19689	CP	mg/kg	< 0.05	< 0.05	<u><1</u>	30%	Pass	
,	· · · · · ·	CP	mg/kg		1 1		1		
Heptachlor	S16-My19689		mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S16-My19689	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S16-My19689	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S16-My19689	CP CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Toxaphene	S16-My19689	L CP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate Belyebleringted Binhanyle (BCB)				Popult 1	Booult 2	BBD			
Polychlorinated Biphenyls (PCB)	C4C M-40C00	CD		Result 1	Result 2	RPD	200/	Dana	
Aroclor-1016	S16-My19689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1232	S16-My19689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S16-My19689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S16-My19689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S16-My19689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S16-My19689	СР	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate Total Bases and La Harden and Land	4000 NEDM F	•		Desilia	D It O	DDD	T	<u> </u>	
Total Recoverable Hydrocarbons -				Result 1	Result 2	RPD	000/	D	
TRH C6-C9	S16-My19692	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate				Desili 4	Descrit o	DDD			
BTEX	040 M 40000	0.5	N	Result 1	Result 2	RPD	2007	Desir	
Benzene	S16-My19692	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S16-My19692	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S16-My19692	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S16-My19692	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S16-My19692	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S16-My19692	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons -				Result 1	Result 2	RPD		+	
Naphthalene	S16-My19692	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S16-My19692	CP	mg/kg	< 20	< 20	<1	30%	Pass	



Dunlicato									
Duplicate Heavy Metals				Dog::lt.4	Decide o	DDD			
Heavy Metals	040.14.40000	0.0	1 "	Result 1	Result 2	RPD	000/		
Arsenic	S16-My19693	CP	mg/kg	4.7	3.7	24	30%	Pass	
Cadmium	S16-My19693	CP	mg/kg	1.7	1.8	5.0	30%	Pass	
Chromium	S16-My19693	CP	mg/kg	12	10	11	30%	Pass	
Copper	S16-My19693	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S16-My19693	CP	mg/kg	12	9.4	20	30%	Pass	
Mercury	S16-My19693	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Nickel	S16-My19693	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S16-My19693	CP	mg/kg	200	220	10	30%	Pass	
Duplicate					I . I				
	T 2			Result 1	Result 2	RPD			
% Moisture	S16-My19694	CP	%	18	18	1.0	30%	Pass	
Duplicate		-		l	1 1				
Total Recoverable Hydrocarbons			1	Result 1	Result 2	RPD			
TRH C6-C9	S16-My19698	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S16-My19698	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S16-My19698	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S16-My19698	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate				1	,				
BTEX				Result 1	Result 2	RPD			
Benzene	S16-My19698	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S16-My19698	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S16-My19698	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S16-My19698	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S16-My19698	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S16-My19698	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons	- 2013 NEPM Fract	ions		Result 1	Result 2	RPD			
Naphthalene	S16-My19698	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S16-My19698	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarboi	ns			Result 1	Result 2	RPD			
Acenaphthene	S16-My19698	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S16-My19698	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S16-My19698	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S16-My19698	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S16-My19698	CP	200 cm/l c cm	l	0.5	<1	30%	Pass	
	3 10-Wy 19090	Cr Cr	mg/kg	< 0.5	< 0.5	<u> </u>			
Benzo(b&j)fluoranthene	S16-My19698	CP	mg/kg	< 0.5 < 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene Benzo(g.h.i)perylene	<u> </u>			i			30% 30%	Pass Pass	
· "	S16-My19698	СР	mg/kg	< 0.5	< 0.5	<1			
Benzo(g.h.i)perylene	S16-My19698 S16-My19698	CP CP	mg/kg mg/kg	< 0.5 < 0.5	< 0.5 < 0.5	<1 <1	30%	Pass	
Benzo(g.h.i)perylene Benzo(k)fluoranthene	S16-My19698 S16-My19698 S16-My19698	CP CP CP	mg/kg mg/kg mg/kg	< 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5	<1 <1 <1	30% 30%	Pass Pass	
Benzo(g.h.i)perylene Benzo(k)fluoranthene Chrysene	S16-My19698 S16-My19698 S16-My19698 S16-My19698	CP CP CP	mg/kg mg/kg mg/kg mg/kg	< 0.5 < 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5 < 0.5	<1 <1 <1 <1	30% 30% 30%	Pass Pass Pass	
Benzo(g.h.i)perylene Benzo(k)fluoranthene Chrysene Dibenz(a.h)anthracene	S16-My19698 S16-My19698 S16-My19698 S16-My19698 S16-My19698	CP CP CP CP	mg/kg mg/kg mg/kg mg/kg mg/kg	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5	<1 <1 <1 <1 <1	30% 30% 30% 30%	Pass Pass Pass Pass	
Benzo(g.h.i)perylene Benzo(k)fluoranthene Chrysene Dibenz(a.h)anthracene Fluoranthene	\$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698	CP CP CP CP CP	mg/kg mg/kg mg/kg mg/kg mg/kg	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	<1 <1 <1 <1 <1 <1	30% 30% 30% 30% 30%	Pass Pass Pass Pass Pass	
Benzo(g.h.i)perylene Benzo(k)fluoranthene Chrysene Dibenz(a.h)anthracene Fluoranthene Fluorene	\$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698	CP CP CP CP CP CP CP	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30%	Pass Pass Pass Pass Pass Pass Pass	
Benzo(g.h.i)perylene Benzo(k)fluoranthene Chrysene Dibenz(a.h)anthracene Fluoranthene Fluorene Indeno(1.2.3-cd)pyrene	\$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698	CP CP CP CP CP CP CP CP	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30%	Pass Pass Pass Pass Pass Pass Pass Pass	
Benzo(g.h.i)perylene Benzo(k)fluoranthene Chrysene Dibenz(a.h)anthracene Fluoranthene Fluorene Indeno(1.2.3-cd)pyrene Naphthalene	\$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698	CP CP CP CP CP CP CP CP CP	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30% 30%	Pass Pass Pass Pass Pass Pass Pass Pass	
Benzo(g.h.i)perylene Benzo(k)fluoranthene Chrysene Dibenz(a.h)anthracene Fluoranthene Fluorene Indeno(1.2.3-cd)pyrene Naphthalene Phenanthrene	\$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698	CP	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30% 30%	Pass Pass Pass Pass Pass Pass Pass Pass	
Benzo(g.h.i)perylene Benzo(k)fluoranthene Chrysene Dibenz(a.h)anthracene Fluoranthene Fluorene Indeno(1.2.3-cd)pyrene Naphthalene Phenanthrene Pyrene	\$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698	CP	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30% 30%	Pass Pass Pass Pass Pass Pass Pass Pass	
Benzo(g.h.i)perylene Benzo(k)fluoranthene Chrysene Dibenz(a.h)anthracene Fluoranthene Fluorene Indeno(1.2.3-cd)pyrene Naphthalene Phenanthrene Pyrene Duplicate Total Recoverable Hydrocarbons	\$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698	CP	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 Result 1	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30% 30%	Pass Pass Pass Pass Pass Pass Pass Pass	
Benzo(g.h.i)perylene Benzo(k)fluoranthene Chrysene Dibenz(a.h)anthracene Fluoranthene Fluorene Indeno(1.2.3-cd)pyrene Naphthalene Phenanthrene Pyrene Duplicate	\$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698 \$16-My19698	CP C	mg/kg	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30% 30% 30%	Pass Pass Pass Pass Pass Pass Pass Pass	



Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-My19703	СР	mg/kg	3.9	3.7	6.0	30%	Pass	
Cadmium	S16-My19703	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S16-My19703	CP	mg/kg	10	9.7	7.0	30%	Pass	
	S16-My19703	CP		7.7	8.5	11	30%	Pass	
Copper	S16-My19703	CP	mg/kg	23	23	2.0	30%	Pass	
Lead	\$16-My19703	CP	mg/kg	0.07	0.06	4.0	30%	Pass	
Mercury	<u> </u>	CP	mg/kg		1			1	
Nickel Zinc	S16-My19703	CP	mg/kg	5.4	5.4 32	<1 4.0	30%	Pass	
	S16-My19703	L CP	mg/kg	33	32	4.0	30%	Pass	
Duplicate				Dogult 1	Decult 2	DDD			
O/ Majatura	C4C M: 40705	СР	0/	Result 1	Result 2	RPD	200/	Dana	
% Moisture	S16-My19705	L CP	%	13	12	7.0	30%	Pass	
Duplicate				Desult 4	Deeult 0	DDD			
9/ Clay	D46 M::04050	NCD	0,	Result 1	Result 2	RPD	200/	Desa	
% Clay	B16-My04859	NCP	%	40	40	<1	30%	Pass	
Conductivity (1:5 aqueous extract at 25°C)	S16-My19708	СР	uS/cm	990	940	5.0	30%	Pass	
Duplicate							l		
Total Recoverable Hydrocarbons	1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C6-C9	S16-My19709	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
ВТЕХ				Result 1	Result 2	RPD			
Benzene	S16-My19709	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S16-My19709	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S16-My19709	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S16-My19709	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S16-My19709	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S16-My19709	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons	2013 NEPM Fract	ions		Result 1	Result 2	RPD			
Naphthalene	S16-My19709	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S16-My19709	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbon	s			Result 1	Result 2	RPD			
Acenaphthene	S16-My19709	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S16-My19709	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S16-My19709	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S16-My19709	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S16-My19709	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S16-My19709	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S16-My19709	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S16-My19709	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S16-My19709	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S16-My19709	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S16-My19709	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S16-My19709	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S16-My19709	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S16-My19709	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S16-My19709	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S16-My19709	СР	mg/kg	< 0.5	< 0.5	<1	30%	Pass	



Comments

Sample Integrity

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

Qualifier Codes/Comments

Code Description

F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis). N01

Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.

F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes. N04

Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs N07

N09 Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear standard.

Authorised By

N02

Andrew Black Analytical Services Manager Bob Symons Senior Analyst-Inorganic (NSW) Emily Rosenberg Senior Analyst-Metal (VIC) Senior Analyst-Metal (NSW) Ivan Taylor Rhys Thomas Senior Analyst-Asbestos (NSW) Richard Corner Senior Analyst-Inorganic (QLD) Richard Corner Senior Analyst-Organic (QLD) Ryan Hamilton Senior Analyst-Organic (NSW) Ryan Hamilton Senior Analyst-Volatile (NSW)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

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

Uncertainty data is available on request

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Certificate of Analysis





NATA Accredited Accreditation Number 1261 Site Number 18217

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

Jacobs Group (Australia) P/L NSW Level 4, 100 Christie St St Leonards NSW 2065

Attention: Blair Cummings
Report 501183-AID

Project Name BANKSTOWN AIRPORT - SITE 2

Project ID IA110700

Received Date May 18, 2016

Date Reported May 26, 2016

Methodology:

Asbestos ID

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

Subsampling Soil Samples

The whole sample submitted is first dried and then sieved through a 10mm sieve followed by a 2mm sieve. All fibrous matter viz greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) Iron ores - Sampling and Sample preparation procedures is employed. Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis in accordance with AS 4964-2004.

Bonded asbestoscontaining material (ACM) The material is first examined and any fibres isolated and where required interfering organic fibres or matter may be removed by treating the sample for several hours at a temperature not exceeding 400 ± 30 °C. The resultant material is then ground and examined in accordance with AS 4964-2004.

Limit of Reporting

The nominal detection limit of the AS4964 method is around 0.01%. The examination of large sample sizes (at least 500 ml is recommended) may improve the likelihood of identifying asbestos material in the greater than 2 mm fraction. The NEPM screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. NOTE: NATA News, September 2011 – page 34, states, "Weighing of fibres is problematic and can lead to loss of fibres and potential exposure for laboratory analysts. To request laboratories to report information which is outside the scope of AS 4964-2004 and the scope of their accreditation is misleading and is most unwise" therefore such values reported are outside the scope of Eurofins | mgt NATA accreditation as designated by an asterisk.









NATA Accredited Accreditation Number 1261 Site Number 18217

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

Project Name BANKSTOWN AIRPORT - SITE 2

Project ID IA110700

Date Sampled May 16, 2016 to May 18, 2016

Report 501183-AID

Client Sample ID	Eurofins mgt Sample No.	Date Sampled	Sample Description	Result
A2_TP07_0.1	16-My19682	May 16, 2016	Approximate Sample 1098g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. M11
A2_TP08_0.0	16-My19684	May 16, 2016	Approximate Sample 763g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. M11
A2_TP22_0.2	16-My19687	May 16, 2016	Approximate Sample 907g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. M11
A2_TP23_0.2	16-My19690	May 16, 2016	Approximate Sample 1058g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}
A2_TP04_0.0	16-My19698	May 17, 2016	Approximate Sample 790g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}
A2_TP06_0.2	16-My19702	May 16, 2016	Approximate Sample 1000g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}
A2_TP18_0.3	16-My19704	May 17, 2016	Approximate Sample 901g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}
A2_TP21_0.2	16-My19706	May 17, 2016	Approximate Sample 730g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}
A2_TP17_0.0	16-My19707	May 18, 2016	Approximate Sample 1024g Sample consisted of: Brown coarse grain soil and rocks	AF: Chrysotile asbestos detected in the form of loose fibre bundles. Approximate raw weight of AF = 0.0025g* Estimated asbestos content in AF = 0.0025g* Total estimated asbestos concentration in AF = 0.0002% w/w* No asbestos detected at the reporting limit of 0.001% w/w.*
				Organic fibre detected. ^{M11}



Sample History

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

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

DescriptionTesting SiteExtractedHolding TimeAsbestos - LTM-ASB-8020SydneyMay 19, 2016Indefinite



Project Name:

mgt

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Melbourne

3-5 Kingston Town Close Oakleigh VIC 3166 Phone: +61 3 8564 5000 NATA # 1261

Site # 1254 & 14271

Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400

NATA # 1261 Site # 18217

Brisbane1/21 Smallwood Place
Murarrie QLD 4172
Phone: +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 18, 2016 7:20 PM

 Address:
 Level 4, 100 Christie St
 Report #:
 501183
 Due:
 May 26, 2016

St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 Contact Name: Blair Cummings

Project ID: IA110700

Eurofins | mgt Analytical Services Manager : Andrew Black

	Sample Detail Melbourne Laboratory - NATA Site # 1254 & 14271							CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
				271										Х	
		- NATA Site # 1					Х	X	Х	Χ		Х	Х	Х	Х
		y - NATA Site #	20794			Х					Х				
	rnal Laboratory			1	1										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID										
1	A2_TP07_0.0	May 16, 2016		Soil	S16-My19681						Х	Х	Х		Х
2	A2_TP07_0.1	May 16, 2016		Soil	S16-My19682		Х								
3	A2_TP07_0.5	May 16, 2016		Soil	S16-My19683								Х		Χ
4	A2_TP08_0.0	May 16, 2016		Soil	S16-My19684		Х								
5	A2_TP08_0.3	May 16, 2016		Soil	S16-My19685								Х		Χ
6											Х	Х	Х		Χ
7	A2_TP22_0.2 May 16, 2016 Soil S16-My19687														
8													Х		Х
9	A2_TP23_0.0 May 16, 2016 Soil S16-My196										Х	Х	Х		Х
10	A2_TP23_0.2	May 16, 2016		Soil	S16-My19690		Х						Х		Χ

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Address: Level 4. 100 Christie St Report #: 501183 Due: May 26, 2016

St Leonards Phone: 02 9928 2100 Priority: 5 Day Blair Cummings NSW 2065 Fax: 02 9928 2504 **Contact Name:**

Project ID: IA110700 **Eurofins | mgt Analytical Services Manager : Andrew Black**

		Sa	mple Detail			% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Melb	ourne Laborato	ory - NATA Site	# 1254 & 142	71										Х	
Sydi	ney Laboratory	- NATA Site # 1	8217				Х	Х	Х	Х		Х	Χ	Х	Χ
Bris	bane Laborator	y - NATA Site#	20794			Х					Х				
Exte	rnal Laboratory	1													
11	A2_BH10_0.5	May 16, 2016		Soil	S16-My19691								Х		Х
12	A2_BH9_0.0	May 16, 2016		Soil	S16-My19692								Х		Х
13	A2_BH5_0.5	May 16, 2016		Soil	S16-My19693								Х		Х
14	A2_BH3_1.5	May 17, 2016		Soil	S16-My19694								Х		Х
15	A2_BH2_0.0	May 17, 2016		Soil	S16-My19695								Х		Х
16	A2_BH6_0.5	May 17, 2016		Soil	S16-My19696								Х		Х
17	A2_TP03_0.3	May 17, 2016		Soil	S16-My19697								Х		Х
18	A2_TP04_0.0	May 17, 2016		Soil	S16-My19698		Х				Х	Х	Х		Х
19	A2_TP04_0.5	May 17, 2016		Soil	S16-My19699								Х		Х
20	A2_TP05_0.0	May 17, 2016		Soil	S16-My19700								Х		Х
21	A2_TP06_0.0	May 16, 2016		Soil	S16-My19701						Χ	Χ	Χ		Χ

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St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 Contact Name: Blair Cummings

Project ID: IA110700

Eurofins | mgt Analytical Services Manager : Andrew Black

		Sa	mple Detail			% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Mell	oourne Laborato	ory - NATA Site	# 1254 & 142	271										Х	
Syd	ney Laboratory	- NATA Site # 1	8217				Χ	Χ	Х	Х		Х	Х	Х	Χ
Bris	bane Laborator	y - NATA Site #	20794			Х					Х				
Exte	rnal Laboratory	,													
22	A2_TP06_0.2	May 16, 2016		Soil	S16-My19702		Х						Х		Χ
23	A2_TP18_0.0	May 17, 2016		Soil	S16-My19703						Х	Х	Х		Х
24	A2_TP18_0.3	May 17, 2016		Soil	S16-My19704		Х								
25	A2_TP21_0.0	May 17, 2016		Soil	S16-My19705						Х	Х	Х		Х
26	A2_TP21_0.2	May 17, 2016		Soil	S16-My19706		Х						Х		Χ
27	A2_TP17_0.0	May 18, 2016		Soil	S16-My19707		Х				Х	Χ	Х		Χ
28	A2_TP17_2.5	May 18, 2016		Soil	S16-My19708	Х				Х			Х	Х	Х
29	A2_BH7_0.0	May 18, 2016		Soil	S16-My19709								Х		Х
30	A2_BH8_0.5	May 18, 2016		Soil	S16-My19710								Х		Х
31	A2_TP07_1.0	May 16, 2016		Soil	S16-My19711				Χ						
32	A2_TP07_2.0	May 16, 2016		Soil	S16-My19712				Χ						



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 Level 4, 100 Christie St
 Report #:
 501183
 Due:
 May 26, 2016

St Leonards Phone: 02 9928 2100 Priority: 5 Day
NSW 2065 Fax: 02 9928 2504 Contact Name: Blair Cummings

Project Name: BANKSTOWN AIRPORT - SITE 2

Project ID: IA110700

Eurofins | mgt Analytical Services Manager : Andrew Black

		Sa	mple Detail			% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
	oourne Laborato	_		271										Х	
	ney Laboratory						Х	Х	Х	Х		Х	Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794			Х					Х				
Exte	rnal Laboratory	1	T											ļ!	
33	A2_TP07_2.5	May 16, 2016		Soil	S16-My19713				Х					<u> </u>	
34	A2_TP08_0.5	May 16, 2016		Soil	S16-My19714				Х					<u> </u>	
35	A2_TP08_1.0	May 16, 2016		Soil	S16-My19715				Х					<u> </u>	
36	A2_TP08_2.0	May 16, 2016		Soil	S16-My19716				Х						
37	A2_TP08_2.5	May 16, 2016		Soil	S16-My19717				Х						
38	A2_TP22_1.0	May 16, 2016		Soil	S16-My19718				Х						
39	A2_TP23_0.5	May 16, 2016		Soil	S16-My19719				Χ						
40	A2_TP23_1.0	May 16, 2016		Soil	S16-My19720				Х						
41	A2_TP23_1.0	May 16, 2016		Soil	S16-My19721			Х							
42	A2_TP23_2.5	May 16, 2016		Soil	S16-My19722				Х						
43	A2_BH10_0.0	May 16, 2016		Soil	S16-My19723				Х						



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

7:20 PM

Due: May 26, 2016 Priority: 5 Day

Blair Cummings **Contact Name:**

Eurofins | mgt Analytical Services Manager : Andrew Black

Company Name:	Jacobs Group (Australia) P/L NSW	Order No.:	IA110700	Received:	May 18, 2016 7:2
Address:	Level 4, 100 Christie St	Report #:	501183	Due:	May 26, 2016

Phone:

Fax:

02 9928 2100

02 9928 2504

Level 4, 100 Christie St St Leonards NSW 2065

BANKSTOWN AIRPORT - SITE 2 Project Name:

Project ID: IA110700

		Sa	mple Detail			% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Melk	ourne Laborato	ory - NATA Site	# 1254 & 142	271										Х	
Syd	ney Laboratory	- NATA Site # 1	8217				Х	Χ	Χ	Х		Х	Х	Х	Χ
Bris	bane Laboratory	y - NATA Site #	20794			Χ					Х				
Exte	rnal Laboratory														
44	A2_BH10_1.5	May 16, 2016		Soil	S16-My19724				Х						
45	A2_BH9_0.5	May 16, 2016		Soil	S16-My19725				Х						
46	A2_BH9_1.5	May 16, 2016		Soil	S16-My19726				Х						
47	A2_BH5_0.0	May 16, 2016		Soil	S16-My19727				Х						
48	A2_BH5_1.5	May 16, 2016		Soil	S16-My19728				Х						
49	A2_BH3_0.0	May 17, 2016		Soil	S16-My19729				Х						
50	A2_BH3_0.5	May 17, 2016		Soil	S16-My19730				Х						
51	A2_BH2_0.5	May 17, 2016		Soil	S16-My19731				Х						
52	A2_BH2_1.5	May 17, 2016		Soil	S16-My19732				Х						
53	A2_BH6_0.0	May 17, 2016		Soil	S16-My19733				Х						
54	A2_BH6_1.5	May 17, 2016		Soil	S16-My19734				Х						

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BANKSTOWN AIRPORT - SITE 2

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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 18, 2016 7:20 PM

Address: Level 4. 100 Christie St Report #: 501183 Due: May 26, 2016 St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 **Contact Name: Blair Cummings**

Project ID: IA110700 Eurofins | mgt Analytical Services Manager : Andrew Black

		Sa	mple Detail			% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Mell	ourne Laborato	ory - NATA Site	# 1254 & 142	271										Х	\square
	ney Laboratory						Х	Х	Х	Х		Х	Х	Х	Х
	bane Laborator		20794			Х					Х				
	rnal Laboratory			ı											
55		May 17, 2016		Soil	S16-My19735				Х						\vdash
56	A2_TP03_0.5	May 17, 2016		Soil	S16-My19736				Χ						\vdash
57	A2_TP03_1.0	May 17, 2016		Soil	S16-My19737				Χ						
58	A2_TP04_0.2	May 17, 2016		Soil	S16-My19738				Х						\perp
59	A2_TP04_1.0	May 17, 2016		Soil	S16-My19739				Х						
60	A2_TP05_0.3	May 17, 2016		Soil	S16-My19740				Х						
61	A2_TP05_0.5	May 17, 2016		Soil	S16-My19741				Х						
62	A2_TP05_1.0	May 17, 2016		Soil	S16-My19742				Х						
63	A2_TP05_2.0	May 17, 2016		Soil	S16-My19743				Х						
64	A2_TP05_2.5	May 17, 2016		Soil	S16-My19744				Х						
65	A2_TP06_0.5	May 17, 2016		Soil	S16-My19745				Х						



Company Name:

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		Sa	mple Detail			% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Mell	oourne Laborato	ory - NATA Site	# 1254 & 142	271										Х	
Syd	ney Laboratory	- NATA Site # 1	8217				Χ	Х	Х	Х		Х	Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794			Х					Х				
Exte	rnal Laboratory	1													
66	A2_TP06_1.0	May 17, 2016		Soil	S16-My19746				Χ						
67	A2_TP06_2.0	May 17, 2016		Soil	S16-My19747				Χ						
68	A2_TP06_2.5	May 17, 2016		Soil	S16-My19748				Х						
69	A2_TP21_0.5	May 17, 2016		Soil	S16-My19749				Х						
70	A2_TP21_1.0	May 17, 2016		Soil	S16-My19750				Х						
71	A2_TP17_0.5	May 18, 2016		Soil	S16-My19751				Х						
72	A2_TP17_1.0	May 18, 2016		Soil	S16-My19752				Х						
73	A2_TP17_2.0	May 18, 2016		Soil	S16-My19753				Χ						
74	A2_BH7_0.5	May 18, 2016		Soil	S16-My19754				Χ						
75	A2_BH7_1.5	May 18, 2016		Soil	S16-My19755				Χ						
76	A2_BH8_0.0	May 18, 2016		Soil	S16-My19756				Χ						



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		Sa	mple Detail			% Clay	Asbestos - WA guidelines	CANCELLED	HOLD	pH (units)(1:5 soil:CaCl2 extract)	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins mgt Suite B7
Mell	ourne Laborato	ory - NATA Site	# 1254 & 142	271										Х	
Syd	ney Laboratory	- NATA Site # 1	8217				Х	Х	Х	Х		Х	Х	Х	Х
Bris	bane Laboratory	y - NATA Site #	20794			Х					Х				
Exte	rnal Laboratory														
77	A2_BH8_1.5	May 18, 2016		Soil	S16-My19757				Х						
78	A2_TP23_2.0	May 16, 2016		Soil	S16-My20037				Х						
Test	Counts	_		•		1	9	1	47	1	8	8	26	1	26



Internal Quality Control Review and Glossary

General

- 1. QC data may be available on request.
- 2. All soil results are reported on a dry basis, unless otherwise stated
- 3. Samples were analysed on an 'as received' basis
- 4. This report replaces any interim results previously issued.

Holding Times

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

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

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w: weight for weight basis grams per kilogram
Filter loading: fibres/100 graticule areas

Reported Concentration: fibres/mL Flowrate: L/min

Terms

ΑF

Date Reported: May 26, 2016

Dry Where a moisture has been determined on a solid sample the result is expressed on a dry basis.

LOR Limit of Reporting.
COC Chain of custody
SRA Sample Receipt Advice

ISO International Stardards Organisation

AS Australian Standards

WA DOH Western Australia Department of Health

NOHSC National Occupational Health and Safety Commission

ACM Bonded asbestos-containing material means any material containing more than 1% asbestos and comprises asbestos-containing-material which is in sound condition,

although possibly broken or fragmented, and where the asbestos is bound in a matrix such as cement or resin. Common examples of ACM include but are not limited to: pipe and boiler insulation, sprayed-on fireproofing, troweled-on acoustical plaster, floor tile and mastic, floor linoleum, transite shingles, roofing materials, wall and ceiling plaster, ceiling tiles, and gasket materials. This term is restricted to material that cannot pass a 7 mm x 7 mm sieve. This sieve size is selected because it approximates the thickness of common asbestos cement sheeting and for fragments to be smaller than this would imply a high degree of damage and hence potential

for fibre release.

FA FA comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. This type of friable asbestos

is defined here as asbestos material that is in a degraded condition such that it can be broken or crumbled by hand pressure. This material is typically unbonded or

was previously bonded and is now significantly degraded (crumbling).

PACM Presumed Asbestos-Containing Material means thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later

than 1980 that are assumed to contain greater than one percent asbestos but have not been sampled or analyzed to verify or negate the presence of asbestos.

Asbestos fines (AF) are defined as free fibres, or fibre bundles, smaller than 7mm. It is the free fibres which present the greatest risk to human health, although very

small fibres (< 5 microns in length) are not considered to be such a risk. AF also includes small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve.

(Note that for bonded ACM fragments to pass through a 7 mm x 7 mm sieve implies a substantial degree of damage which increases the potential for fibre release.)

AC Asbestos cement means a mixture of cement and asbestos fibres (typically 90:10 ratios).

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Report Number: 501183-AID



Comments

Sample Integrity

	•	
Custody Seals Intact	t (if used)	N/A
Attempt to Chill was e	evident	Yes
Sample correctly pres	served	Yes
Appropriate sample c	containers have been used	Yes
Sample containers for	or volatile analysis received with minimal headspace	Yes
Samples received wit	ithin HoldingTime	Yes
Some samples have I	been subcontracted	No

Qualifier Codes/Comments

Code Description N/A Not applicable

M11 NATA accreditation does not cover the performance of this service.

Authorised by:

Rhys Thomas Senior Analyst-Asbestos (NSW)

Glenn Jackson

National Operations Manager

Final Report - this report replaces any previously issued Report

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

Uncertainty data is available on request

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e.mail: EnviroSales@eurofins.com

web: www.eurofins.com.au

Melbourne 3-5 Kingston Town Close Oakleigh Vic 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400 NATA # 1261 Site # 18217 Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Sample Receipt Advice

Company name: Jacobs Group (Australia) P/L NSW

Contact name: Blair Cummings

Project name: BANKSTOWN AIRPORT - SITE 2

Project ID: IA110700 COC number: Not provided

Turn around time: 5 Day

Date/Time received: May 18, 2016 7:20 PM

Eurofins | mgt reference: 501183

Sample information

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

Notes

A2_TP23_1.0 not received, sample cancelled.

Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone: (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Blair Cummings - Blair.Cummings@jacobs.com.





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CHAIN OF CUSTODY RECORD ABN 50005 085 521

Sydney Lab

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Assistant cont. Brisbane Lab

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2 Kingston Town Close Oakleigh MC 3166 P +61 385645000 F +61385645090 E EnviroSampleVic@eurofins.com.au

Company	Jacobs		Purchas	se Order	TA	1107	00				Projecti	Manager	BI	AIR	CUMM	INGA	Pro	ject Nar	me	Ba	nkst	own Airport - Site 2
Address	Level 4 100 Christle Str	eet	Eurofins)	mgt Quote Ne			160413	JACN			Proje	ect Ne	I	9110°	700			ronic Rei Format	ault	EZ	dat	
Contact Name	St Leonards NSW 2065 Michael Stacey		lal" no "Ellines d" I ali		od, Cr, Cu, N		suffonic acid FTS)	0.001%w/w)					O. N.	ice Level	suffonic acid FTS)		Email	l for Res	sult			iel.Stacey@jacobs.c Blowr. Cummings@ja
Contact Phone Ne Special Direction	02 9032 1467		L. Bynade see of apole.		CNV PAHV As, C	Eurofins mgt Suite: B13 OCP/ PCB	Perfluorooctane suffonate (6:2	- Quantitative ((2)	Cation Exchange Capacity (CEC)	iterit		KNV As, Cd, Cr	ıns (PAH) - Tra	erfluorooctane suffonate (6:2			rn Arour quiremen	nd	10.	AY"	2DAY 3DAY' *Satissips apply
Special Direction			e de la compa	Soil	H BTEXN	Suite: B	CA) / F	delines -	pH (CaCl2)	nge Ca	% Clay content	Water	√ BTE> Zn, Hg	rocarbo	OA) / P				Cont	iners		Method of Shipment
Relinquished by (Signature) (Time I Date)	B. Cummingo 18:05/16	93 910:	Analysis HotelWhommel		Eurofins mgt Suite. B7 TRH/ BTEXIV PAH/ As, Cd, Cr, Ph. Zn, Hg	Eurofins mgt	Perfluorooctanoic acid (PFOA) / Perfluorooctanesulfonic acid (PFOS) / 6.2 fluorotelomer sulfonate (6.2 FTS)	Asbestos - WANEPM Guidelines - Quantkative (0.001% w/w)	ia.	Cation Excha	0%		Eurofins mgt Suite: B6 TRH/ BTEXN/ As, Cd, Cr, Zn, Hg	Polycyclic Aromatic Hydrocarbons (PAH) - Trace Level	Perfluorooctanoic acid (PFOA) / Perfluorooctanesulfonic acid (PFOS) / 6.2 fluorotelomer sulfonate (6.2 FTS)		11. Plantic	250mkPiartic 125mLPlartic	200mL Amber Gleer	40ml vial 25ml Amber Glare	Jac	Courier (HandDelivered
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April 12 in

Unit F3Building F_16Mars Rd_Lane Cove West_NSW 2066 P+612 9900 8400 E_FnvtroSample\(\)SW@eurofins.com_au

Eurofins mgt Briskins (#6

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+6173902 4600 E
EnviroSampleQLD@eurolins.com.au

Submission of samplest of he laboratory will be deemed as acceptance of Eurofins | mgt Standard Term sand Conditions unless agreed otherwise. A copy of Eurofins | mgt Standard Terms and Conditions is

Eurofine jmgt Melbourne Lab 2Kingston Fown Close, Oakleigh, VIC 3166 P +61 38564 5000 F +6138564 5090 E Envir oSample Vic @eurofins com au

Bankstown Arrport - Site 2 Jacobs Project Name Company Purchase Order Project Manager BLAIR CUMMINGS JA110700 Eurofins | mgt Quote TH110700 160413JACN Esdat Project No Format Level 4 100 Christie Street Address St Leonards NSW 2085 Asbestos - WANEPM Guidelines - Quantitative (0.001% w/w) Michael.Stacey@jacobs.c ਤੌ Eurofins mgt Suite: B6 TRH/ BTEXN/ As, Cd, Cr, Cu, Ni, Polycyclic Aromatic Hydrocarbons (PAH) - Trace Level Perfluorooctanoic acid (PFOA) / Perfluorooctanesulfonic (PFOS) / 6:2 fluorotelomer sulfonate (6:2 FTS) Email for Results om, Blair, Cummings & jabols. Co Michael Stacey Contact Name Contact Phone Eurofins mgt Suite: B7 TRH/ BTEXN/ PAH/ As, Cation Exchange Capacity (CEC) 02 9032 1467 Turn Around Requirements 5 DAY(SID) Ciner(% Clay content Special Direction Cont minus Method of Shipment B. Cumming Relinguished by 125mL Amber Glace (Signature) (Time Date) Sample Comments DG Hazard Client Sample ID Matrix 16/05/6 Soil X X A2 TP22 0.0 501183 A2_TP22 - 0-2 X AZ_TP2Z_ 0.5 X AZ- TP22-1.0 AZ-TP23_00 X × X AZ_TP23 . 02 X X A2_TP23_0.5 AZ_TP23_1.0 AZ_TP23_ 2.0 16/05/16 A2_TP23_2.5 16/05/16 A2-BH10-0.0 AZ-BH10-0.5 Received By BNE MEL PER ADL NEW DAR Temperature Laboratory Use Only Received By Date Time Report No SYD I BNE MEL PER ADLINEW DAR Slonature



CHAIN OF CUSTODY RECORD

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Unit F3Building F_{||} 16Mars Rd Lane Cove West INSW 2066 P + 612 9909 8400 E. Enviro Sample RSW@eurolins.com.au

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+617 3902 4600 E
EnviroSampleQLD@eurotins.com.au

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2 Kingston Town Close Oakleigh MC 3166 P +61 385645000 F +61385645090 E EnviroSampleVic@euroFins.com au

Bankstown Airport - Site 2 TA110700 BLAIR COMMINCO Jacobs Purchase Order Project Name Company Project Manager Eurof insimgt Quote TA110700 Electronic Results Fisdat 160413JACN Project No Format Level 4 100 Christie Street Address St Leonards NSW 2065 Asbestos - WA/NEPM Guidelines - Quantitative (0.001% w/w) Michael.Stacey@jacobs.c ਰੱ Eurofins mgt Suite: B6 TRH/ BTEXN As, Cd, Cr, Cu, Ni, Potycyclic Aromatic Hydrocarbons (PAH) - Trace Level Email for Result ਨੁੰ om, Blair. Cumming & jacobs com (PFOS) / 6:2 fluorotelomer sulfonate (6:2 FTS) Contact Name Michael Stacey Eurofins mgt Suite: B7 TRH/ BTEXN/ PAH/ As, Cd. Contact Phone Cation Exchange Capacity (CEC) 02 9032 1467 No **Turn Around** Requirements 5 DAY(SID) Cher(%Clay content pH (CaCl2) Special Direction Containers Method of Shipment B. Cummings Relinguished by (Signature) (Time | Date) Sample Comments | DG Hazard Client Sample ID Matrix 16/05/16 501 A2-8410-1.5 501183 AZ_ BH9.0.0 X AZ BH9 0.5 3 AZ-BH9-1.5 AZ_BH5_ 0.0 AZ-BHS - 0.5 X 6 16/05/16 AZ_BHS_ 1.5 17/05/16 AZ_ BHZ_ 0.0 AZ-BH3_ 0.5 AZ_BH3_ 1.5 X 10 AZ_BH2_0.0 X AZ-BHZ- 0.5 Received By Date SYD BNE | NEL | PER | ADL | NEW | DAR Signature Temperature Laboratory Use Only Received By SYD | BNE | MEL | PER | ADL | NEW | DAR Date Time Signature Report Ne



CHAIN OF CUSTODY RECORD ABN 50005 085 521

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Melbourne Cab

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	Company		Jacobs		Purch	ase Order	7	EAIIS	000				Project	Manager	6	LAIR	CUMA	MINCH		Pro	ect Na	me	Ba	nksh	own	- Airport - Site	e Z
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	ntact Phone Na	02 9032 1467			ومادقه والمواوطي		N/PAH/As, C	Eurolins mgt Suite: B13 OCP/ PCB	erfluorooctane sulfonate (6:2	Quantitative (2)	Cation Exchange Capacity (CEC)	tent		OV As, Cd, Cr	ns (PAH) - Tra	erfluorooctane suffonate (6.2			Turi Requ	n Arou uireme	ind	┌ 10.	AY*	Г	2DAY 1DAY Sadage	7177 (C)
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ABN 50005 085 521

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Eurofine | mgt Melbaurne Lab

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Company	J	acobs		Purche	se Order	:	E4 11	700				Properti	Manager	B	LAIR	CUMI	MINGS		Project	Name	Ba	nksto	المعاذ	Airport - Site 2
Address	Level 4 100 Chris	stie Stree	t	Eurof na	mgi Quote			160413	JACN			Proje	act Ne		J A11	0700		е	Bectronic Form			ES dat		
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CHAIN OF CUSTODY RECORD ABN 50005 085 521

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Unit F3Building F 16Mars Rd, Lane Cove West INSW P +612 9900 8400 E EnviroSampleNSW@eurofins.com.au

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Ext. (2.1 (4.1 (4.1))) Mafbaurne Lab

2Kingston Town Close Oakleigh VIC 3166 P +61 385645000 F +61385645090 E EnviroSampleVic@eurofins.com au

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CHAIN OF CUSTODY RECORD ABN 50005-085-521

and sey Lab

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Company		Jacobs		Purcha	se Order		IAI	טטרסו				Projecti	Manager		B. C	ummi	April 1		Projec	t Name	9	Bank	atou	- Auport - Si	te 2
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Contact Name	Michael Staces	,		101-4-761		Ö Ö		sulfonic FTS)	0.001%					8	ce Lev	suffonic FTS)			Email fo	r Result	13	on	<u> </u>	lair. Cummings	1 Gijar
Contact Phone	02 9032 1467			L. Byin oder ner ogsågeger		Eurofins mgt Suite. B7 TRH/ BTEXN/ PAH/ As, Cd, Cr, Ph, Zn, Hg	Eurofins mgt Suite: B13 OCP/ PCB	Perfluorooctanoic acid (PFOA) / Perfluorooctanesulfonic acid (PFOS) / 8:2 fluorotelomer sulfonate (8:2 FTS)	Asbestos - WA/NEPM Guidelines - Quantkative (0.001% w/w)	5)	Cation Exchange Capacity (CEC)	terit		Eurofins mgt Suite: B6 TRH/ BTEXN/ As, Cd, Cr, Cu, N, Zn, Hg	Potycyclic Aromatic Hydrocarbons (PAH) - Trace Level	Perfluorooctanoic acid (PFOA) / Perfluorooctanesulfonic acid (PFOS) / 6:2 fluorotelomer sulfonate (6:2 FTS)				Around rements	 	10AY	/(SId)	Part Commings	yedes why
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Ne	Client Sample ID		Date	M at rix		Eurofi		Perf	Asbes					Eurof	æ	Ped								Sample Comments / DG Warning	3 Hezard
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4	AZ-BH8- C	7.5	+	4		X																			
5	AZ, BH8, 1.5		18/05/16	Soil																					
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Jacobs Group (Australia) P/L NSW Level 4, 100 Christie St St Leonards NSW 2065





Certificate of Analysis

NATA Accredited Accreditation Number 1261 Site Number 18217

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

Attention: Michael Stacey

Report 501564-S

Project name BANKSTOWN AIRPORT - SITE 2

Project ID IA1107200
Received Date May 20, 2016

Client Sample ID			A2_BH4_0.0	A2_BH1_1.5	A2_TP10_0.0	A2_TP10_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My22619	S16-My22620	S16-My22621	S16-My22622
Date Sampled			May 19, 2016	May 19, 2016	May 19, 2016	May 19, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM	Fractions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
ВТЕХ						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	108	99	101	101
Total Recoverable Hydrocarbons - 2013 NEPM	Fractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons	·					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	0.7	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	1.1	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.4	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	0.7	< 0.5
Benzo(b&j)fluorantheneN07	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	0.6	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	0.8	< 0.5	1.4	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5



Olivert Committee ID						T
Client Sample ID			A2_BH4_0.0	A2_BH1_1.5	A2_TP10_0.0	A2_TP10_0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My22619	S16-My22620	S16-My22621	S16-My22622
Date Sampled			May 19, 2016	May 19, 2016	May 19, 2016	May 19, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	0.7	< 0.5
Pyrene	0.5	mg/kg	0.8	< 0.5	1.4	< 0.5
Total PAH*	0.5	mg/kg	1.6	< 0.5	4.8	< 0.5
2-Fluorobiphenyl (surr.)	1	%	84	89	93	97
p-Terphenyl-d14 (surr.)	1	%	85	90	93	100
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	-	< 0.1	-
4.4'-DDD	0.05	mg/kg	-	-	< 0.05	-
4.4'-DDE	0.05	mg/kg	-	-	< 0.05	-
4.4'-DDT	0.05	mg/kg	-	-	< 0.05	-
a-BHC	0.05	mg/kg	-	-	< 0.05	-
Aldrin	0.05	mg/kg	-	-	< 0.05	-
b-BHC	0.05	mg/kg	-	-	< 0.05	-
d-BHC	0.05	mg/kg	-	-	< 0.05	-
Dieldrin	0.05	mg/kg	-	-	< 0.05	-
Endosulfan I	0.05	mg/kg	-	-	< 0.05	-
Endosulfan II	0.05	mg/kg	-	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	-	-	< 0.05	-
Endrin	0.05	mg/kg	-	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	-	-	< 0.05	-
Endrin ketone	0.05	mg/kg	-	-	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	-	-	< 0.05	-
Heptachlor	0.05	mg/kg	-	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	-	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	-	-	< 0.05	-
Methoxychlor	0.2	mg/kg	-	-	< 0.2	-
Toxaphene	1	mg/kg	-	-	< 1	-
Dibutylchlorendate (surr.)	1	%	-	-	103	-
Tetrachloro-m-xylene (surr.)	1	%	-	-	116	-
Polychlorinated Biphenyls (PCB)		1				
Aroclor-1016	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1232	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1242	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1248	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1254	0.5	mg/kg	-	-	< 0.5	-
Aroclor-1260	0.5	mg/kg	-	-	< 0.5	-
Total PCB*	0.5	mg/kg	-	-	< 0.5	-
Dibutylchlorendate (surr.)	1	%	-	-	103	-
Total Recoverable Hydrocarbons - 2013 NEPM Frac						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
PFOS/PFOA/6:2FTS	T =					
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	-	-	< 0.005	-
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	-	-	< 0.005	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	-	-	< 0.01	-
13C-PFHxA (surr.)	1	%	-	-	88	-



Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled			A2_BH4_0.0 Soil S16-My22619 May 19, 2016	A2_BH1_1.5 Soil S16-My22620 May 19, 2016	A2_TP10_0.0 Soil S16-My22621 May 19, 2016	A2_TP10_0.5 Soil S16-My22622 May 19, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	4.8	5.0	5.5	5.4
Cadmium	0.4	mg/kg	0.7	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	12	7.1	12	15
Copper	5	mg/kg	10	9.6	10.0	6.6
Lead	5	mg/kg	39	7.9	30	9.3
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	35	7.7	26	< 5
% Moisture	1	%	11	15	14	19

Client Sample ID			A2_TP11_0.0	A2_TP11_2.0	A2_TP13_0.0	A2_TP13_0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My22623	S16-My22624	S16-My22625	S16-My22626
Date Sampled			May 19, 2016	May 19, 2016	May 19, 2016	May 19, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM	Fractions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	64	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	64	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	102	104	100	98
Total Recoverable Hydrocarbons - 2013 NEPM	Fractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2)N01	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5



Client Sample ID			A2_TP11_0.0	A2_TP11_2.0	A2_TP13_0.0	A2_TP13_0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My22623	S16-My22624	S16-My22625	S16-My22626
Date Sampled			May 19, 2016	May 19, 2016	May 19, 2016	May 19, 2016
•	1.05	11.5	Way 19, 2016	Way 19, 2016	Way 19, 2016	Way 19, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	96	89	92	91
p-Terphenyl-d14 (surr.)	1	%	100	92	97	93
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	< 0.1	-
4.4'-DDD	0.05	mg/kg	< 0.05	-	< 0.05	-
4.4'-DDE	0.05	mg/kg	< 0.05	-	< 0.05	-
4.4'-DDT	0.05	mg/kg	< 0.05	-	< 0.05	-
a-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Aldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
b-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
d-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Dieldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan I	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan II	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin ketone	0.05	mg/kg	< 0.05	-	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	< 0.05	-
Methoxychlor	0.2	mg/kg	< 0.2	-	< 0.2	-
Toxaphene	1	mg/kg	< 1	-	< 1	-
Dibutylchlorendate (surr.)	1	%	110	-	112	-
Tetrachloro-m-xylene (surr.)	1	%	123	-	86	-
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1232	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1242	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1248	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1254	0.5	mg/kg	< 0.5	-	< 0.5	-
Aroclor-1260	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PCB*	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibutylchlorendate (surr.)	1	%	110	-	112	-
Total Recoverable Hydrocarbons - 2013 NEP	M Fractions					
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100



Client Sample ID Sample Matrix			A2_TP11_0.0 Soil	A2_TP11_2.0 Soil	A2_TP13_0.0 Soil	A2_TP13_0.2 Soil
Eurofins mgt Sample No.			S16-My22623	S16-My22624	S16-My22625	S16-My22626
Date Sampled			May 19, 2016	May 19, 2016	May 19, 2016	May 19, 2016
Test/Reference	LOR	Unit				
PFOS/PFOA/6:2FTS						
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	N090.010	-	< 0.005	-
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	< 0.005	-	< 0.005	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	< 0.01	-	< 0.01	-
13C-PFHxA (surr.)	1	%	96	-	85	-
13C8-PFOS (surr.)	1	%	120	-	111	-
Heavy Metals						
Arsenic	2	mg/kg	3.4	4.5	10	7.9
Cadmium	0.4	mg/kg	1.5	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	9.9	5.1	25	12
Copper	5	mg/kg	11	9.1	13	10
Lead	5	mg/kg	44	5.4	910	540
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	6.9	< 5	12	5.6
Zinc	5	mg/kg	43	7.2	30	24
% Moisture	1	%	18	19	15	13

Client Sample ID			A2_TP14_0.3	A2_TP15_0.0	A2_TP15_1.0	A2_TP01_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My22627	S16-My22628	S16-My22630	S16-My22631
Date Sampled			May 19, 2016	May 19, 2016	May 19, 2016	May 19, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fr	actions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	290	69	< 50	< 50
TRH C29-C36	50	mg/kg	640	600	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	930	669	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	100	95	99	99
Total Recoverable Hydrocarbons - 2013 NEPM Fr	actions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2)N01	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	4.1	3.6	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	4.1	3.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	4.1	3.6	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	0.9	0.7	< 0.5	< 0.5



Client Sample ID			A2_TP14_0.3	A2_TP15_0.0	A2_TP15_1.0	A2_TP01_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My22627	S16-My22628	S16-My22630	S16-My22631
Date Sampled			May 19, 2016	May 19, 2016	May 19, 2016	May 19, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons	•	•				
Anthracene	0.5	mg/kg	0.8	0.6	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	0.8	0.8	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	2.7	2.4	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	1.9	1.6	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	3.0	2.6	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	2.3	1.8	< 0.5	< 0.5
Chrysene	0.5	mg/kg	1.0	1.0	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	0.7	0.6	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	1.2	1.6	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	2.0	1.8	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	1.4	1.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	18.7	17	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	91	93	92	91
p-Terphenyl-d14 (surr.)	1	%	91	95	94	96
Organochlorine Pesticides		•				
Chlordanes - Total	0.1	mg/kg	-	< 0.1	-	-
4.4'-DDD	0.05	mg/kg	-	< 0.05	=	=
4.4'-DDE	0.05	mg/kg	-	< 0.05	=	=
4.4'-DDT	0.05	mg/kg	-	< 0.05	=	=
a-BHC	0.05	mg/kg	-	< 0.05	=	=
Aldrin	0.05	mg/kg	-	< 0.05	=	=
b-BHC	0.05	mg/kg	-	< 0.05	-	-
d-BHC	0.05	mg/kg	-	< 0.05	-	-
Dieldrin	0.05	mg/kg	-	< 0.05	-	-
Endosulfan I	0.05	mg/kg	-	< 0.05	-	-
Endosulfan II	0.05	mg/kg	-	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	-	-
Endrin	0.05	mg/kg	-	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	-	< 0.05	-	-
Endrin ketone	0.05	mg/kg	-	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	-	-
Heptachlor	0.05	mg/kg	-	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	-	-
Methoxychlor	0.2	mg/kg	-	< 0.2	-	-
Toxaphene	1	mg/kg	-	< 1	-	-
Dibutylchlorendate (surr.)	1	%	-	97	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	102	-	-
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	-	< 0.5	-	
Aroclor-1232	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1242	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1248	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1254	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1260	0.5	mg/kg	-	< 0.5	-	-
Total PCB*	0.5	mg/kg	-	< 0.5	-	-
Dibutylchlorendate (surr.)	1	%	-	97	=	=



Client Sample ID			A2_TP14_0.3	A2_TP15_0.0	A2_TP15_1.0	A2_TP01_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My22627	S16-My22628	S16-My22630	S16-My22631
Date Sampled			May 19, 2016	May 19, 2016	May 19, 2016	May 19, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	700	520	< 100	< 100
TRH >C34-C40	100	mg/kg	510	150	< 100	< 100
PFOS/PFOA/6:2FTS						
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	-	N090.006	-	-
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	-	< 0.005	-	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	-	< 0.01	-	-
13C-PFHxA (surr.)	1	%	-	92	-	-
13C8-PFOS (surr.)	1	%	-	112	-	-
Heavy Metals						
Arsenic	2	mg/kg	5.7	7.4	5.4	5.8
Cadmium	0.4	mg/kg	0.8	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	24	13	12	50
Copper	5	mg/kg	25	14	10	< 5
Lead	5	mg/kg	32	710	12	42
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	36	11	5.3	18
Zinc	5	mg/kg	35	22	< 5	64
% Moisture	1	%	6.2	14	25	11

Client Sample ID Sample Matrix			A2_TP02_0.0 Soil	A2_TP02_0.5 Soil	A2_TP09_0.3 Soil	A2_TP12_0.0 Soil
Eurofins mgt Sample No.			S16-My22632	S16-My22634	S16-My22635	S16-My22636
Date Sampled			May 20, 2016	May 19, 2016	May 20, 2016	May 20, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fr	actions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	240
TRH C29-C36	50	mg/kg	54	< 50	< 50	890
TRH C10-36 (Total)	50	mg/kg	54	< 50	< 50	1130
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	98	98	102	91
Total Recoverable Hydrocarbons - 2013 NEPM Fr	actions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50



Client Sample ID			A2_TP02_0.0	A2_TP02_0.5	A2_TP09_0.3	A2_TP12_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My22632	S16-My22634	S16-My22635	S16-My22636
Date Sampled			May 20, 2016	May 19, 2016	May 20, 2016	May 20, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons	•	•				
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	3.0
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	3.2
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	3.5
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.6
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.6
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.0
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	2.3
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.9
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	2.0
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.9
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.1
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.8
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	2.0
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	16.7
2-Fluorobiphenyl (surr.)	1	%	95	91	86	89
p-Terphenyl-d14 (surr.)	1	%	101	94	92	98
Organochlorine Pesticides	-	•				
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	-	-	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	-	-	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	-	-	< 0.05
a-BHC	0.05	mg/kg	< 0.05	-	-	< 0.05
Aldrin	0.05	mg/kg	< 0.05	-	=	< 0.05
b-BHC	0.05	mg/kg	< 0.05	-	=	< 0.05
d-BHC	0.05	mg/kg	< 0.05	-	=	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	-	=	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	-	=	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	-	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	=	< 0.05
Endrin	0.05	mg/kg	< 0.05	-	=	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	-	-	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	-	-	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	-	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	-	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	-	-	< 0.2
Toxaphene	1	mg/kg	< 1	-	-	< 1
Dibutylchlorendate (surr.)	1	%	88	-	-	138
Tetrachloro-m-xylene (surr.)	1	%	121	-	_	94



Client Sample ID			A2_TP02_0.0	A2_TP02_0.5	A2_TP09_0.3	A2_TP12_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My22632	S16-My22634	S16-My22635	S16-My22636
Date Sampled			May 20, 2016	May 19, 2016	May 20, 2016	May 20, 2016
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls (PCB)	•	•				
Aroclor-1016	0.5	mg/kg	< 0.5	-	-	< 0.5
Aroclor-1232	0.5	mg/kg	< 0.5	-	-	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	-	-	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	-	-	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	-	-	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	=	=	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	-	=	< 0.5
Dibutylchlorendate (surr.)	1	%	88	-	-	138
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	770
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	880
PFOS/PFOA/6:2FTS						
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	N090.34	-	-	< 0.005
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	< 0.005	-	-	< 0.005
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	< 0.01	-	-	< 0.01
13C-PFHxA (surr.)	1	%	104	-	-	88
13C8-PFOS (surr.)	1	%	120	-	-	109
Heavy Metals						
Arsenic	2	mg/kg	3.8	4.6	7.1	8.9
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	0.5
Chromium	5	mg/kg	19	24	15	19
Copper	5	mg/kg	12	5.4	9.4	13
Lead	5	mg/kg	210	8.2	63	760
Mercury	0.05	mg/kg	0.42	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	11	5.1	< 5	11
Zinc	5	mg/kg	47	11	23	23
	1					
% Moisture	1	%	8.8	23	9.7	8.8

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled			A2_TP12_0.5 Soil S16-My22637 May 20, 2016	A2_TP16_0.3 Soil S16-My22638 May 20, 2016	A2_TP19_0.2 Soil S16-My22639 May 20, 2016	A2_TP20_0.0 Soil S16-My22640 May 20, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Frac	tions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	75
TRH C29-C36	50	mg/kg	220	76	62	240
TRH C10-36 (Total)	50	mg/kg	220	76	62	315
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1



Client Semple ID			A0 TD40 0.5	A0 TD40 00	40 TD40 0 0	40 TD00 0.0
Client Sample ID			A2_TP12_0.5	A2_TP16_0.3	A2_TP19_0.2	A2_TP20_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My22637	S16-My22638	S16-My22639	S16-My22640
Date Sampled			May 20, 2016	May 20, 2016	May 20, 2016	May 20, 2016
Test/Reference	LOR	Unit				
BTEX						
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	98	105	106	105
Total Recoverable Hydrocarbons - 2013 NEPM	Fractions	-				
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons	T.					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.8
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	2.0
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	2.3
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.4
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.2
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.6
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.0
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.6
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.8
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.0
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.8
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	9.4
2-Fluorobiphenyl (surr.)	1	%	81	91	89	91
p-Terphenyl-d14 (surr.)	1	%	82	99	100	99
Organochlorine Pesticides				+		0.4
Chlordanes - Total	0.1	mg/kg	-	-	-	< 0.1
4.4'-DDD	0.05	mg/kg	-	-	-	< 0.05
4.4'-DDE 4.4'-DDT	0.05	mg/kg	-	-	-	< 0.05 < 0.05
a-BHC	0.05	mg/kg	-	-	-	< 0.05
Aldrin	0.05	mg/kg mg/kg	-	-	-	< 0.05
b-BHC	0.05	mg/kg	-	-	-	< 0.05
d-BHC	0.05			-	-	< 0.05
Dieldrin	0.05	mg/kg mg/kg	-	-	-	< 0.05
Endosulfan I	0.05	mg/kg	-	-	-	< 0.05
Endosulfan II	0.05	mg/kg	-	-	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	-	-	< 0.05
Endrin Endrin	0.05	mg/kg	-	-	-	< 0.05
Endrin aldehyde	0.05	mg/kg	-	-	-	< 0.05
Endrin ketone	0.05	mg/kg	-	-	-	< 0.05
g-BHC (Lindane)	0.05	mg/kg	-	-	-	< 0.05
Heptachlor	0.05	mg/kg	-	-	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	_	_	-	< 0.05



Client Sample ID			A2_TP12_0.5	A2_TP16_0.3	A2_TP19_0.2	A2_TP20_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My22637	S16-My22638	S16-My22639	S16-My22640
Date Sampled			May 20, 2016	May 20, 2016	May 20, 2016	May 20, 2016
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Hexachlorobenzene	0.05	mg/kg	-	-	-	< 0.05
Methoxychlor	0.2	mg/kg	-	-	-	< 0.2
Toxaphene	1	mg/kg	-	-	-	< 1
Dibutylchlorendate (surr.)	1	%	-	-	-	122
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	88
Polychlorinated Biphenyls (PCB)	1	•				
Aroclor-1016	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1232	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1242	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1248	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1254	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1260	0.5	mg/kg	-	-	-	< 0.5
Total PCB*	0.5	mg/kg	-	-	-	< 0.5
Dibutylchlorendate (surr.)	1	%	-	-	-	122
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	240	< 100	< 100	260
TRH >C34-C40	100	mg/kg	140	< 100	< 100	130
PFOS/PFOA/6:2FTS						
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	-	-	-	N090.013
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	-	-	-	< 0.005
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	-	-	-	< 0.01
13C-PFHxA (surr.)	1	%	-	-	-	100
13C8-PFOS (surr.)	1	%	-	-	-	121
Heavy Metals						
Arsenic	2	mg/kg	10	10	3.1	5.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	0.4
Chromium	5	mg/kg	11	9.2	5.5	30
Copper	5	mg/kg	< 5	< 5	< 5	17
Lead	5	mg/kg	710	51	10	54
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	< 5	< 5	< 5	24
Zinc	5	mg/kg	12	7.9	< 5	50
% Moisture	1	%	7.6	4.0	9.9	10

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled			A2_TP20_1.0 Soil S16-My22641 May 20, 2016	A2_QC01 Soil S16-My22642 May 20, 2016	A2_QC03 Soil S16-My22643 May 20, 2016	TS 160517-1 Soil S16-My22644 May 20, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	-
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	-
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	-
TRH C29-C36	50	mg/kg	< 50	< 50	84	-
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	84	-



Client Sample ID			A2_TP20_1.0	A2_QC01	A2_QC03	TS 160517-1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-My22641	S16-My22642	S16-My22643	S16-My22644
Date Sampled			May 20, 2016	May 20, 2016	May 20, 2016	May 20, 2016
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	110%
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	109%
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	108%
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	108%
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	108%
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	108%
4-Bromofluorobenzene (surr.)	1	%	102	102	103	94
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	-
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	_
Polycyclic Aromatic Hydrocarbons	,	<u>,</u>	1.20	1.50	1.50	
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	 -
Benzo(a)pyrene TEQ (inediam bound) *	0.5	mg/kg	1.2	1.2	1.2	<u> </u>
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	_
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	<u> </u>
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	<u> </u>
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	<u> </u>
Fluoranthene	0.5		< 0.5	< 0.5	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg mg/kg	< 0.5	< 0.5	< 0.5	- -
Naphthalene				< 0.5		-
Phenanthrene	0.5	mg/kg	< 0.5 < 0.5	< 0.5	< 0.5 < 0.5	-
	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Pyrene Total PALI*		mg/kg				
Total PAH* 2-Fluorobiphenyl (surr.)	0.5	mg/kg %	< 0.5 88	< 0.5 86	< 0.5 86	-
p-Terphenyl-d14 (surr.)	1	%	92	94	94	-
p-1erpnenyi-d14 (surr.) Total Recoverable Hydrocarbons - 2013 NEPM Frac		70	92	94	94	
		malle	, FO	. FO	. 50	+
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	-
TRH >C16-C34	100	mg/kg	< 100	< 100	110	-
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	-
Heavy Metals					2 -	+
Arsenic	2	mg/kg	4.7	5.1	3.7	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	-
Chromium	5	mg/kg	15	9.9	6.6	-
Copper	5	mg/kg	11	< 5	< 5	-
Lead	5	mg/kg	11	35	14	-
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
Nickel	5	mg/kg	9.0	< 5	< 5	-
Zinc	5	mg/kg	15	7.4	< 5	-
% Moisture	1	%	22	7.9	4.0	-



Client Sample ID Sample Matrix				TB 160517-1 Soil
Eurofins mgt Sample No.				S16-My22645
Date Sampled				May 20, 2016
Test/Reference	L	OR	Unit	
BTEX	•		•	
Benzene	().1	mg/kg	< 0.1
Toluene	().1	mg/kg	< 0.1
Ethylbenzene	().1	mg/kg	< 0.1
m&p-Xylenes	().2	mg/kg	< 0.2
o-Xylene	().1	mg/kg	< 0.1
Xylenes - Total	(0.3	mg/kg	< 0.3



Sample History

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

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	May 24, 2016	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Sydney	May 23, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	May 23, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Sydney	May 24, 2016	14 Day
- Method: E007 Polyaromatic Hydrocarbons (PAH)			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	May 23, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Sydney	May 23, 2016	28 Day
- Method: LTM-MET-3040_R0 TOTAL AND DISSOLVED METALS AND MERCURY IN WATERS BY ICP-MS			
Eurofins mgt Suite B13			
Organochlorine Pesticides	Sydney	May 24, 2016	14 Day
- Method: E013 Organochlorine Pesticides (OC)			
Polychlorinated Biphenyls (PCB)	Sydney	May 24, 2016	28 Day
- Method: E013 Polychlorinated Biphenyls (PCB)			
PFOS/PFOA/6:2FTS	Brisbane	May 24, 2016	14 Day
- Method: LTM-ORG-2100 Analysis of PFCs in environmental samples by LC-MS/MS			
% Moisture	Sydney	May 23, 2016	14 Day

⁻ Method: LTM-GEN-7080 Moisture



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

Eurofins | mgt Analytical Services Manager : Andrew Black

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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 20, 2016 7:30 PM

 Address:
 Level 4, 100 Christie St
 Report #:
 501564
 Due:
 May 30, 2016

St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 Contact Name: Michael Stacey

Project Name: BANKSTOWN AIRPORT - SITE 2
Project ID: IA1107200

		Sa	mple Detail			Asbestos - WA guidelines	HOLD	втех	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Eurofins mgt Suite B7
Melb	ourne Laborato	ory - NATA Site	# 1254 & 142	271								
Sydi	ney Laboratory	- NATA Site # 1	8217			Х	Х	Χ		Х	Х	Χ
Bris	bane Laborator	y - NATA Site #	20794						Х			
Exte	rnal Laboratory	,										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID							
1	A2_BH4_0.0	May 19, 2016		Soil	S16-My22619						Х	Х
2	A2_BH1_1.5	May 19, 2016		Soil	S16-My22620						Χ	Х
3	A2_TP10_0.0	May 19, 2016		Soil	S16-My22621	Х			Х	Х	Х	Х
4	A2_TP10_0.5	May 19, 2016		Soil	S16-My22622						Х	Х
5	A2_TP11_0.0	May 19, 2016		Soil	S16-My22623	Х			Х	Χ	Χ	Х
6	A2_TP11_2.0	May 19, 2016		Soil	S16-My22624						Χ	Х
7	A2_TP13_0.0	May 19, 2016		Soil	S16-My22625				Х	Χ	Χ	Х
8	A2_TP13_0.2	May 19, 2016		Soil	S16-My22626	Х					Х	Х
9		May 19, 2016		Soil	S16-My22627						Χ	Х
10	A2_TP15_0.0	May 19, 2016		Soil	S16-My22628				Х	Χ	Χ	Χ

Eurofins | mgt Unit F3, Building F, 16 Mars Road, Lane Cove West, NSW, Australia, 2066 ABN: 50 005 085 521 Telephone: +61 2 9900 8400 Facsimile: +61 2 9420 2977



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NATA # 1261 Site # 18217

Eurofins | mgt Analytical Services Manager : Andrew Black

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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 20, 2016 7:30 PM

Address: Level 4, 100 Christie St Report #: 501564 Due: May 30, 2016

> St Leonards Phone: 02 9928 2100 Priority: 5 Day **Contact Name:** Michael Stacey Fax: 02 9928 2504

NSW 2065

PFOS/PFOA/6:2FTS BTEX HOLD Asbestos - WA guidelines Sample Detail	mgt Suite B7
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Mel	bourne Laborate	ory - NATA Site	# 1254 & 142	271								
Syd	Iney Laboratory	- NATA Site # 1	8217			Х	Х	Х		Х	Х	Х
Bris	sbane Laborator	y - NATA Site #	20794						Х			
Ext	ernal Laboratory	/										
11	A2_TP15_0.2	May 19, 2016		Soil	S16-My22629	Х						
12	A2_TP15_1.0	May 19, 2016		Soil	S16-My22630						Х	Х
13	A2_TP01_0.0	May 19, 2016		Soil	S16-My22631						Х	Х
14	A2_TP02_0.0	May 20, 2016		Soil	S16-My22632				Х	Х	Х	Х
15	A2_TP02_0.2	May 20, 2016		Soil	S16-My22633	Х						
16	A2_TP02_0.5	May 19, 2016		Soil	S16-My22634						Х	Х
17	A2_TP09_0.3	May 20, 2016		Soil	S16-My22635						Х	Х
18	A2_TP12_0.0	May 20, 2016		Soil	S16-My22636	Х			Х	Х	Х	Х
19	A2_TP12_0.5	May 20, 2016		Soil	S16-My22637						Х	Х
20	A2_TP16_0.3	May 20, 2016		Soil	S16-My22638						Х	Х
21	A2_TP19_0.2	May 20, 2016		Soil	S16-My22639						Х	Х



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> St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 **Contact Name:** Michael Stacey

BANKSTOWN AIRPORT - SITE 2 Project Name: Project ID: IA1107200

		Sa	mple Detail			Asbestos - WA guidelines	HOLD	втех	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Eurofins mgt Suite B7
Mell	bourne Laborate	ory - NATA Site	# 1254 & 142	71								
Syd	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х		Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794						Х			
Exte	rnal Laboratory		1									
22	A2_TP20_0.0	May 20, 2016		Soil	S16-My22640	Х			Х	Х	Х	Х
23	A2_TP20_1.0	May 20, 2016		Soil	S16-My22641						Х	Х
24	A2_QC01	May 20, 2016		Soil	S16-My22642						Х	Х
25	A2_QC03	May 20, 2016		Soil	S16-My22643						Х	Х
26	TS 160517-1	May 20, 2016		Soil	S16-My22644			Х				
27	TB 160517-1	May 20, 2016		Soil	S16-My22645			Χ				
28	A2_BH4_0.5	May 19, 2016		Soil	S16-My22650		Х					
29	A2_BH4_1.5	May 19, 2016		Soil	S16-My22651		Х					
30	A2_BH1_0.0	May 19, 2016		Soil	S16-My22652		Х					
31	A2_BH1_0.5	May 19, 2016		Soil	S16-My22653		Х					
32	A2_TP10_0.2	May 19, 2016		Soil	S16-My22654		Х					



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NATA # 1261 Site # 20794

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 20, 2016 7:30 PM

Address: Level 4, 100 Christie St Report #: 501564 Due: May 30, 2016

> St Leonards Phone: 02 9928 2100 Priority: 5 Day NSW 2065 Fax: 02 9928 2504 **Contact Name:** Michael Stacey

BANKSTOWN AIRPORT - SITE 2 Project Name: Project ID: IA1107200

		Sa	mple Detail			Asbestos - WA guidelines	HOLD	втех	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Eurofins mgt Suite B7
Mell	oourne Laborato	ory - NATA Site	# 1254 & 142	71								
Syd	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х		Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794						Х			
Exte	rnal Laboratory	1										
33	A2_TP10_1.0	May 19, 2016		Soil	S16-My22655		Х					
34	A2_TP10_2.0	May 19, 2016		Soil	S16-My22656		Х					
35	A2_TP10_2.5	May 19, 2016		Soil	S16-My22657		Х					
36	A2_TP11_0.2	May 19, 2016		Soil	S16-My22658		Х					
37	A2_TP11_0.5	May 19, 2016		Soil	S16-My22659		Х					
38	A2_TP11_1.0	May 19, 2016		Soil	S16-My22660		Х					
39	A2_TP11_2.5	May 19, 2016		Soil	S16-My22661		Х					
40	A2_TP13_0.5	May 19, 2016		Soil	S16-My22662		Х					
41	A2_TP13_1.0	May 19, 2016		Soil	S16-My22663		Х					
42	A2_TP13_2.0	May 19, 2016		Soil	S16-My22664		Х					
43	A2_TP13_2.5	May 19, 2016		Soil	S16-My22665		Х					

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Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 20, 2016 7:30 PM

Address: Level 4, 100 Christie St Report #: 501564 Due: May 30, 2016

> St Leonards Phone: 02 9928 2100 Priority: 5 Day **Contact Name:** NSW 2065 Fax: 02 9928 2504 Michael Stacey

		Sa	mple Detail			Asbestos - WA guidelines	HOLD	ВТЕХ	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Eurofins mgt Suite B7
Mell	oourne Laborato	ory - NATA Site	# 1254 & 142	71								
Syd	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х		Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794						Х			
Exte	rnal Laboratory	1										
44	A2_TP14_0.0	May 19, 2016		Soil	S16-My22666		Х					
45	A2_TP14_0.5	May 19, 2016		Soil	S16-My22667		Х					
46	A2_TP14_1.0	May 19, 2016		Soil	S16-My22668		Х					
47	A2_TP14_2.0	May 19, 2016		Soil	S16-My22669		Х					
48	A2_TP14_2.5	May 19, 2016		Soil	S16-My22670		Х					
49	A2_TP15_0.5	May 19, 2016		Soil	S16-My22671		Х					
50		May 19, 2016		Soil	S16-My22672		Х					
51	A2_TP15_2.5	May 19, 2016		Soil	S16-My22673		Х					
52	A2_TP01_0.5	May 20, 2016		Soil	S16-My22674		Χ					
53	A2_TP01_1.0	May 20, 2016		Soil	S16-My22675		Х					
54	A2_TP02_1.0	May 20, 2016		Soil	S16-My22676		Х					



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Eurofins | mgt Analytical Services Manager : Andrew Black

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Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 20, 2016 7:30 PM

Address: Level 4, 100 Christie St Report #: 501564 Due: May 30, 2016

> St Leonards Phone: 02 9928 2100 Priority: 5 Day **Contact Name:** NSW 2065 Fax: 02 9928 2504 Michael Stacey

		Sa	mple Detail			Asbestos - WA guidelines	HOLD	ВТЕХ	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Eurofins mgt Suite B7
Mall	oourne Laborato	ory - NATA Sita	# 125/ & 1/2	71								
	ney Laboratory			/ I		Х	Х	Х		Х	Х	Х
_	bane Laborator								Х			
	ernal Laboratory								,			
55		May 20, 2016		Soil	S16-My22677		Х					
56	A2_TP09_0.5	May 20, 2016		Soil	S16-My22678		Х					
57	A2_TP09_1.0	May 20, 2016		Soil	S16-My22679		Х					
58	A2_TP09_2.0	May 20, 2016		Soil	S16-My22680		Х					
59	A2_TP09_2.5	May 20, 2016		Soil	S16-My22681		Х					
60	A2_TP12_1.0	May 20, 2016		Soil	S16-My22682		Х					
61	A2_TP12_2.0	May 20, 2016		Soil	S16-My22683		Х					
62	A2_TP12_2.5	May 20, 2016		Soil	S16-My22684		Х					
63	A2_TP16_0.0	May 20, 2016		Soil	S16-My22685		Х					
64	A2_TP16_0.5	May 20, 2016		Soil	S16-My22686		Х					
65	A2_TP16_1.0	May 20, 2016		Soil	S16-My22687		Χ					



ABN - 50 005 085 521 e.mail : EnviroSales@eurofins.com

web : www.eurofins.com.au

Melbourne 2-5 Kingston Town Close Oakleigh VIC 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400 NATA # 1261 Site # 18217

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		Sal	mple Detail		Asbestos - WA guidelines	HOLD	ВТЕХ	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Eurofins mgt Suite B7
Melb	ourne Laborato	ory - NATA Site	# 1254 & 14271								
Sydi	ney Laboratory	- NATA Site # 1	8217		Х	Х	Х		Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794					Х			
Exte	rnal Laboratory	<u>'</u>									
66	A2_TP16_2.0	May 20, 2016	Soil	S16-My22688		Х					
67	A2_TP16_2.5	May 20, 2016	Soil	S16-My22689		Х					
68	A2_TP19_0.0	May 20, 2016	Soil	S16-My22690		Х					
69	A2_TP19_0.5	May 20, 2016	Soil	S16-My22691		Х					
70	A2_TP19_1.0	May 20, 2016	Soil	S16-My22692		Х					
71	A2_TP20_0.5	May 20, 2016	Soil	S16-My22693		Х					
Test	Counts				7	44	2	7	7	23	23



Internal Quality Control Review and Glossary

General

- 1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 4. Results are uncorrected for matrix spikes or surrogate recoveries.
- 5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise
- 6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

Units

 mg/kg: milligrams per Kilogram
 mg/l: milligrams per litre

 ug/l: micrograms per litre
 ppm: Parts per million

 ppb: Parts per billion
 %: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry Where a moisture has been determined on a solid sample the result is expressed on a dry basis.

LOR Limit of Reporting.

SPIKE Addition of the analyte to the sample and reported as percentage recovery.

RPD Relative Percent Difference between two Duplicate pieces of analysis.

LCS Laboratory Control Sample - reported as percent recovery
CRM Certified Reference Material - reported as percent recovery

Method Blank In the case of solid samples these are performed on laboratory certified clean sands

In the case of water samples these are performed on de-ionised water.

Surr - Surrogate The addition of a like compound to the analyte target and reported as percentage recovery.

DuplicateA second piece of analysis from the same sample and reported in the same units as the result to show comparison.

Batch Duplicate A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.

Batch SPIKE Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.

USEPA United States Environmental Protection Agency

APHA American Public Health Association

TCLP Toxicity Characteristic Leaching Procedure

COC Chain of Custody
SRA Sample Receipt Advice

CP Client Parent - QC was performed on samples pertaining to this report

NCP Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within

TEQ Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

QC Data General Comments

- 1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxaphene is not added to the Spike.
- 5. Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- 6. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time.

 Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- 8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- 9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.



Quality Control Results

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Method Blank					
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	mg/kg	< 20	20	Pass	
TRH C10-C14	mg/kg	< 20	20	Pass	
TRH C15-C28	mg/kg	< 50	50	Pass	
TRH C29-C36	mg/kg	< 50	50	Pass	
Method Blank			 		
BTEX					
Benzene	mg/kg	< 0.1	0.1	Pass	
Toluene	mg/kg	< 0.1	0.1	Pass	
Ethylbenzene	mg/kg	< 0.1	0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2	0.2	Pass	
o-Xylene	mg/kg	< 0.1	0.1	Pass	
Xylenes - Total	mg/kg	< 0.3	0.3	Pass	
Method Blank					
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene	mg/kg	< 0.5	0.5	Pass	
TRH C6-C10	mg/kg	< 20	20	Pass	
Method Blank	1g,g	120			
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	mg/kg	< 0.5	0.5	Pass	
Acenaphthylene	mg/kg	< 0.5	0.5	Pass	
Anthracene	mg/kg	< 0.5	0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5	0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5	0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5	0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5	0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5	0.5	Pass	
Chrysene	mg/kg	< 0.5	0.5	Pass	
Dibenz(a.h)anthracene		< 0.5	0.5	Pass	
Fluoranthene	mg/kg	< 0.5	0.5	Pass	
Fluorene	mg/kg	< 0.5	0.5	Pass	
	mg/kg				
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5	0.5	Pass	
Naphthalene	mg/kg	< 0.5	0.5	Pass	
Phenanthrene	mg/kg	< 0.5	0.5	Pass	
Pyrene Mathe at Plants	mg/kg	< 0.5	0.5	Pass	
Method Blank			1		
Organochlorine Pesticides		0.4	- 0.4	D	
Chlordanes - Total	mg/kg	< 0.1	0.1	Pass	
4.4'-DDD	mg/kg	< 0.05	0.05	Pass	
4.4'-DDE	mg/kg	< 0.05	0.05	Pass	
4.4'-DDT	mg/kg	< 0.05	0.05	Pass	
a-BHC	mg/kg	< 0.05	0.05	Pass	
Aldrin	mg/kg	< 0.05	0.05	Pass	
b-BHC	mg/kg	< 0.05	0.05	Pass	
d-BHC	mg/kg	< 0.05	0.05	Pass	
Dieldrin	mg/kg	< 0.05	0.05	Pass	
Endosulfan I	mg/kg	< 0.05	0.05	Pass	
Endosulfan II	mg/kg	< 0.05	0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05	0.05	Pass	
Endrin	mg/kg	< 0.05	0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05	0.05	Pass	1



Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Endrin ketone	mg/kg	< 0.05	0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05	0.05	Pass	
Heptachlor	mg/kg	< 0.05	0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05	0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05	0.05	Pass	
Methoxychlor	mg/kg	< 0.2	0.2	Pass	
Toxaphene	mg/kg	< 1	1	Pass	
Method Blank		<u>'</u>			
Polychlorinated Biphenyls (PCB)					
Aroclor-1016	mg/kg	< 0.5	0.5	Pass	
Aroclor-1232	mg/kg	< 0.5	0.5	Pass	
Aroclor-1242	mg/kg	< 0.5	0.5	Pass	
Aroclor-1248	mg/kg	< 0.5	0.5	Pass	
Aroclor-1254	mg/kg	< 0.5	0.5	Pass	
Aroclor-1260	mg/kg	< 0.5	0.5	Pass	<u> </u>
Total PCB*	mg/kg	< 0.5	0.5	Pass	
Method Blank	i ilig/kg	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	0.5	1 000	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				I	
TRH >C10-C16	mg/kg	< 50	50	Pass	
TRH >C10-C16					
	mg/kg	< 100	100	Pass	
TRH >C34-C40	mg/kg	< 100	100	Pass	
Method Blank		T T	T	l	
PFOS/PFOA/6:2FTS				<u> </u>	
Perfluorooctanesulfonic acid (PFOS)	mg/kg	< 0.005	0.005	Pass	
Perfluorooctanoic acid (PFOA)	mg/kg	< 0.005	0.005	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	mg/kg	< 0.01	0.01	Pass	
Method Blank				I	-
Heavy Metals					-
Arsenic	mg/kg	< 2	2	Pass	
Cadmium	mg/kg	< 0.4	0.4	Pass	<u> </u>
Chromium	mg/kg	< 5	5	Pass	
Copper	mg/kg	< 5	5	Pass	
Lead	mg/kg	< 5	5	Pass	
Mercury	mg/kg	< 0.05	0.05	Pass	
Nickel	mg/kg	< 5	5	Pass	
Zinc	mg/kg	< 5	5	Pass	
LCS - % Recovery					
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	%	99	70-130	Pass	
TRH C10-C14	%	90	70-130	Pass	
LCS - % Recovery					
ВТЕХ					
Benzene	%	93	70-130	Pass	
Toluene	%	93	70-130	Pass	
Ethylbenzene	%	94	70-130	Pass	
m&p-Xylenes	%	96	70-130	Pass	
o-Xylene	%	96	70-130	Pass	
Xylenes - Total	%	96	70-130	Pass	
LCS - % Recovery					
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene	%	100	70-130	Pass	
TRH C6-C10	%	95	70-130	Pass	
LCS - % Recovery	, , ,		1		
Polycyclic Aromatic Hydrocarbons					



Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Acenaphthene	%	94	70-130	Pass	
Acenaphthylene	%	92	70-130	Pass	
Anthracene	%	98	70-130	Pass	
Benz(a)anthracene	%	100	70-130	Pass	
Benzo(a)pyrene	%	95	70-130	Pass	
Benzo(b&j)fluoranthene	%	102	70-130	Pass	
Benzo(g.h.i)perylene	%	77	70-130	Pass	
Benzo(k)fluoranthene	%	99	70-130	Pass	
Chrysene	%	95	70-130	Pass	
Dibenz(a.h)anthracene	%	78	70-130	Pass	
Fluoranthene	%	96	70-130	Pass	
Fluorene	%	92	70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	79	70-130	Pass	
Naphthalene	%	95	70-130	Pass	
Phenanthrene	%	91	70-130	Pass	
Pyrene	%	97	70-130	Pass	
LCS - % Recovery		<u> </u>			
Organochlorine Pesticides					
Chlordanes - Total	%	116	70-130	Pass	
4.4'-DDD	%	119	70-130	Pass	
4.4'-DDE	%	118	70-130	Pass	
4.4'-DDT	%	129	70-130	Pass	
a-BHC	%	115	70-130	Pass	
Aldrin	%	116	70-130	Pass	
b-BHC	%	109	70-130	Pass	
d-BHC	%	116	70-130	Pass	
Dieldrin	%	117	70-130	Pass	
Endosulfan I	%	122	70-130	Pass	
Endosulfan II	%	117	70-130	Pass	
Endosulfan sulphate	%	115	70-130	Pass	
Endrin	%	116	70-130	Pass	
Endrin aldehyde	%	128	70-130	Pass	
Endrin ketone	%	116	70-130	Pass	
g-BHC (Lindane)	%	112	70-130	Pass	
Heptachlor	%	123	70-130	Pass	
Heptachlor epoxide	%	112	70-130	Pass	
Hexachlorobenzene	%	120	70-130	Pass	
Methoxychlor	%	102	70-130	Pass	
LCS - % Recovery	,,,	1.02	10.00		
Polychlorinated Biphenyls (PCB)					
Aroclor-1260	%	104	70-130	Pass	
LCS - % Recovery	70	101	70 100	1 400	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH >C10-C16	%	95	70-130	Pass	
LCS - % Recovery	70		70-130	1 433	
PFOS/PFOA/6:2FTS					
Perfluorooctanesulfonic acid (PFOS)	%	95	50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	102	50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	%	115	50-150	Pass	
LCS - % Recovery	70	110	1 00-100	1 433	
Heavy Metals					<u> </u>
Arsenic	%	107	70-130	Pass	
Cadmium	%	118	70-130	Pass	
	%	93	70-130	Pass	
Chromium	70	ე შა	1 10-130	г ass	



Te	st		Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Copper			%	97	70-130	Pass	
Lead			%	102	70-130	Pass	
Mercury			%	123	70-130	Pass	
Nickel			%	109	70-130	Pass	
Zinc			%	109	70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
Organochlorine Pesticides				Result 1			
Chlordanes - Total	S16-My22600	NCP	%	122	70-130	Pass	
4.4'-DDD	S16-My22963	NCP	%	125	70-130	Pass	
4.4'-DDE	S16-My22600	NCP	%	124	70-130	Pass	
4.4'-DDT	S16-My22600	NCP	%	113	70-130	Pass	
a-BHC	S16-My22600	NCP	%	116	70-130	Pass	
Aldrin	S16-My22600	NCP	%	118	70-130	Pass	
b-BHC	S16-My22600	NCP	%	105	70-130	Pass	
d-BHC	S16-My22600	NCP	%	118	70-130	Pass	
Dieldrin	S16-My22600	NCP	%	125	70-130	Pass	
Endosulfan I	S16-My22600	NCP	%	127	70-130	Pass	
Endosulfan II	S16-My22600	NCP	%	124	70-130	Pass	
Endosulfan sulphate	S16-My22600	NCP	%	114	70-130	Pass	
Endrin	S16-My22600	NCP	%	118	70-130	Pass	
Endrin aldehyde	S16-My22600	NCP	%	128	70-130	Pass	
,		NCP		1			
Endrin ketone	S16-My22600		%	123	70-130	Pass	
g-BHC (Lindane)	S16-My22600	NCP	%	110	70-130	Pass	
Heptachlor	S16-My22600	NCP	%	122	70-130	Pass	
Heptachlor epoxide	S16-My22600	NCP	%	122	70-130	Pass	
Hexachlorobenzene	S16-My22600	NCP	%	117	70-130	Pass	
Methoxychlor	S16-My22600	NCP	%	97	70-130	Pass	-
Spike - % Recovery				T = T		T	
Total Recoverable Hydrocarbo				Result 1		-	
TRH C6-C9	S16-My22622	CP	%	89	70-130	Pass	
TRH C10-C14	S16-My22622	CP	%	98	70-130	Pass	
Spike - % Recovery						i	
BTEX				Result 1			
Benzene	S16-My22622	CP	%	87	70-130	Pass	
Toluene	S16-My22622	CP	%	87	70-130	Pass	
Ethylbenzene	S16-My22622	CP	%	87	70-130	Pass	
m&p-Xylenes	S16-My22622	CP	%	90	70-130	Pass	
o-Xylene	S16-My22622	CP	%	90	70-130	Pass	
Xylenes - Total	S16-My22622	CP	%	90	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbo	ns - 2013 NEPM Frac	tions		Result 1			
Naphthalene	S16-My22622	CP	%	96	70-130	Pass	
TRH C6-C10	S16-My22622	CP	%	87	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbo	ns - 2013 NEPM Frac	tions		Result 1			
TRH >C10-C16	S16-My22622	СР	%	95	70-130	Pass	
Spike - % Recovery							
Polycyclic Aromatic Hydrocarb	oons			Result 1			
Acenaphthene	S16-My22623	СР	%	95	70-130	Pass	
Acenaphthylene	S16-My22623	CP	%	97	70-130	Pass	
Anthracene	S16-My22623	CP	%	103	70-130	Pass	
Benz(a)anthracene	S16-My22623	CP	%	106	70-130	Pass	
202(4)411111400110	S16-My22623	CP	%	107	70-130	Pass	+



Description Description	Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Benzo(ph,D)epréne S16-My22623 CP % 104 70-130 Pass	Benzo(b&j)fluoranthene	S16-My22623		%	94		70-130	Pass	
Benzo(Milluoranthene	Benzo(g.h.i)perylene	S16-My22623	СР	%	104		70-130	Pass	
Chrysene	, , , , , , , , , , , , , , , , , , ,	<u> </u>	СР	%	109		70-130	Pass	
Dibentification		· · ·	СР		107		70-130		
Fluorambene		· · ·	CP		88		70-130		
Fluorene		· · ·							
Indomot 2.3-cd)pyrene		· · ·							
Naphthalene		1							
Phenanthrene	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	· · · · · · · · · · · · · · · · · · ·							
Pyrene S16-My22623 CP % 120 70-130 Pass	-	1 1							
PFOS/PFOA/6:2FTS		1 1							
PFOS/PFOA/6:2FTS		310-Wy22023	L CF	/0	120		70-130	r ass	
Perfluorocatenesulfonic acid (PFOA)					Describ 4				
CPFOS S16-My22623					Result 1				
Perfluorocatanoic acid (PFOA) S16-My22623 CP % 98 50-150 Pass		S16-Mv22623	CP	%	97		50-150	Pass	
TH.1H.2H.2H-perfluoroctanesulfonic acid (6:2 S16-My22623 CP % 110 50-150 Pass		<u> </u>							
Deffilorococtanesulfonic acid (6:2 S16-My22623 CP % 110 S0-150 Pass	` '	O TO MIYEEOEO	O.	70	- 50		00 100	1 455	
Polychlorinated Biphenyls (PCB)	perfluorooctanesulfonic acid (6:2	S16-My22623	СР	%	110		50-150	Pass	
Aroclor-1260	Spike - % Recovery								
Spike - % Recovery	Polychlorinated Biphenyls (PCB)				Result 1				
Heavy Metals	Aroclor-1260	S16-My22625	СР	%	87		70-130	Pass	
Heavy Metals	Spike - % Recovery				•				
Arsenic					Result 1				
Cadmium \$16-My22626 CP % 112 70-130 Pass Chromium \$16-My22626 CP % 96 70-130 Pass Copper \$16-My22626 CP % 110 70-130 Pass Mercury \$16-My22626 CP % 101 70-130 Pass Nickel \$16-My22626 CP % 107 70-130 Pass Zinc \$16-My22626 CP % 107 70-130 Pass Zinc \$16-My22626 CP % 127 70-130 Pass Spike - ** Recovery *** Recovery** *** Pass *** Pas	•	S16-My22626	CP	%			70-130	Pass	
Chromium		1 1							
Copper		1 1							
Mercury		1 1							
Nickel	- ' '	1 1							
Zinc	•	1 1							
Spike - % Recovery		1 1							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions Result 1		310-Wy22020	L CF	/0	121		70-130	r ass	
TRH C6-C9		4000 NEDM 5			Desult 4				
TRH C10-C14	•			0/			70.400	D	
Spike - % Recovery		1 1			İ				
Result 1 Result 1		S16-My22634	L CP	<u>%</u>	101		70-130	Pass	
Benzene					I	T T			
Toluene		1	1						
Ethylbenzene \$16-My22634 CP % 86 70-130 Pass m&p-Xylenes \$16-My22634 CP % 88 70-130 Pass o-Xylene \$16-My22634 CP % 89 70-130 Pass Xylenes - Total \$16-My22634 CP % 88 70-130 Pass Spike - % Recovery Total Recoverable Hydrocarbons - 2013 NEPM Fractions Result 1 Naphthalene \$16-My22634 CP % 95 70-130 Pass TRH C6-C10 \$16-My22634 CP % 79 70-130 Pass Spike - % Recovery Total Recoverable Hydrocarbons - 2013 NEPM Fractions Result 1 Result 1 TRH >C10-C16 \$16-My22634 CP % 101 70-130 Pass Spike - % Recovery Polycyclic Aromatic Hydrocarbons Acenaphthene \$16-My22635 CP % 100 70-130 Pass		1 1							
m&p-Xylenes \$16-My22634 CP % 88 70-130 Pass o-Xylene \$16-My22634 CP % 89 70-130 Pass Xylenes - Total \$16-My22634 CP % 88 70-130 Pass Spike - % Recovery Total Recoverable Hydrocarbons - 2013 NEPM Fractions Result 1 Naphthalene \$16-My22634 CP % 95 70-130 Pass TRH C6-C10 \$16-My22634 CP % 79 70-130 Pass Spike - % Recovery Total Recoverable Hydrocarbons - 2013 NEPM Fractions Result 1 Result 1 TRH >C10-C16 \$16-My22634 CP % 101 70-130 Pass Spike - % Recovery Polycyclic Aromatic Hydrocarbons Result 1 Result 1 Result 1 Acenaphthene \$16-My22635 CP % 100 70-130 Pass		†							
o-Xylene \$16-My22634 CP % 89 70-130 Pass Xylenes - Total \$16-My22634 CP % 88 70-130 Pass Spike - % Recovery Total Recoverable Hydrocarbons - 2013 NEPM Fractions Result 1 70-130 Pass TRH C6-C10 \$16-My22634 CP % 79 70-130 Pass Spike - % Recovery Total Recoverable Hydrocarbons - 2013 NEPM Fractions Result 1 Result 1 70-130 Pass Spike - % Recovery Recoverable Hydrocarbons Result 1 70-130 Pass Spike - % Recovery Result 1 70-130 Pass Acenaphthene \$16-My22635 CP % 100 70-130 Pass	Ethylbenzene	S16-My22634	CP	%	86		70-130	Pass	
Xylenes - Total \$16-My22634 CP \$88 70-130 Pass Spike - % Recovery Total Recoverable Hydrocarbons - 2013 NEPM Fractions Result 1	m&p-Xylenes	S16-My22634	CP	%	88		70-130	Pass	
Spike - % Recovery Total Recoverable Hydrocarbons - 2013 NEPM Fractions Result 1 Naphthalene \$16-My22634 CP % 95 70-130 Pass TRH C6-C10 \$16-My22634 CP % 79 70-130 Pass Spike - % Recovery Total Recoverable Hydrocarbons - 2013 NEPM Fractions Result 1 1 TRH >C10-C16 \$16-My22634 CP % 101 70-130 Pass Spike - % Recovery Polycyclic Aromatic Hydrocarbons Result 1 1 70-130 Pass Acenaphthene \$16-My22635 CP % 100 70-130 Pass	o-Xylene	S16-My22634	CP	%	89		70-130	Pass	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions Result 1 Pass Naphthalene \$16-My22634 CP % 95 70-130 Pass TRH C6-C10 \$16-My22634 CP % 79 70-130 Pass Spike - % Recovery Total Recoverable Hydrocarbons - 2013 NEPM Fractions Result 1 TRH >C10-C16 \$16-My22634 CP % 101 70-130 Pass Spike - % Recovery Polycyclic Aromatic Hydrocarbons Result 1 Result 1 Acenaphthene \$16-My22635 CP % 100 70-130 Pass	Xylenes - Total	S16-My22634	CP	%	88		70-130	Pass	
Naphthalene \$16-My22634 CP % 95 70-130 Pass TRH C6-C10 \$16-My22634 CP % 79 70-130 Pass Spike - % Recovery Total Recoverable Hydrocarbons - 2013 NEPM Fractions Result 1 70-130 Pass TRH >C10-C16 \$16-My22634 CP % 101 70-130 Pass Spike - % Recovery Polycyclic Aromatic Hydrocarbons Result 1 70-130 Pass Acenaphthene \$16-My22635 CP % 100 70-130 Pass	Spike - % Recovery								
TRH C6-C10 S16-My22634 CP % 79 70-130 Pass Spike - % Recovery Total Recoverable Hydrocarbons - 2013 NEPM Fractions Result 1	Total Recoverable Hydrocarbons	- 2013 NEPM Fract	ions		Result 1				
TRH C6-C10 S16-My22634 CP % 79 70-130 Pass Spike - % Recovery Total Recoverable Hydrocarbons - 2013 NEPM Fractions Result 1	Naphthalene	S16-My22634	СР	%	95		70-130	Pass	
Spike - % Recovery Total Recoverable Hydrocarbons - 2013 NEPM Fractions Result 1 TRH >C10-C16 \$16-My22634 CP % 101 70-130 Pass Spike - % Recovery Polycyclic Aromatic Hydrocarbons Result 1 To-130 Pass Acenaphthene \$16-My22635 CP % 100 70-130 Pass	TRH C6-C10	S16-My22634	СР	%	79		70-130	Pass	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions Result 1 TRH >C10-C16 S16-My22634 CP % 101 70-130 Pass Spike - % Recovery Polycyclic Aromatic Hydrocarbons Result 1 Acenaphthene S16-My22635 CP % 100 70-130 Pass									
TRH >C10-C16 S16-My22634 CP % 101 70-130 Pass Spike - % Recovery Polycyclic Aromatic Hydrocarbons Result 1 70-130 Pass Acenaphthene S16-My22635 CP % 100 70-130 Pass		- 2013 NEPM Fract	ions		Result 1				
Spike - % Recovery Polycyclic Aromatic Hydrocarbons Result 1 70-130 Pass Acenaphthene \$16-My22635 CP % 100 70-130 Pass				%			70-130	Pass	
Polycyclic Aromatic Hydrocarbons Result 1 Acenaphthene \$16-My22635 CP % 100 70-130 Pass		,							
Acenaphthene S16-My22635 CP % 100 70-130 Pass		s			Result 1				
			СР	%			70-130	Pass	
/100/100/1010 010 101/0 30 10-130 FdSS	<u> </u>	<u> </u>							
Anthracene S16-My22635 CP % 102 70-130 Pass									



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benz(a)anthracene	S16-My22635	СР	%	113			70-130	Pass	
Benzo(a)pyrene	S16-My22635	СР	%	105			70-130	Pass	
Benzo(b&j)fluoranthene	S16-My22635	СР	%	112			70-130	Pass	
Benzo(g.h.i)perylene	S16-My22635	СР	%	97			70-130	Pass	
Benzo(k)fluoranthene	S16-My22635	СР	%	91			70-130	Pass	
Chrysene	S16-My22635	СР	%	108			70-130	Pass	
Dibenz(a.h)anthracene	S16-My22635	CP	%	87			70-130	Pass	
Fluoranthene	S16-My22635	CP	%	114			70-130	Pass	
Fluorene	S16-My22635	CP	%	99			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S16-My22635	CP	%	93			70-130	Pass	
Naphthalene	S16-My22635	CP	%	98			70-130	Pass	
Phenanthrene	S16-My22635	CP	%	104			70-130	Pass	
Pyrene	S16-My22635	CP	%	114			70-130	Pass	
	516-Wy22635	CP	%	114			70-130	Pass	
Spike - % Recovery				Daguit 4	T				
Heavy Metals	040.14.00000	0.0	0/	Result 1			70.400	D	
Arsenic	S16-My22638	CP	%	93			70-130	Pass	
Cadmium	S16-My22638	CP	%	104			70-130	Pass	
Chromium	S16-My22638	CP	%	77			70-130	Pass	
Copper	S16-My22638	CP	%	108			70-130	Pass	
Lead	S16-My22638	CP	%	79			70-130	Pass	
Mercury	S16-My22638	CP	%	101			70-130	Pass	
Nickel	S16-My22638	CP	%	93			70-130	Pass	
Zinc	S16-My22638	CP	%	90			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate				1					
Total Recoverable Hydrocarbons	- 1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C6-C9	S16-My22621	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S16-My22621	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S16-My22621	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S16-My22621	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S16-My22621	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S16-My22621	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S16-My22621	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S16-My22621	СР	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S16-My22621	СР	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S16-My22621	СР	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons	- 2013 NEPM Fract	ions		Result 1	Result 2	RPD			
Naphthalene	S16-My22621	СР	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S16-My22621	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate	,	-	8						
Total Recoverable Hydrocarbons	- 2013 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH >C10-C16	S16-My22621	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S16-My22621	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S16-My22621	CP		< 100	< 100	<1	30%	Pass	
Duplicate	J 10-10111111111111111111111111111111111	L OF	mg/kg	_ \ 100	\ 100	<u> </u>	J 30 /0	1 455	
				Popult 1	Pocult 2	DDD			
PFOS/PFOA/6:2FTS				Result 1	Result 2	RPD			
Perfluorooctanesulfonic acid (PFOS)	S16-My22621	СР	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	S16-My22621	CP	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
1H.1H.2H-2H-perfluorooctanesulfonic acid (6:2 FTS)	S16-My22621	СР	mg/kg	< 0.01	< 0.01	<1	30%	Pass	



Duplicate				_					
Polycyclic Aromatic Hydrocarbon			1	Result 1	Result 2	RPD			
Acenaphthene	S16-My22622	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S16-My22622	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S16-My22622	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S16-My22622	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S16-My22622	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S16-My22622	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S16-My22622	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S16-My22622	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S16-My22622	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S16-My22622	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S16-My22622	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S16-My22622	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S16-My22622	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S16-My22622	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S16-My22622	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S16-My22622	СР	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S16-My22623	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S16-My22623	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S16-My22623	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S16-My22623	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S16-My22623	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S16-My22623	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S16-My22623	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S16-My22623	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S16-My22623	CP		< 0.05	< 0.05	<u> </u>	30%	Pass	
Endosulfan I		CP	mg/kg						
	S16-My22623		mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S16-My22623	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S16-My22623	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S16-My22623	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S16-My22623	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S16-My22623	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S16-My22623	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S16-My22623	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S16-My22623	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S16-My22623	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S16-My22623	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Toxaphene	S16-My22623	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate				T	1				
Polychlorinated Biphenyls (PCB)	T			Result 1	Result 2	RPD			
Aroclor-1016	S16-My22623	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1232	S16-My22623	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S16-My22623	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S16-My22623	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S16-My22623	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S16-My22623	СР	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-My22625	CP	mg/kg	10	8.8	16	30%	Pass	
Cadmium	S16-My22625	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S16-My22625	CP	mg/kg	25	15	49	30%	Fail	Q15
Copper	S16-My22625	CP	mg/kg	13	20	45	30%	Fail	Q15



Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Mercury	S16-My22625	СР	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Nickel	S16-My22625	CP	mg/kg	12	11	16	30%	Pass	
Zinc	S16-My22625	CP	mg/kg	30	21	35	30%	Fail	Q15
Duplicate	1 010 Wy22023	01	i ilig/kg	1 30		- 33	3070	1 an	QIO
Барпоасс				Result 1	Result 2	RPD			
% Moisture	S16-My22625	СР	%	15	21	11	30%	Pass	
Duplicate	1 010 MIY22020	01	70	10		- 11	0070	1 433	
Total Recoverable Hydrocarbons	- 1999 NFPM Fract	ions		Result 1	Result 2	RPD			
TRH C6-C9	S16-My22632	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S16-My22632	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S16-My22632	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S16-My22632	CP	mg/kg	54	61	12	30%	Pass	
Duplicate	010 WIYZZ03Z	01	i ilig/kg] 54	01	12	3070	1 433	
BTEX				Result 1	Result 2	RPD			
Benzene	S16-My22632	СР	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S16-My22632	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S16-My22632	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S16-My22632	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
o-Xylene	S16-My22632	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Xylenes - Total	S16-My22632	CP	mg/kg	< 0.1	< 0.3	<1	30%	Pass	
Duplicate	310-WIY22032	L CF	i ilig/kg	< 0.5	<u> </u>	<1	30 /6	Fass	
Total Recoverable Hydrocarbons	- 2013 NEPM Fract	ions		Result 1	Result 2	RPD			
Naphthalene	S16-My22632	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S16-My22632	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate	310-Wy22032	l Ci	i ilig/kg	\ 20	\ 20	7	3078	1 033	
Total Recoverable Hydrocarbons	- 2013 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH >C10-C16	S16-My22632	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S16-My22632	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S16-My22632	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate	1 0 10 WYZZ00Z	01	1 1119/119	1 100	100	<u> </u>	0070	1 433	
Polycyclic Aromatic Hydrocarbo	ns			Result 1	Result 2	RPD		T	
Acenaphthene	S16-My22634	СР	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S16-My22634	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S16-My22634	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S16-My22634	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S16-My22634	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&i)fluoranthene	S16-My22634	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S16-My22634	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S16-My22634	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S16-My22634	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S16-My22634	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S16-My22634	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S16-My22634	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S16-My22634	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S16-My22634	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S16-My22634	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S16-My22634	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
	1 010-101922004	LOF	i iiig/kg	_ \ 0.5	\ 0.0		J JU /0	1 1 455	
Duplicate				Result 1	Result 2	RPD			



Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-My22637	CP	mg/kg	10	8.3	20	30%	Pass	
Cadmium	S16-My22637	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S16-My22637	CP	mg/kg	11	10	9.0	30%	Pass	
Copper	S16-My22637	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S16-My22637	CP	mg/kg	710	650	8.0	30%	Pass	
Mercury	S16-My22637	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Nickel	S16-My22637	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc S16-My22637 CP mg/kg				12	9.1	25	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons	- 1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C6-C9	S16-My22643	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S16-My22643	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S16-My22643	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S16-My22643	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S16-My22643	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S16-My22643	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S16-My22643	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons	- 2013 NEPM Fract	ions	_	Result 1	Result 2	RPD			
Naphthalene	S16-My22643	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S16-My22643	CP	mg/kg	< 20	< 20	<1	30%	Pass	



Comments

Sample Integrity

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

Qualifier Codes/Comments

<u> </u>	D
Code	Description

F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis). N01

Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.

N02

F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes. N04

Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs N07 N09 Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear standard.

The RPD reported passes Eurofins I mot's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report. Q15

Authorised By

Andrew Black Analytical Services Manager Bob Symons Senior Analyst-Inorganic (NSW) Senior Analyst-Metal (NSW) Ivan Taylor Rhys Thomas Senior Analyst-Asbestos (NSW) Senior Analyst-Organic (QLD) Richard Corner Ryan Hamilton Senior Analyst-Organic (NSW) Ryan Hamilton Senior Analyst-Volatile (NSW)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

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

Uncertainty data is available on request

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



Certificate of Analysis





NATA Accredited Accreditation Number 1261 Site Number 18217

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

Jacobs Group (Australia) P/L NSW Level 4, 100 Christie St St Leonards NSW 2065

Attention: Michael Stacey
Report 501564-AID

Project Name BANKSTOWN AIRPORT - SITE 2

Project ID IA1107200
Received Date May 20, 2016
Date Reported May 30, 2016

Methodology:

Asbestos ID

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

Subsampling Soil Samples

The whole sample submitted is first dried and then sieved through a 10mm sieve followed by a 2mm sieve. All fibrous matter viz greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) Iron ores - Sampling and Sample preparation procedures is employed. Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis in accordance with AS 4964-2004.

Bonded asbestoscontaining material (ACM) The material is first examined and any fibres isolated and where required interfering organic fibres or matter may be removed by treating the sample for several hours at a temperature not exceeding 400 ± 30 °C. The resultant material is then ground and examined in accordance with AS 4964-2004.

Limit of Reporting

The nominal detection limit of the AS4964 method is around 0.01%. The examination of large sample sizes (at least 500 ml is recommended) may improve the likelihood of identifying asbestos material in the greater than 2 mm fraction. The NEPM screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. NOTE: NATA News, September 2011 – page 34, states, "Weighing of fibres is problematic and can lead to loss of fibres and potential exposure for laboratory analysts. To request laboratories to report information which is outside the scope of AS 4964-2004 and the scope of their accreditation is misleading and is most unwise" therefore such values reported are outside the scope of Eurofins | mgt NATA accreditation as designated by an asterisk.









NATA Accredited Accreditation Number 1261 Site Number 18217

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

Project Name BANKSTOWN AIRPORT - SITE 2

Project ID IA1107200

Date Sampled May 19, 2016 to May 20, 2016

Report 501564-AID

Client Sample ID	Eurofins mgt Sample No.	Date Sampled	Sample Description	Result
A2_TP10_0.0	16-My22621	May 19, 2016	Approximate Sample 875g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}
A2_TP11_0.0	16-My22623	May 19, 2016	Approximate Sample 1045g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. M11
A2_TP13_0.2	16-My22626	May 19, 2016	Approximate Sample 1032g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. M11
A2_TP15_0.2	16-My22629	May 19, 2016	Approximate Sample 1078g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. M11
A2_TP02_0.2	16-My22633	May 20, 2016	Approximate Sample 789g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}
A2_TP12_0.0	16-My22636	May 20, 2016	Approximate Sample 1032g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}
A2_TP20_0.0	16-My22640	May 20, 2016	Approximate Sample 976g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}

Eurofins | mgt Unit F3, Building F, 16 Mars Road, Lane Cove West, NSW, Australia, 2066 ABN: 50 005 085 521 Telephone: +61 2 9900 8400 Facsimile: +61 2 9420 2977



Sample History

Date Reported: May 30, 2016

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

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

DescriptionTesting SiteExtractedHolding TimeAsbestos - LTM-ASB-8020SydneyMay 23, 2016Indefinite

Page 3 of 12

Report Number: 501564-AID



ABN - 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Melbourne

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NATA # 1261 Site # 18217

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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 20, 2016 7:30 PM

 Address:
 Level 4, 100 Christie St
 Report #:
 501564
 Due:
 May 30, 2016

St Leonards Phone: 02 9928 2100 Priority: 5 Day
NSW 2065 Fax: 02 9928 2504 Contact Name: Michael Stacey

Project Name: BANKSTOWN AIRPORT - SITE 2

Project ID: IA1107200

Eurofins | mgt Analytical Services Manager : Andrew Black

		Asbestos - WA guidelines	HOLD	втех	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Eurofins mgt Suite B7				
Melb	ourne Laborato	ory - NATA Site	# 1254 & 142	271								
Sydı	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х		Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794						Х			
Exte	rnal Laboratory	,										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID							
1	A2_BH4_0.0	May 19, 2016		Soil	S16-My22619						Х	Х
2	A2_BH1_1.5	May 19, 2016		Soil	S16-My22620						Х	Х
3	A2_TP10_0.0	May 19, 2016		Soil	S16-My22621	Х			Х	Х	Х	Х
4	A2_TP10_0.5	May 19, 2016		Soil	S16-My22622						Х	Х
5	A2_TP11_0.0	May 19, 2016		Soil	S16-My22623	Х			Х	Х	Х	Х
6	A2_TP11_2.0	May 19, 2016		Soil	S16-My22624						Х	Х
7	A2_TP13_0.0	May 19, 2016		Soil	S16-My22625				Х	Х	Χ	Х
8	A2_TP13_0.2	May 19, 2016		Soil	S16-My22626	Х					Χ	Х
9	A2_TP14_0.3	May 19, 2016		Soil	S16-My22627						Χ	Х
10	A2_TP15_0.0	May 19, 2016		Soil	S16-My22628				Χ	Х	Χ	Х



IA1107200

Project ID:

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NATA # 1261 Site # 18217

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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 20, 2016 7:30 PM

Address: Level 4, 100 Christie St Report #: 501564 Due: May 30, 2016

St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 **Contact Name:** Michael Stacey

Project Name: **BANKSTOWN AIRPORT - SITE 2**

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail								втех	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Eurofins mgt Suite B7
Mell	Melbourne Laboratory - NATA Site # 1254 & 14271											
Sydney Laboratory - NATA Site # 18217								Х		Χ	Х	Х
	Brisbane Laboratory - NATA Site # 20794								Х			
Exte	rnal Laboratory	1		1								
11	A2_TP15_0.2	May 19, 2016		Soil	S16-My22629	X						
12	A2_TP15_1.0	May 19, 2016		Soil	S16-My22630						Х	Х
13	A2_TP01_0.0	May 19, 2016		Soil	S16-My22631						Х	Х
14	A2_TP02_0.0	May 20, 2016		Soil	S16-My22632				Χ	Х	Х	Χ
15	A2_TP02_0.2	May 20, 2016		Soil	S16-My22633	Х						
16	A2_TP02_0.5	May 19, 2016		Soil	S16-My22634						Х	Х
17	A2_TP09_0.3	May 20, 2016		Soil	S16-My22635						Х	Х
18	A2_TP12_0.0	May 20, 2016		Soil	S16-My22636	Х			Х	Х	Х	Х
19	A2_TP12_0.5	May 20, 2016		Soil	S16-My22637						Х	Х
20	A2_TP16_0.3	May 20, 2016		Soil	S16-My22638						Х	Х
21	A2_TP19_0.2	May 20, 2016		Soil	S16-My22639						Х	Х

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BANKSTOWN AIRPORT - SITE 2

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Melbourne

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NATA # 1261 Site # 18217

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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 20, 2016 7:30 PM

Address: Level 4. 100 Christie St Report #: 501564 Due: May 30, 2016

St Leonards Phone: 02 9928 2100 Priority: 5 Day NSW 2065 Fax: 02 9928 2504 **Contact Name:** Michael Stacey

Project Name:

Project ID: IA1107200 **Eurofins | mgt Analytical Services Manager : Andrew Black**

Sample Detail								втех	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Eurofins mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271												
Sydney Laboratory - NATA Site # 18217								Х		Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794						Х			
Exte	External Laboratory											
22	A2_TP20_0.0	May 20, 2016		Soil	S16-My22640	Х			Χ	Х	Х	Х
23	A2_TP20_1.0	May 20, 2016		Soil	S16-My22641						Х	Х
24	A2_QC01	May 20, 2016		Soil	S16-My22642						Х	Х
25	A2_QC03	May 20, 2016		Soil	S16-My22643						Х	Х
26	TS 160517-1	May 20, 2016		Soil	S16-My22644			Х				
27	TB 160517-1	May 20, 2016		Soil	S16-My22645			Х				
28	A2_BH4_0.5	May 19, 2016		Soil	S16-My22650		Х					
29	A2_BH4_1.5	May 19, 2016		Soil	S16-My22651		Х					
30	A2_BH1_0.0	May 19, 2016		Soil	S16-My22652		Х					
31	A2_BH1_0.5	May 19, 2016		Soil	S16-My22653		Х					
32	A2_TP10_0.2	May 19, 2016		Soil	S16-My22654		Х					



Company Name:

Project Name:

Address:

mgt

BANKSTOWN AIRPORT - SITE 2

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Melbourne

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Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 20, 2016 7:30 PM

Level 4, 100 Christie St Report #: 501564 Due: May 30, 2016

St Leonards Phone: 02 9928 2100 Priority: 5 Day NSW 2065 Fax: 02 9928 2504 **Contact Name:** Michael Stacey

Project ID: IA1107200 **Eurofins | mgt Analytical Services Manager : Andrew Black**

		Asbestos - WA guidelines	HOLD	BTEX	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Eurofins mgt Suite B7				
Mell	Melbourne Laboratory - NATA Site # 1254 & 14271											
Sydney Laboratory - NATA Site # 18217								Х		Χ	Х	Х
Bris	Brisbane Laboratory - NATA Site # 20794								Х			
Exte	rnal Laboratory	1										
33	A2_TP10_1.0	May 19, 2016		Soil	S16-My22655		Х					
34	A2_TP10_2.0	May 19, 2016		Soil	S16-My22656		Х					
35	A2_TP10_2.5	May 19, 2016		Soil	S16-My22657		Х					
36	A2_TP11_0.2	May 19, 2016		Soil	S16-My22658		Х					
37	A2_TP11_0.5	May 19, 2016		Soil	S16-My22659		Х					
38	A2_TP11_1.0	May 19, 2016		Soil	S16-My22660		Х					
39	A2_TP11_2.5	May 19, 2016		Soil	S16-My22661		Х					
40	A2_TP13_0.5	May 19, 2016		Soil	S16-My22662		Х					
41	A2_TP13_1.0	May 19, 2016		Soil	S16-My22663		Х					
42	A2_TP13_2.0	May 19, 2016		Soil	S16-My22664		Х					
43	A2_TP13_2.5	May 19, 2016		Soil	S16-My22665		Х					



Company Name:

Project Name:

mgt

BANKSTOWN AIRPORT - SITE 2

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Melbourne

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

Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 20, 2016 7:30 PM

Address: Level 4, 100 Christie St **Report #:** 501564 **Due:** May 30, 2016

St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 Contact Name: Michael Stacey

Project ID: IA1107200

Eurofins | mgt Analytical Services Manager : Andrew Black

		Sa	mple Detail				Asbestos - WA guidelines	HOLD	втех	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Eurofins mgt Suite B7
Melk	ourne Laborato	ory - NATA Site	# 1254 & 142	71									
Syd	ney Laboratory	- NATA Site # 1	8217				Χ	Х	Χ		Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794							Х			
Exte	rnal Laboratory	1											
44	A2_TP14_0.0	May 19, 2016		Soil	S16-My220	666		Х					
45	A2_TP14_0.5	May 19, 2016		Soil	S16-My220	667		Х					
46	A2_TP14_1.0	May 19, 2016		Soil	S16-My220	668		Х					
47	A2_TP14_2.0	May 19, 2016		Soil	S16-My220	669		Х					
48	A2_TP14_2.5	May 19, 2016		Soil	S16-My220	670		Х					
49	A2_TP15_0.5	May 19, 2016		Soil	S16-My220	671		Х					
50	A2_TP15_2.0	May 19, 2016		Soil	S16-My220	672		Х					
51	A2_TP15_2.5	May 19, 2016		Soil	S16-My220	673		Χ					
52	A2_TP01_0.5	May 20, 2016		Soil	S16-My220	674		Χ					
53	A2_TP01_1.0	May 20, 2016		Soil	S16-My220	675		Χ					
54	A2_TP02_1.0	May 20, 2016		Soil	S16-My220	676		Х					

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Company Name:

Address:

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Melbourne

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

Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: May 20, 2016 7:30 PM

Level 4. 100 Christie St Report #: 501564 Due: May 30, 2016

St Leonards Phone: 02 9928 2100 Priority: 5 Day Fax: 02 9928 2504 **Contact Name:**

NSW 2065 Michael Stacey

Project Name: **BANKSTOWN AIRPORT - SITE 2** Project ID: IA1107200

		Sa	mple Detail			Asbestos - WA guidelines	HOLD	BTEX	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Eurofins mgt Suite B7
Melk	ourne Laborato	ory - NATA Site	# 1254 & 1427	71								
Syd	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х		Х	Х	Х
Bris	bane Laborator	y - NATA Site#	20794						Х			
Exte	rnal Laboratory	,										
55	A2_TP09_0.0	May 20, 2016		Soil	S16-My22677		Х					
56	A2_TP09_0.5	May 20, 2016		Soil	S16-My22678		Х					
57	A2_TP09_1.0	May 20, 2016		Soil	S16-My22679		Χ					
58	A2_TP09_2.0	May 20, 2016		Soil	S16-My22680		Х					
59	A2_TP09_2.5	May 20, 2016		Soil	S16-My22681		Χ					
60	A2_TP12_1.0	May 20, 2016		Soil	S16-My22682		Χ					
61	A2_TP12_2.0	May 20, 2016		Soil	S16-My22683		Х					
62	A2_TP12_2.5	May 20, 2016		Soil	S16-My22684		Х					
63	A2_TP16_0.0	May 20, 2016		Soil	S16-My22685		Х					
64	A2_TP16_0.5	May 20, 2016		Soil	S16-My22686		Х					
65	A2_TP16_1.0	May 20, 2016		Soil	S16-My22687		Х					



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Melbourne

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NATA # 1261 Site # 18217

Received:

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

May 20, 2016 7:30 PM

Company Name: Jacobs Group (Australia) P/L NSW Address: Level 4. 100 Christie St Report #: 501564

Due: May 30, 2016 St Leonards Phone: 02 9928 2100 Priority: 5 Day

IA110700

NSW 2065 Fax: 02 9928 2504 **Contact Name:** Michael Stacey

Project Name: **BANKSTOWN AIRPORT - SITE 2**

Order No.:

Project ID: IA1107200 **Eurofins | mgt Analytical Services Manager : Andrew Black**

		Sa	mple Detail			Asbestos - WA guidelines	HOLD	ВТЕХ	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B13	Moisture Set	Eurofins mgt Suite B7
Melk	ourne Laborato	ory - NATA Site	# 1254 & 14271									
Sydı	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х		Х	Χ	Х
Bris	bane Laborator	y - NATA Site #	20794						Х			
Exte	rnal Laboratory											
66	A2_TP16_2.0	May 20, 2016	Soil	S16	S-My22688		Х					
67	A2_TP16_2.5	May 20, 2016	Soil	S16	6-My22689		Х					
68	A2_TP19_0.0	May 20, 2016	Soil	S16	6-My22690		Х					
69	A2_TP19_0.5	May 20, 2016	Soil	S16	6-My22691		Х					
70	A2_TP19_1.0	May 20, 2016	Soil	S16	6-My22692		Х					
71	A2_TP20_0.5	May 20, 2016	Soil	S16	6-My22693		Х					
Test	Counts					7	44	2	7	7	23	23

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Internal Quality Control Review and Glossary

General

- 1. QC data may be available on request.
- 2. All soil results are reported on a dry basis, unless otherwise stated
- 3. Samples were analysed on an 'as received' basis
- 4. This report replaces any interim results previously issued.

Holding Times

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

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

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w: weight for weight basis grams per kilogram
Filter loading: fibres/100 graticule areas

Reported Concentration: fibres/mL Flowrate: L/min

Terms

ΑF

Date Reported: May 30, 2016

Dry Where a moisture has been determined on a solid sample the result is expressed on a dry basis.

LOR Limit of Reporting.
COC Chain of custody
SRA Sample Receipt Advice

ISO International Stardards Organisation

AS Australian Standards

WA DOH Western Australia Department of Health

NOHSC National Occupational Health and Safety Commission

ACM Bonded asbestos-containing material means any material containing more than 1% asbestos and comprises asbestos-containing-material which is in sound condition,

although possibly broken or fragmented, and where the asbestos is bound in a matrix such as cement or resin. Common examples of ACM include but are not limited to: pipe and boiler insulation, sprayed-on fireproofing, troweled-on acoustical plaster, floor tile and mastic, floor linoleum, transite shingles, roofing materials, wall and ceiling plaster, ceiling tiles, and gasket materials. This term is restricted to material that cannot pass a 7 mm x 7 mm sieve. This sieve size is selected because it approximates the thickness of common asbestos cement sheeting and for fragments to be smaller than this would imply a high degree of damage and hence potential

for fibre release.

FA FA comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. This type of friable asbestos

is defined here as asbestos material that is in a degraded condition such that it can be broken or crumbled by hand pressure. This material is typically unbonded or

was previously bonded and is now significantly degraded (crumbling).

PACM Presumed Asbestos-Containing Material means thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later

than 1980 that are assumed to contain greater than one percent asbestos but have not been sampled or analyzed to verify or negate the presence of asbestos.

Asbestos fines (AF) are defined as free fibres, or fibre bundles, smaller than 7mm. It is the free fibres which present the greatest risk to human health, although very

small fibres (< 5 microns in length) are not considered to be such a risk. AF also includes small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve.

(Note that for bonded ACM fragments to pass through a 7 mm x 7 mm sieve implies a substantial degree of damage which increases the potential for fibre release.)

AC Asbestos cement means a mixture of cement and asbestos fibres (typically 90:10 ratios).

Report Number: 501564-AID



Comments

Sample Integrity

N/A
Yes
Yes
Yes
Yes
Yes
No

Qualifier Codes/Comments

Code Description N/A Not applicable

M11 NATA accreditation does not cover the performance of this service.

Authorised by:

Rhys Thomas Senior Analyst-Asbestos (NSW)

Glenn Jackson

National Operations Manager

Final Report - this report replaces any previously issued Report

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

Uncertainty data is available on request

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Report Number: 501564-AID



ABN - 50 005 085 521

e.mail: EnviroSales@eurofins.com

web: www.eurofins.com.au

Melbourne 3-5 Kingston Town Close Oakleigh Vic 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400 NATA # 1261 Site # 18217 Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Sample Receipt Advice

Company name: Jacobs Group (Australia) P/L NSW

Contact name: Michael Stacey

Project name: BANKSTOWN AIRPORT - SITE 2

Project ID: IA1107200 COC number: Not provided

Turn around time: 5 Day

Date/Time received: May 20, 2016 7:30 PM

Eurofins | mgt reference: 501564

Sample information

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

Notes

A2-QC02 and A2-QC04 forwarded to ALS|

Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone: (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Michael Stacey - michael.stacey@jacobs.com.







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E EnviroSampleVic@eurofins.com.au

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Page 1 of 7

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Variation)

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Page 2 of 7

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Company	Jacobs		Purcha	se Order		I	111070	O			Project	Manager	B	AIR	CUMMIN	47	Proj	ject N	ame	B	anlo	stow	~ Airpi	ot - Site
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Contact Phone No Special Direction	02 9032 1467		figinale aeraje gajea			Eurofins mgt Suite: B13 OCP/ PCB	Perfluorooctane r sulfonate (6:2	- Quantitative	[2]	Cation Exchange Capacity (CEC)	ntent		XN' As, Cd, C	ons (PAH) - Trace Level	c acid (PFOA) / Perfluorooctanesulion 6.2 fluorotelomer sulfonate (6.2 FTS)			n Aro uirem		٦	DAY*		2DAY	Sandangas apply
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MITTON JO MORNOP Editor Agreemy S.Lebent Agreeve in July 244

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Submission of sumplied of the faboral cry will be deemed as accept since of Earof Inst, implications and Conditions unless agreed of her wise. A copy of Earofins; impli Standard Terms and Conditionals

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Page 5 of 7



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Unit F3Building F 1GMars Rd, Lane Cove West NSW 2066 P +612 9900 8400 E EnviroSampleNSW@eurofins.com.au

Eurofins | mgt Brisbane tab Unit 1,21SmallwoodPlace Murarrie QLD 4172 P
+617 3902 4600 E
EnviroSampleQtD@eurofins.com au

Submission of samplest of histoboratory will be doomed assocceptance of Eurofinsjingt Standard Term sand Conditions unless agreed of herwise. A cupy of Eurofinsjingt Standard Terms and Conditions is

Eurofins | mgt

2KingstonTown Close Oakleigh WC 3166 P +61 385645000 F +61385645090 E EnviroSampleVic@eurofins.com au

Bankstown Airport - Site 2 TA110700 BLAIR CUMMINGS Project Name Jacobs Purchase Order Project Manager Company **Bectronic Results** Eurofins mgt Quote **TA110700** 160413JACN ESdat Project Ne Level 4 100 Christie Street Address St Leonards NSW 2065 Asbestos - WA/NEPM Guidelines - Quantitative (0.001% w/w) Michael.Stacey@jacobs.c ਰੱ Eurofins mgt Suite: B6 TRH/ BTEXNV As, Cd, Cr, Cu, Ni, Polycyclic Aromatic Hydrocarbons (PAH) - Trace Level Email for Results om , Blair Cumming & jacobs com (PFOS) / 6:2 fluorotelomer sulfonate (6:2 FTS) Contact Name Michael Stacey Eurofins mgt Suite: B7 TRH/ BTEXN/ PAH/ As, Cd, TIDAY" ZDAY" **Contact Phone** Cation Exchange Capacity (CEC) 02 9032 1467 Turn Around SDAY(SId) Cher %Clay content Special Direction Containers Method of Shipment B. Cummings Relinquished by 125mLAmber Glav Hand Deliverent (Signature) がる (Time / Date) Sample Comments | DG Hazard Matrix Client Sample ID Warning 20/02/1 AZ-TP19-0.0 301 AZ-TP19_0.2 X AZ- TP19-05 AZ- TP19- 1.0 AZ-TP20-0.D X M X AZ- TPZO- 0.5 Az- TP20 - 1.0 A2- QCO1 20 Please forward to Als AZ- QCOZ X AZ- QC03 AZ - QC04 30 Please forward to ALS X TS 160517-1 20,5,16 Received By BNE IMEL IPER | ADL | NEW | DAR Signature Tomp grature Laboratory Use Only Time Report Ne Date Signature Received By SYD I BNE IN ELIPER I ADLINEW I DAR

Page 6 of 7

and positive interests the entire appropriate Control of Appropriate Services

Bydney Lab

Unit F3Building F 16 Mars Rd Lane Cove West NSW 2056 P +612 9900 8400 E EnviroSampleNSW@eurof ins.com.au

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Company	Ja	cobs		Purches	e Order	-	LAII	0700				Project N	fanager	BL	AIR	COMMIN	107	Pr	oject N	terne	l R	ank	707	in Hirport	- Site 1
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Address	St Leonards NSW			ur Pillered" 1		Cr, Ou, N		ifonic acid TS)	001%w/w)					Q, N,	e Level	ufonic acid		Eme	all for F	Result:	s	Micl om	hae , Bl	I.Stacey@ja	cobs.c
ntact Name	Michael Stacey	-		Me Talah		k, Cd	8	tanesu (6:2 F	ive (0.0	1	()			, O	Trac	(6.2 F					Г	1DAY*		2DAY	3DAY
ntact Phone No	02 9032 1467			please and		PAH/	OCP/ I	fluorood	vantitat		city (C	=		V As, C	s (PAH)	uffonate		R	um Are equiter	cund ments	47	5 DAY (S	SId)	Other(Sarcharges apply
ecial Direction				ee eegerated	Soil	RH BTEXN/ Pb, Zn, Hg	uite: B13	OA) / Per slomer si	elines - C	pH (CaCl2)	ge Capa	% Clay content	Water	√ BTEXIY Zn, Hg	rocarbon	OA) / Pe				Co	nt einer	\$		Method of Shi	ipment
elinguished by	Blair Cun	nminga		Hales Where melals		Eurofins mgt Suite: B7 TRH/ BTEXN/ PAH/ As, Cd, Pb, Zn, Hg	Eurofins mgt Suite: B13 OCP/ PCB	Perfluorooctanoic acid (PFOA) / Perfluorooctanesulfonic acid (PFOS) / 8:2 fluorotekomer sulfonate (8:2 FTS)	Asbestos - WA/NEPM Guidelines - Quantitative (0.001% w/w)	됩	Cation Exchange Capacity (CEC)	8		Eurofins mgt Suite: B6 TRH/ BTEXN/ As, Cd, Cr, Cu, N, Zn, Hg	Polycyclic Aromatic Hydrocarbons (PAH)Trace Level	Perfluorooctanoic acid (PFOA) / Perfluorooctanes ulfonic acid (PFCS) / 6.2 fluorotelonier sulfonate (6.2 FTS)		ie	볼	artic or Glazz		y Gler		Courier (1
Signature)	19 10	20,	05/14	Analysis many	it	mgt Su	Щ	rooctan (PFOS)	s - WA		0			s mgt S	cyclic A	(PFOS)		1L.Plartic	250mLPlantic	125mLPjartic	40mLviel	125mL Amber Glav	100	Postal	
(Inter Date)	Client Sample ID		Date	M et rix	蓝	Eurofins		Perfluo	Asbesto					Eurofin	S.	Perfluc						2		Sample Comments Warning	
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74	Received By	37"		11.1		SYD BNE	MEL I PER	ADL NEW		1						at Gurafiasi mai Silar			nicas	orredo	ol hervi	se A con	over Eur	rofins mgl Standard Term	sand Conditionsis



Jacobs Group (Australia) P/L NSW Level 4, 100 Christie St St Leonards NSW 2065





Certificate of Analysis

NATA Accredited Accreditation Number 1261 Site Number 18217

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

Attention: Michael Stacey

Report 502799-S

Project name BANKSTOWN AIRPORT - SITE 2

Project ID IA110700
Received Date Jun 01, 2016

Client Sample ID			A2_TP24_0.0	A2_TP24_0.5	A2_TP25_0.3	A2_TP26_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Jn01229	S16-Jn01230	S16-Jn01231	S16-Jn01232
Date Sampled			May 30, 2016	May 30, 2016	May 31, 2016	May 31, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM		0				
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX	1	, , ,				
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	61	59	52	64
Total Recoverable Hydrocarbons - 2013 NEPM	Fractions	•				
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons		, , ,				
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5



					1	
Client Sample ID			A2_TP24_0.0	A2_TP24_0.5	A2_TP25_0.3	A2_TP26_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Jn01229	S16-Jn01230	S16-Jn01231	S16-Jn01232
Date Sampled			May 30, 2016	May 30, 2016	May 31, 2016	May 31, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons	·	•				
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	96	94	94	93
p-Terphenyl-d14 (surr.)	1	%	95	93	93	89
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	-	-	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	-	-	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	-	-	< 0.05
a-BHC	0.05	mg/kg	< 0.05	-	-	< 0.05
Aldrin	0.05	mg/kg	< 0.05	-	-	< 0.05
b-BHC	0.05	mg/kg	< 0.05	-	-	< 0.05
d-BHC	0.05	mg/kg	< 0.05	-	-	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	-	-	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	-	-	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	-	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	-	< 0.05
Endrin	0.05	mg/kg	< 0.05	-	-	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	-	-	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	=	=	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	-	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	-	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	-	-	< 0.05
Toxaphene	1	mg/kg	< 1	-	-	< 1
Dibutylchlorendate (surr.)	1	%	68	-	-	83
Tetrachloro-m-xylene (surr.)	1	%	69	-	-	67
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	-	-	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	-	-	< 0.1
Dibutylchlorendate (surr.)	1	%	68	-	-	83
Tetrachloro-m-xylene (surr.)	1	%	69	-	-	67
Total Recoverable Hydrocarbons - 2013 NEPI	M Fractions					
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100



Client Sample ID			A2_TP24_0.0 Soil	A2_TP24_0.5	A2_TP25_0.3	A2_TP26_0.0 Soil
Sample Matrix Eurofins mgt Sample No.			S16-Jn01229	Soil S16-Jn01230	Soil S16-Jn01231	S16-Jn01232
Date Sampled			May 30, 2016	May 30, 2016	May 31, 2016	May 31, 2016
Test/Reference	LOR	Unit		ay 00, 2010	ay 01, 2010	
PFOS/PFOA/6:2FTS		J 0				
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	N090.035	-	-	< 0.005
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	< 0.005	-	-	< 0.005
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	< 0.01	-	-	< 0.01
13C-PFHxA (surr.)	1	%	98	-	-	101
13C8-PFOS (surr.)	1	%	108	-	-	101
Heavy Metals		_				
Arsenic	2	mg/kg	< 2	2.3	2.2	6.3
Cadmium	0.4	mg/kg	< 0.4	0.5	< 0.4	0.6
Chromium	5	mg/kg	10	20	9.3	13
Copper	5	mg/kg	< 5	5.9	< 5	17
Lead	5	mg/kg	8.8	5.1	12	24
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.1
Nickel	5	mg/kg	< 5	< 5	< 5	7.8
Zinc	5	mg/kg	< 5	< 5	< 5	39
	_					
% Moisture	1	%	5.9	15	7.8	8.9

Client Sample ID Sample Matrix			A2_TP26_1.0 Soil	A2_TP27_0.0 Soil	A2_TP28_0.3 Soil	A2_TP29_0.0 Soil
Eurofins mgt Sample No.			S16-Jn01233	S16-Jn01234	S16-Jn01235	S16-Jn01236
, • .						
Date Sampled			May 31, 2016	May 31, 2016	May 31, 2016	May 31, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM F	ractions	1				
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	56	53	50	50
Total Recoverable Hydrocarbons - 2013 NEPM F	ractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2)N01	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5



Client Comple ID			10 7700 10	40 7007 00	40 7700 00	10 7700 00
Client Sample ID			A2_TP26_1.0	A2_TP27_0.0	A2_TP28_0.3	A2_TP29_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Jn01233	S16-Jn01234	S16-Jn01235	S16-Jn01236
Date Sampled			May 31, 2016	May 31, 2016	May 31, 2016	May 31, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluorantheneN07	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	96	92	90	96
p-Terphenyl-d14 (surr.)	1	%	98	92	91	89
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	=	=	< 0.1
4.4'-DDD	0.05	mg/kg	-	-	-	< 0.05
4.4'-DDE	0.05	mg/kg	-	-	-	< 0.05
4.4'-DDT	0.05	mg/kg	-	=	=	< 0.05
a-BHC	0.05	mg/kg	-	-	-	< 0.05
Aldrin	0.05	mg/kg	-	=	=	< 0.05
b-BHC	0.05	mg/kg	-	-	-	< 0.05
d-BHC	0.05	mg/kg	-	-	-	< 0.05
Dieldrin	0.05	mg/kg	-	-	-	< 0.05
Endosulfan I	0.05	mg/kg	-	-	-	< 0.05
Endosulfan II	0.05	mg/kg	-	-	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	-	-	< 0.05
Endrin	0.05	mg/kg	-	-	-	< 0.05
Endrin aldehyde	0.05	mg/kg	-	-	-	< 0.05
Endrin ketone	0.05	mg/kg	-	-	-	< 0.05
g-BHC (Lindane)	0.05	mg/kg	-	-	-	< 0.05
Heptachlor	0.05	mg/kg	-	-	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	-	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	-	-	< 0.05
Methoxychlor	0.05	mg/kg	-	-	-	< 0.05
Toxaphene	1	mg/kg	-	-	-	< 1
Dibutylchlorendate (surr.)	1	%	-	-	-	56
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	66
Polychlorinated Biphenyls	1					
Aroclor-1016	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1221	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1232	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1242	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1248	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1254	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1260	0.1	mg/kg	-	-	-	< 0.1



Client Sample ID			A2_TP26_1.0	A2_TP27_0.0	A2_TP28_0.3	A2_TP29_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Jn01233	S16-Jn01234	S16-Jn01235	S16-Jn01236
Date Sampled			May 31, 2016	May 31, 2016	May 31, 2016	May 31, 2016
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Total PCB*	0.1	mg/kg	-	-	-	< 0.1
Dibutylchlorendate (surr.)	1	%	-	-	-	56
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	66
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions	•				
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
PFOS/PFOA/6:2FTS						
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	-	-	-	< 0.005
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	-	-	-	< 0.005
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	-	-	-	< 0.01
13C-PFHxA (surr.)	1	%	-	-	=	81
13C8-PFOS (surr.)	1	%	-	-	-	89
Heavy Metals						
Arsenic	2	mg/kg	5.2	2.3	4.0	2.3
Cadmium	0.4	mg/kg	< 0.4	0.9	< 0.4	< 0.4
Chromium	5	mg/kg	18	10	14	15
Copper	5	mg/kg	11	10	6.3	17
Lead	5	mg/kg	13	110	16	91
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	5.7	< 5	< 5
Zinc	5	mg/kg	6.4	25	11	57
% Moisture	1	%	16	6.2	7.4	7.5

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference Total Recoverable Hydrocarbons - 1999 NEPM Fract	LOR	Unit	A2_TP29_0.5 Soil S16-Jn01237 May 31, 2016	A2_TP30_0.2 Soil S16-Jn01238 May 31, 2016	A2_TP31_0.0 Soil S16-Jn01239 May 31, 2016	A2_TP32_0.0 Soil S16-Jn01240 May 31, 2016
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
втех	•					
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	53	54	54	54



Client Sample ID			A2_TP29_0.5	A2_TP30_0.2	A2_TP31_0.0	A2_TP32_0.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Jn01237	S16-Jn01238	S16-Jn01239	S16-Jn01240
Date Sampled			May 31, 2016	May 31, 2016	May 31, 2016	May 31, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPN	l Fractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2)N01	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons	•					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	100	88	90	86
p-Terphenyl-d14 (surr.)	1	%	102	88	92	85
Total Recoverable Hydrocarbons - 2013 NEPN	l Fractions					
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Heavy Metals						
Arsenic	2	mg/kg	< 2	2.8	2.2	7.6
Cadmium	0.4	mg/kg	0.5	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	25	13	13	15
Copper	5	mg/kg	11	5.9	10	10
Lead	5	mg/kg	6.7	9.0	12	2200
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	7.2	< 5	7.9	5.5
Zinc	5	mg/kg	9.5	8.9	18	25
	·					
% Moisture	1	%	19	6.9	9.8	8.0



	1			1		1
Client Sample ID			A2_TP33_0.0	A2_TP33_0.5	A2_QC05	A2_QC07
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Jn01241	S16-Jn01242	S16-Jn01243	S16-Jn01244
Date Sampled			May 31, 2016	May 31, 2016	May 31, 2016	May 31, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Frac	tions	'				
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX		19/1.9	100	100	100	100
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1		< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
		mg/kg				
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1 1	%	59	50	54	50
Total Recoverable Hydrocarbons - 2013 NEPM Frac		<u> </u>				
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	108	83	82	80
p-Terphenyl-d14 (surr.)	1	%	99	93	89	90
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-	_
4.4'-DDD	0.05	mg/kg	< 0.05	-	_	_
4.4'-DDE	0.05	mg/kg	< 0.05	-		-
4.4'-DDT	0.05	mg/kg	< 0.05	-	<u> </u>	-
a-BHC	0.05	mg/kg	< 0.05	-	-	-
Aldrin	0.05	mg/kg	< 0.05	-	-	-
	(1.13)	THU/KU	. S.U.UO			



Client Sample ID			A2_TP33_0.0	A2_TP33_0.5	A2_QC05	A2_QC07
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Jn01241	S16-Jn01242	S16-Jn01243	S16-Jn01244
Date Sampled			May 31, 2016	May 31, 2016	May 31, 2016	May 31, 2016
Test/Reference	LOR	Unit	", "	, , ,		
Organochlorine Pesticides	LOIX	Onic				
d-BHC	0.05	mg/kg	< 0.05	_	_	
Dieldrin	0.05	mg/kg	< 0.05	<u> </u>		_
Endosulfan I	0.05	mg/kg	< 0.05		_	
Endosulfan II	0.05	mg/kg	< 0.05	_	_	_
Endosulfan sulphate	0.05	mg/kg	< 0.05	_	_	_
Endrin	0.05	mg/kg	< 0.05	_	_	_
Endrin aldehyde	0.05	mg/kg	< 0.05	_	_	_
Endrin ketone	0.05	mg/kg	< 0.05	-	_	_
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	_	_
Heptachlor	0.05	mg/kg	< 0.05	-	_	_
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	_	_
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-	_
Methoxychlor	0.05	mg/kg	< 0.05	_	_	_
Toxaphene	1	mg/kg	< 1	-	_	_
Dibutylchlorendate (surr.)	1	%	99	-	_	_
Tetrachloro-m-xylene (surr.)	1	%	65	-	_	_
Polychlorinated Biphenyls		,,,				
Aroclor-1016	0.1	mg/kg	< 0.1	_	_	_
Aroclor-1221	0.1	mg/kg	< 0.1	_	_	_
Aroclor-1232	0.1	mg/kg	< 0.1	_	_	_
Aroclor-1242	0.1	mg/kg	< 0.1	_	_	_
Aroclor-1248	0.1	mg/kg	< 0.1	_	_	_
Aroclor-1254	0.1	mg/kg	< 0.1	_	_	_
Aroclor-1260	0.1	mg/kg	< 0.1	-	_	_
Total PCB*	0.1	mg/kg	< 0.1	-	_	_
Dibutylchlorendate (surr.)	1	%	99	-	_	_
Tetrachloro-m-xylene (surr.)	1	%	65	-	-	_
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
PFOS/PFOA/6:2FTS	•					
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	< 0.005	-	_	_
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	< 0.005	-	-	_
1H.1H.2H.Perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	< 0.01	-	-	_
13C-PFHxA (surr.)	1	%	101	-	-	-
13C8-PFOS (surr.)	1	%	116	-	-	-
Heavy Metals	•	1				
Arsenic	2	mg/kg	< 2	4.6	4.1	< 2
Cadmium	0.4	mg/kg	0.6	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	22	29	10	6.3
Copper	5	mg/kg	46	11	< 5	12
Lead	5	mg/kg	20	14	14	5.5
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	110	5.4	< 5	9.2
Zinc	5	mg/kg	44	7.1	5.5	14
	•					
% Moisture	1	%	10	21	9.7	10



					1	
Client Sample ID			A2_TP34_0.0	A2_TP34_0.3	A2_TP35_0.0	A2_TP35_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Jn01245	S16-Jn01246	S16-Jn01247	S16-Jn01249
Date Sampled			Jun 01, 2016	Jun 01, 2016	Jun 01, 2016	Jun 01, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM	Fractions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	50	< 50
BTEX	•					
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	85	81	80	63
Total Recoverable Hydrocarbons - 2013 NEPM	Fractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
Polycyclic Aromatic Hydrocarbons		199				
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	78	73	84	78
p-Terphenyl-d14 (surr.)	1	%	85	80	94	89
Organochlorine Pesticides	•					
Chlordanes - Total	0.1	mg/kg	< 0.1	-	< 0.1	-
4.4'-DDD	0.05	mg/kg	< 0.05	_	< 0.05	_
4.4'-DDE	0.05	mg/kg	< 0.05	_	< 0.05	_
4.4'-DDT	0.05	mg/kg	< 0.05	_	< 0.05	_
a-BHC	0.05	mg/kg	< 0.05	_	< 0.05	_
Aldrin	0.05	mg/kg	< 0.05	_	< 0.05	_
b-BHC	0.05	mg/kg	< 0.05	_	< 0.05	_



Client Sample ID			A2_TP34_0.0	A2_TP34_0.3	A2_TP35_0.0	A2_TP35_1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Jn01245	S16-Jn01246	S16-Jn01247	S16-Jn01249
Date Sampled			Jun 01, 2016	Jun 01, 2016	Jun 01, 2016	Jun 01, 2016
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
d-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Dieldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan I	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan II	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin ketone	0.05	mg/kg	< 0.05	-	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	< 0.05	-
Methoxychlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Toxaphene	1	mg/kg	< 1	-	< 1	-
Dibutylchlorendate (surr.)	1	%	124	-	126	-
Tetrachloro-m-xylene (surr.)	1	%	61	-	87	-
Polychlorinated Biphenyls		•				
Aroclor-1016	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1221	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1232	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1242	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1248	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1254	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1260	0.1	mg/kg	< 0.1	-	< 0.1	-
Total PCB*	0.1	mg/kg	< 0.1	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	124	-	126	-
Tetrachloro-m-xylene (surr.)	1	%	61	-	87	-
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions	•				
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
PFOS/PFOA/6:2FTS						
Perfluorooctanesulfonic acid (PFOS)	0.005	mg/kg	^{N09} 0.020	-	N090.028	-
Perfluorooctanoic acid (PFOA)	0.005	mg/kg	< 0.005	-	< 0.005	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.01	mg/kg	< 0.01	-	< 0.01	-
13C-PFHxA (surr.)	1	%	102	-	100	-
13C8-PFOS (surr.)	1	%	112	-	107	-
Heavy Metals		1				
Arsenic	2	mg/kg	< 2	3.3	< 2	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	14	15	16	11
Copper	5	mg/kg	9.6	10	20	11
Lead	5	mg/kg	11	24	36	7.9
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	6.1	< 5	10	< 5
Zinc	5	mg/kg	15	20	35	5.3
% Moisture	1	%	9.3	9.4	9.7	18



Client Sample ID Sample Matrix			TS160517-6 Soil	TB160517-6 Soil
Eurofins mgt Sample No.			S16-Jn01250	S16-Jn01251
Date Sampled			Jun 01, 2016	Jun 01, 2016
Test/Reference	LOR	Unit		
BTEX	•			
Benzene	0.1	mg/kg	102%	< 0.1
Toluene	0.1	mg/kg	102%	< 0.1
Ethylbenzene	0.1	mg/kg	102%	< 0.1
m&p-Xylenes	0.2	mg/kg	102%	< 0.2
o-Xylene	0.1	mg/kg	102%	< 0.1
Xylenes - Total	0.3	mg/kg	102%	< 0.3
4-Bromofluorobenzene (surr.)	1	%	84	81



Sample History

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

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

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

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B7			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Jun 02, 2016	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Sydney	Jun 02, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Jun 02, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Jun 02, 2016	14 Day
- Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Jun 02, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Melbourne	Jun 02, 2016	28 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
Eurofins mgt Suite B13			
Organochlorine Pesticides	Melbourne	Jun 02, 2016	14 Day
- Method: USEPA 8081 Organochlorine Pesticides			
Polychlorinated Biphenyls	Melbourne	Jun 02, 2016	28 Day
- Method: USEPA 8082 Polychlorinated Biphenyls			
PFOS/PFOA/6:2FTS	Brisbane	Jun 06, 2016	14 Day
- Method: LTM-ORG-2100 Analysis of PFCs in environmental samples by LC-MS/MS			
% Moisture	Melbourne	Jun 01, 2016	14 Day

⁻ Method: LTM-GEN-7080 Moisture



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NATA # 1261 Site # 18217

Eurofins | mgt Analytical Services Manager : Andrew Black

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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: Jun 1, 2016 3:45 PM

 Address:
 Level 4, 100 Christie St
 Report #:
 502799
 Due:
 Jun 8, 2016

 St Leonards
 Phone:
 02 9928 2100
 Priority:
 5 Day

NSW 2065 Fax: 02 9928 2504 Contact Name: Michael Stacey

Project Name: BANKSTOWN AIRPORT - SITE 2

Project Name: BANKSTOWN AIRPORT - SITE 2
Project ID: IA110700

							HOLD	втех	Eurofins mgt Suite B13	PFOS/PFOA/6:2FTS	Moisture Set	Eurofins mgt Suite B7
Melk	Melbourne Laboratory - NATA Site # 1254 & 14271								Х		Х	Х
Sydi	ney Laboratory	- NATA Site # 1	8217			Х		Χ				Χ
Bris	bane Laborator	y - NATA Site #	20794							Х		
Exte	rnal Laboratory	,										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID							
1	A2_TP24_0.0	May 30, 2016		Soil	S16-Jn01229	Х			Х	Х	Х	Х
2	A2_TP24_0.5	May 30, 2016		Soil	S16-Jn01230						Χ	Х
3	A2_TP25_0.3	May 31, 2016		Soil	S16-Jn01231						Χ	Х
4	A2_TP26_0.0	May 31, 2016		Soil	S16-Jn01232	Х			Х	Χ	Χ	Х
5	A2_TP26_1.0	May 31, 2016		Soil	S16-Jn01233						Χ	Х
6	A2_TP27_0.0	May 31, 2016		Soil	S16-Jn01234						Х	Х
7	A2_TP28_0.3	May 31, 2016		Soil	S16-Jn01235						Χ	Х
8	A2_TP29_0.0	May 31, 2016		Soil	S16-Jn01236	Х			Х	Χ	Χ	Х
9	A2_TP29_0.5	May 31, 2016		Soil	S16-Jn01237						Χ	Х
10	A2_TP30_0.2 May 31, 2016 Soil S16-Jn01238										Χ	Χ

Eurofins | mgt Unit F3, Building F, 16 Mars Road, Lane Cove West, NSW, Australia, 2066 ABN: 50 005 085 521 Telephone: +61 2 9900 8400 Facsimile: +61 2 9420 2977

Date Reported:Jun 08, 2016



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

Company Name: Jacobs Group (Australia) P/L NSW Order No.:

Address: Level 4, 100 Christie St

> St Leonards NSW 2065

Project Name: **BANKSTOWN AIRPORT - SITE 2**

Project ID: IA110700

IA110700 Received: Jun 1, 2016 3:45 PM Report #: 502799 Due: Jun 8, 2016

Phone: 02 9928 2100 Priority: 5 Day

Contact Name: Fax: 02 9928 2504 Michael Stacey

Eurofins | mgt Analytical Services Manager : Andrew Black

	Sample Detail Melbourne Laboratory - NATA Site # 1254 & 14271						HOLD	втех	Eurofins mgt Suite B13	PFOS/PFOA/6:2FTS	Moisture Set	Eurofins mgt Suite B7
Melk	ourne Laborato	ory - NATA Site	# 1254 & 142	71			Х		Х		Х	Χ
Sydı	ney Laboratory	- NATA Site # 1	8217			X		Х				Х
Bris	bane Laborator	y - NATA Site #	20794							Х		
Exte	rnal Laboratory	<u>, </u>										
11	A2_TP31_0.0	May 31, 2016		Soil	S16-Jn0123	9					Х	Χ
12	A2_TP32_0.0	May 31, 2016		Soil	S16-Jn0124	0					Х	Χ
13	A2_TP33_0.0	May 31, 2016		Soil	S16-Jn0124	1 X			Х	Х	Х	Х
14	A2_TP33_0.5	May 31, 2016		Soil	S16-Jn0124	2					Х	Χ
15	A2_QC05	May 31, 2016		Soil	S16-Jn0124	3					Х	Х
16	A2_QC07	May 31, 2016		Soil	S16-Jn0124	4					Х	Х
17	A2_TP34_0.0	Jun 01, 2016		Soil	S16-Jn0124	5 X			Х	Х	Х	Х
18	A2_TP34_0.3	Jun 01, 2016		Soil	S16-Jn0124	6					Х	Х
19	A2_TP35_0.0	Jun 01, 2016		Soil	S16-Jn0124	7			Х	Х	Х	Х
20	A2_TP35_0.2	Jun 01, 2016		Soil	S16-Jn0124	8 X						
21	A2_TP35_1.0	Jun 01, 2016		Soil	S16-Jn0124	.9					Х	Х



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Company Name: Jacobs Group (Australia) P/L NSW

Address: Level 4, 100 Christie St

> St Leonards NSW 2065

Project Name: **BANKSTOWN AIRPORT - SITE 2**

Project ID: IA110700 Order No.: IA110700 Received: Jun 1, 2016 3:45 PM

Report #: 502799 Due: Jun 8, 2016 Phone: 02 9928 2100 Priority: 5 Day

Contact Name: Fax: 02 9928 2504 Michael Stacey

Eurofins | mgt Analytical Services Manager : Andrew Black

	Sample Detail Melbourne Laboratory - NATA Site # 1254 & 14271							ВТЕХ	Eurofins mgt Suite B13	PFOS/PFOA/6:2FTS	Moisture Set	Eurofins mgt Suite B7
Melk	ourne Laborate	ory - NATA Site	# 1254 & 142	71			Х		Х		Х	Х
Sydı	ney Laboratory	- NATA Site # 1	8217			Х		Χ				Х
Bris	bane Laborator	y - NATA Site #	20794							Х		
Exte	rnal Laboratory											
22	TS160517-6	Jun 01, 2016		Soil	S16-Jn01250			Х				
23	TB160517-6	Jun 01, 2016		Soil	S16-Jn01251			Х				
24	A2_TP24_1.0	May 30, 2016		Soil	S16-Jn01253		Х					
25	A2_TP25_0.0	May 31, 2016		Soil	S16-Jn01254		Х					
26	A2_TP25_0.5	May 31, 2016		Soil	S16-Jn01255		Х					
27	A2_TP25_1.0	May 31, 2016		Soil	S16-Jn01256		Х					
28	A2_TP26_0.4	May 31, 2016		Soil	S16-Jn01257		Χ					
29	A2_TP26_0.6	May 31, 2016		Soil	S16-Jn01258		Х					
30	A2_TP27_0.3	May 31, 2016		Soil	S16-Jn01259		Х					
31	A2_TP27_0.6	May 31, 2016		Soil	S16-Jn01260		Χ					
32	A2_TP27_1.0	May 31, 2016		Soil	S16-Jn01261		Х					



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Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700

Address: Level 4, 100 Christie St

> St Leonards NSW 2065

Project Name: **BANKSTOWN AIRPORT - SITE 2**

Project ID: IA110700

Received: Jun 1, 2016 3:45 PM Report #: 502799 Due: Jun 8, 2016

Phone: 02 9928 2100 Priority: 5 Day

Contact Name: Fax: 02 9928 2504 Michael Stacey

Eurofins | mgt Analytical Services Manager : Andrew Black

	Sample Detail Sample Detail						HOLD	втех	Eurofins mgt Suite B13	PFOS/PFOA/6:2FTS	Moisture Set	Eurofins mgt Suite B7
Mell	ourne Laborato	ory - NATA Site	# 1254 & 1427	1			Х		Χ		Х	Х
Syd	ney Laboratory	- NATA Site # 1	8217			Х		Χ				Х
Bris	bane Laborator	y - NATA Site #	20794							Х		
Exte	rnal Laboratory											
33	A2_TP28_0.0	May 31, 2016	5	Soil	S16-Jn01262		Х					
34	A2_TP28_0.5	May 31, 2016	5	Soil	S16-Jn01263		Х					
35	A2_TP28_1.0	May 31, 2016	5	Soil	S16-Jn01264		Х					
36	A2_TP29_0.3	May 31, 2016	5	Soil	S16-Jn01265		Х					
37	A2_TP29_1.0	May 31, 2016	5	Soil	S16-Jn01266		Х					
38	A2_TP30_0.0	May 31, 2016		Soil	S16-Jn01267		Х					
39	A2_TP30_0.5	May 31, 2016	5	Soil	S16-Jn01268		Х					
40	A2_TP30_1.0	May 31, 2016	5	Soil	S16-Jn01269		Х					
41	A2_TP31_0.5	May 31, 2016		Soil	S16-Jn01270		Х					
42	A2_TP31_1.0	May 31, 2016		Soil	S16-Jn01271		Х					
43	A2_TP32_0.2	May 31, 2016		Soil	S16-Jn01272		Χ					



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Eurofins | mgt Analytical Services Manager : Andrew Black

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Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: Jun 1, 2016 3:45 PM

Address: Level 4, 100 Christie St Report #: 502799 Due: Jun 8, 2016 St Leonards Phone: 02 9928 2100 Priority: 5 Day

Contact Name: NSW 2065 Fax: 02 9928 2504 Michael Stacey

BANKSTOWN AIRPORT - SITE 2 Project Name:

Project ID: IA110700

	Sample Detail						HOLD	ВТЕХ	Eurofins mgt Suite B13	PFOS/PFOA/6:2FTS	Moisture Set	Eurofins mgt Suite B7
Melk	ourne Laborato	ory - NATA Site	# 1254 & 142	71			Х		Х		Х	Χ
Sydi	ney Laboratory	- NATA Site # 1	8217			Х		Х				Х
Bris	bane Laborator	y - NATA Site #	20794							Х		
Exte	rnal Laboratory											
44	A2_TP32_0.5	May 31, 2016		Soil	S16-Jn01273		Х					
45	A2_TP32_1.0	May 31, 2016		Soil	S16-Jn01274		Χ					
46	A2_TP33_0.2	May 31, 2016		Soil	S16-Jn01275		Х					
47	A2_TP33_1.0	May 31, 2016		Soil	S16-Jn01276		Х					
48	A2_TP34_0.5	Jun 01, 2016		Soil	S16-Jn01277		Х					
49	9 A2_TP34_1.0 Jun 01, 2016 Soil S16-Jn01278						Х					
50	0 A2_TP35_0.5 Jun 01, 2016 Soil S16-Jn01279						Х					
Test	Counts					6	27	2	6	6	20	20



Internal Quality Control Review and Glossary

General

- 1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 4. Results are uncorrected for matrix spikes or surrogate recoveries.
- 5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise
- 6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

Units

 mg/kg: milligrams per Kilogram
 mg/l: milligrams per litre

 ug/l: micrograms per litre
 ppm: Parts per million

 ppb: Parts per billion
 %: Percentage

org/100ml: Organisms per 100 millilitres NTU: Nephelometric Turbidity Units

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

Terms

Dry Where a moisture has been determined on a solid sample the result is expressed on a dry basis.

LOR Limit of Reporting.

SPIKE Addition of the analyte to the sample and reported as percentage recovery.

RPD Relative Percent Difference between two Duplicate pieces of analysis.

LCS Laboratory Control Sample - reported as percent recovery
CRM Certified Reference Material - reported as percent recovery

Method Blank In the case of solid samples these are performed on laboratory certified clean sands

In the case of water samples these are performed on de-ionised water. $% \label{eq:case_eq} % \label{eq:case_eq}$

Surr - Surrogate The addition of a like compound to the analyte target and reported as percentage recovery.

DuplicateA second piece of analysis from the same sample and reported in the same units as the result to show comparison.

Batch Duplicate A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.

Batch SPIKE Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.

USEPA United States Environmental Protection Agency

APHA American Public Health Association

TCLP Toxicity Characteristic Leaching Procedure

COC Chain of Custody

SRA Sample Receipt Advice

CP Client Parent - QC was performed on samples pertaining to this report

NCP Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within

TEQ Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

QC Data General Comments

- 1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported
 in the C10-C14 cell of the Report.
- 6. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time.

 Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- 8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- 9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Report Number: 502799-S



Quality Control Results

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Method Blank						
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	mg/kg	< 20		20	Pass	
TRH C10-C14	mg/kg	< 20		20	Pass	
TRH C15-C28	mg/kg	< 50		50	Pass	
TRH C29-C36	mg/kg	< 50		50	Pass	
Method Blank						
BTEX						
Benzene	mg/kg	< 0.1		0.1	Pass	
Toluene	mg/kg	< 0.1		0.1	Pass	
Ethylbenzene	mg/kg	< 0.1		0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2		0.2	Pass	
o-Xylene	mg/kg	< 0.1		0.1	Pass	
Xylenes - Total	mg/kg	< 0.3		0.3	Pass	
Method Blank						
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene	mg/kg	< 0.5		0.5	Pass	
TRH C6-C10	mg/kg	< 20		20	Pass	
Method Blank	1 3 3		,			
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	mg/kg	< 0.5		0.5	Pass	
Acenaphthylene	mg/kg	< 0.5		0.5	Pass	
Anthracene	mg/kg	< 0.5		0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5		0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5		0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5		0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5		0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5		0.5	Pass	
Chrysene	mg/kg	< 0.5		0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5		0.5	Pass	
Fluoranthene	mg/kg	< 0.5		0.5	Pass	
Fluorene	mg/kg	< 0.5		0.5	Pass	
		< 0.5		0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg					
Naphthalene	mg/kg	< 0.5		0.5	Pass	
Phenanthrene	mg/kg	< 0.5		0.5	Pass	
Pyrene	mg/kg	< 0.5		0.5	Pass	
Method Blank						
Organochlorine Pesticides		.04		0.4	Dana	
Chlordanes - Total	mg/kg	< 0.1		0.1	Pass	
4.4'-DDD	mg/kg	< 0.05		0.05	Pass	
4.4'-DDE	mg/kg	< 0.05		0.05	Pass	
4.4'-DDT	mg/kg	< 0.05		0.05	Pass	
a-BHC	mg/kg	< 0.05		0.05	Pass	
Aldrin	mg/kg	< 0.05		0.05	Pass	
b-BHC	mg/kg	< 0.05		0.05	Pass	
d-BHC	mg/kg	< 0.05		0.05	Pass	
Dieldrin	mg/kg	< 0.05		0.05	Pass	
Endosulfan I	mg/kg	< 0.05		0.05	Pass	
Endosulfan II	mg/kg	< 0.05		0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05		0.05	Pass	
Endrin	mg/kg	< 0.05		0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05		0.05	Pass	



Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Endrin ketone	mg/kg	< 0.05	0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05	0.05	Pass	
Heptachlor	mg/kg	< 0.05	0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05	0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05	0.05	Pass	
Methoxychlor	mg/kg	< 0.05	0.05	Pass	
Toxaphene	mg/kg	< 1	1	Pass	
Method Blank					
Polychlorinated Biphenyls					
Aroclor-1016	mg/kg	< 0.1	0.1	Pass	
Aroclor-1221	mg/kg	< 0.1	0.1	Pass	
Aroclor-1232	mg/kg	< 0.1	0.1	Pass	
Aroclor-1242	mg/kg	< 0.1	0.1	Pass	
Aroclor-1248	mg/kg	< 0.1	0.1	Pass	
Aroclor-1254	mg/kg	< 0.1	0.1	Pass	
Aroclor-1260	mg/kg	< 0.1	0.1	Pass	
Total PCB*	mg/kg	< 0.1	0.1	Pass	
Method Blank					
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH >C10-C16	mg/kg	< 50	50	Pass	
TRH >C16-C34	mg/kg	< 100	100	Pass	
TRH >C34-C40	mg/kg	< 100	100	Pass	
Method Blank					
PFOS/PFOA/6:2FTS					
Perfluorooctanesulfonic acid (PFOS)	mg/kg	< 0.005	0.005	Pass	
Perfluorooctanoic acid (PFOA)	mg/kg	< 0.005	0.005	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	mg/kg	< 0.01	0.01	Pass	
Method Blank		1			
Heavy Metals					
Arsenic	mg/kg	< 2	2	Pass	
Cadmium	mg/kg	< 0.4	0.4	Pass	
Chromium	mg/kg	< 5	5	Pass	
Copper	mg/kg	< 5	5	Pass	
Lead	mg/kg	< 5	5	Pass	
Mercury	mg/kg	< 0.1	0.1	Pass	
Nickel	mg/kg	< 5	5	Pass	
Zinc	mg/kg	< 5	5	Pass	
LCS - % Recovery		T T	<u> </u>		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	%	87	70-130	Pass	
TRH C10-C14	%	114	70-130	Pass	
LCS - % Recovery					
BTEX					
Benzene	%	84	70-130	Pass	
Toluene	%	85	70-130	Pass	
Ethylbenzene	%	83	70-130	Pass	
m&p-Xylenes	%	84	70-130	Pass	
Xylenes - Total	%	84	70-130	Pass	
LCS - % Recovery					
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene	%	76	70-130	Pass	
TRH C6-C10	%	84	70-130	Pass	
LCS - % Recovery					ı



Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Acenaphthene	%	101	70-130	Pass	Code
Acenaphthylene	%	99	70-130	Pass	
Anthracene	%	108	70-130	Pass	
Benz(a)anthracene	%	83	70-130	Pass	
Benzo(a)pyrene	%	95	70-130	Pass	
Benzo(b&j)fluoranthene	%	87	70-130	Pass	
Benzo(g.h.i)perylene	%	73	70-130	Pass	
Benzo(k)fluoranthene	%	98	70-130	Pass	
Chrysene	%	110	70-130	Pass	
Dibenz(a.h)anthracene	%	92	70-130	Pass	
Fluoranthene	%	88	70-130	Pass	
Fluorene	%	100	70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	89	70-130	Pass	
Naphthalene	%	95	70-130	Pass	
Phenanthrene	%	93	70-130	Pass	
Pyrene	%	87	70-130	Pass	
LCS - % Recovery	,,,	<u> </u>	1 10 100		
Organochlorine Pesticides					
4.4'-DDD	%	72	70-130	Pass	
4.4'-DDE	%	117	70-130	Pass	
4.4'-DDT	%	97	70-130	Pass	
a-BHC	%	107	70-130	Pass	
Aldrin	%	95	70-130	Pass	
b-BHC	%	111	70-130	Pass	
d-BHC	%	89	70-130	Pass	
Dieldrin	%	110	70-130	Pass	
Endosulfan I	%	82	70-130	Pass	
Endosulfan II	%	70	70-130	Pass	
Endosulfan sulphate	%	71	70-130	Pass	
Endrin	%	114	70-130	Pass	
Endrin aldehyde	%	113	70-130	Pass	
Endrin ketone	%	73	70-130	Pass	
g-BHC (Lindane)	%	101	70-130	Pass	
Heptachlor	%	102	70-130	Pass	
Heptachlor epoxide	%	84	70-130	Pass	
Hexachlorobenzene	%	105	70-130	Pass	
Methoxychlor	%	120	70-130	Pass	
LCS - % Recovery					
Polychlorinated Biphenyls					
Aroclor-1260	%	95	70-130	Pass	
LCS - % Recovery					
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH >C10-C16	%	110	70-130	Pass	
LCS - % Recovery	•				
PFOS/PFOA/6:2FTS					
Perfluorooctanesulfonic acid (PFOS)	%	111	50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	110	50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	%	110	50-150	Pass	
LCS - % Recovery					
Heavy Metals					
Arsenic	%	102	80-120	Pass	
Cadmium	%	97	80-120	Pass	
Chromium	%	102	80-120	Pass	
Copper	%	104	80-120	Pass	



Test Lead			Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
			%	100	80-120	Pass	
Mercury			%	91	75-125	Pass	
Nickel			%	98	80-120	Pass	
Zinc			%	94	80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
Organochlorine Pesticides				Result 1			
4.4'-DDD	S16-Jn01229	СР	%	86	70-130	Pass	
4.4'-DDE	S16-Jn01229	СР	%	123	70-130	Pass	
4.4'-DDT	S16-Jn01229	СР	%	117	70-130	Pass	
a-BHC	S16-Jn01229	СР	%	84	70-130	Pass	
Aldrin	S16-Jn01229	СР	%	74	70-130	Pass	
b-BHC	S16-Jn01229	CP	%	81	70-130	Pass	
d-BHC	S16-Jn01229	CP	%	111	70-130	Pass	
Dieldrin	S16-Jn01229	CP	%	117	70-130	Pass	
Endosulfan I	S16-Jn01229	CP	%	86	70-130	Pass	
Endosulfan II	S16-Jn01229	CP	%	127	70-130	Pass	
Endosulfan sulphate	S16-Jn01229	CP	%	124	70-130	Pass	
Endrin	S16-Jn01229	CP	%	116	70-130	Pass	
Endrin aldehyde	S16-Jn01229	CP	%	125	70-130	Pass	
,				1			
Endrin ketone	S16-Jn01229	CP	%	121	70-130	Pass	
g-BHC (Lindane)	S16-Jn01229	CP	%	79	70-130	Pass	
Heptachlor	S16-Jn01229	CP	%	76	70-130	Pass	
Heptachlor epoxide	S16-Jn01229	CP	%	104	70-130	Pass	
Hexachlorobenzene	S16-Jn01229	CP	%	91	70-130	Pass	
Methoxychlor	S16-Jn01229	CP	%	87	70-130	Pass	
Spike - % Recovery				T			
Polychlorinated Biphenyls				Result 1			
Aroclor-1260	S16-Jn01229	CP	%	119	70-130	Pass	
Spike - % Recovery							
Heavy Metals				Result 1			
Lead	B16-Jn01846	NCP	%	76	75-125	Pass	
Spike - % Recovery					 		
PFOS/PFOA/6:2FTS				Result 1			
Perfluorooctanesulfonic acid (PFOS)	S16-Jn01232	СР	%	129	50-150	Pass	
Perfluorooctanoic acid (PFOA)	S16-Jn01232	СР	%	114	50-150	Pass	
1H.1H.2H.2H- perfluorooctanesulfonic acid (6:2 FTS)	S16-Jn01232	СР	%	108	50-150	Pass	
Spike - % Recovery	3 10 0110 1202	, Ji	, , , , , , , , , , , , , , , , , , ,		1 00 100	1 400	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1			
TRH C6-C9	S16-Jn01233	CP	%	77	70-130	Pass	
TRH C10-C14	S16-Jn01233	CP	%	102	70-130		
	3 10-3110 1233	L 05	70	102	10-130	Pass	
Spike - % Recovery BTEX				Popult 1			
	C16 In04000	СР	%	Result 1	70 120	Poss	
Benzene	S16-Jn01233			76	70-130	Pass	
Toluene	S16-Jn01233	CP	%	75	70-130	Pass	
Ethylbenzene	S16-Jn01233	CP	%	78	70-130	Pass	
m&p-Xylenes	S16-Jn01233	CP	%	82	70-130	Pass	
o-Xylene	S16-Jn01233	CP	%	88	70-130	Pass	
Xylenes - Total	S16-Jn01233	СР	%	84	70-130	Pass	
Spike - % Recovery				T _			
Total Recoverable Hydrocarbons				Result 1			
Naphthalene	S16-Jn01233	CP	%	77	70-130	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
TRH C6-C10	S16-Jn01233	СР	%	70	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbons	- 2013 NEPM Fract	tions		Result 1			
TRH >C10-C16	S16-Jn01233	СР	%	99	70-130	Pass	
Spike - % Recovery				•			
Heavy Metals				Result 1			
Arsenic	S16-Jn01236	СР	%	90	75-125	Pass	
Cadmium	S16-Jn01236	СР	%	81	75-125	Pass	
Chromium	S16-Jn01236	СР	%	87	75-125	Pass	
Copper	S16-Jn01236	СР	%	95	75-125	Pass	
Mercury	S16-Jn01236	СР	%	94	70-130	Pass	
Zinc	S16-Jn01236	CP	%	87	75-125	Pass	
Spike - % Recovery							
Polycyclic Aromatic Hydrocarbor	ns			Result 1			
Acenaphthene	S16-Jn01237	СР	%	97	70-130	Pass	
Acenaphthylene	S16-Jn01237	CP	%	100	70-130	Pass	
Anthracene	S16-Jn01237	CP	%	101	70-130	Pass	
Benz(a)anthracene	S16-Jn01237	CP	%	92	70-130	Pass	
Benzo(a)pyrene	S16-Jn01237	CP	%	97	70-130	Pass	
Benzo(b&j)fluoranthene	S16-Jn01237	CP	%	110	70-130	Pass	
Benzo(g.h.i)perylene	S16-Jn01237	CP	%	74	70-130	Pass	
Benzo(k)fluoranthene	S16-Jn01237	CP	%	122	70-130	Pass	
Chrysene	S16-Jn01237	CP	%	105	70-130	Pass	
Dibenz(a.h)anthracene	S16-Jn01237	CP	%	85	70-130	Pass	
Fluoranthene	S16-Jn01237	CP	%	87	70-130	Pass	
Fluorene	S16-Jn01237	CP	%	101	70-130	Pass	
Indeno(1.2.3-cd)pyrene	S16-Jn01237	CP	%	93	70-130	Pass	
Naphthalene	S16-Jn01237	CP	%	95	70-130	Pass	
Phenanthrene	S16-Jn01237	CP	%	100	70-130	Pass	
Pyrene	S16-Jn01237	CP	%	86	70-130	Pass	
Spike - % Recovery	7 0.0 0.10 120.	<u> </u>	,,,		10.00		
Heavy Metals				Result 1			
Arsenic	S16-Jn01246	СР	%	86	75-125	Pass	
Cadmium	S16-Jn01246	CP	%	87	75-125	Pass	
Chromium	S16-Jn01246	CP	%	87	75-125	Pass	
Copper	S16-Jn01246	CP	%	100	75-125	Pass	
Nickel	S16-Jn01246	CP	%	79	75-125	Pass	
Spike - % Recovery	1 010 0110 12 10	Ų.	70	, , ,	70 120	1 400	
Polycyclic Aromatic Hydrocarbor	ns			Result 1			
Acenaphthene	S16-Jn01247	СР	%	90	70-130	Pass	
Acenaphthylene	S16-Jn01247	CP	%	91	70-130	Pass	
Anthracene	S16-Jn01247	CP	%	91	70-130	Pass	
Benz(a)anthracene	S16-Jn01247	CP	%	96	70-130	Pass	
Benzo(a)pyrene	S16-Jn01247	CP	%	97	70-130	Pass	
Benzo(b&j)fluoranthene	S16-Jn01247	CP	%	91	70-130	Pass	
Benzo(g.h.i)perylene	S16-Jn01247	CP	%	92	70-130	Pass	
Benzo(k)fluoranthene	S16-Jn01247	CP	%	96	70-130	Pass	
Chrysene	S16-Jn01247	CP	%	98	70-130	Pass	
Dibenz(a.h)anthracene	S16-Jn01247	CP	%	108	70-130	Pass	
Fluoranthene	S16-Jn01247	CP	%	99	70-130	Pass	
Fluorene	S16-Jn01247	CP	%	92	70-130	Pass	
Indeno(1.2.3-cd)pyrene	S16-Jn01247	CP	%	101	70-130	Pass	
Naphthalene	S16-Jn01247	CP	<u> </u>	90	70-130	Pass	
Phenanthrene	S16-Jn01247	CP	// %	89	70-130	Pass	
Pyrene	S16-Jn01247	CP	// %	94	70-130	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate		'			,				
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	M16-Jn00200	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	M16-Jn00200	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	M16-Jn00200	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	M16-Jn00200	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	M16-Jn00200	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	M16-Jn00200	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	M16-Jn00200	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	M16-Jn00200	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	M16-Jn00200	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	M16-Jn00200	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	M16-Jn00200	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	M16-Jn00200	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	M16-Jn00200	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	M16-Jn00200	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	M16-Jn00200	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	M16-Jn00200	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	M16-Jn00200	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	M16-Jn00200	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	M16-Jn00200	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	M16-Jn00200	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	M16-Jn00200	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate		,						1 3.00	
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	M16-Jn00200	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	M16-Jn00200	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	M16-Jn00200	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	M16-Jn00200	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	M16-Jn00200	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	M16-Jn00200	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1260	M16-Jn00200	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	M16-Jn00200	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate		1121						1 3.00	
PFOS/PFOA/6:2FTS				Result 1	Result 2	RPD			
Perfluorooctanesulfonic acid (PFOS)	S16-Jn01229	СР	mg/kg	0.035	0.034	5.0	30%	Pass	
Perfluorooctanoic acid (PFOA)	S16-Jn01229	СР	mg/kg	< 0.005	< 0.005	<1	30%	Pass	
1H.1H.2H.2H- perfluorooctanesulfonic acid (6:2 FTS)	S16-Jn01229	СР	mg/kg	< 0.01	< 0.01	<1	30%	Pass	
Duplicate			J						
Heavy Metals				Result 1	Result 2	RPD			
Mercury	M16-Jn04231	NCP	mg/kg	0.3	0.3	3.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M16-Jn01089	NCP	%	25	25	2.0	30%	Pass	
Duplicate	, 5 5 1000		,,,			,			
Total Recoverable Hydrocarbons	- 1999 NEPM Fract	tions		Result 1	Result 2	RPD			
TRH C6-C9	S16-Jn01232	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S16-Jn01232	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S16-Jn01232	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S16-Jn01232	CP	mg/kg	< 50	< 50	<1	30%	Pass	



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Duplicate				l			Ī		
ВТЕХ				Result 1	Result 2	RPD			
Benzene	S16-Jn01232	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S16-Jn01232	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S16-Jn01232	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S16-Jn01232	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S16-Jn01232	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S16-Jn01232	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate				1					
Total Recoverable Hydrocarbons -				Result 1	Result 2	RPD		1	
Naphthalene	S16-Jn01232	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S16-Jn01232	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions	_	Result 1	Result 2	RPD		1	
TRH >C10-C16	S16-Jn01232	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S16-Jn01232	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S16-Jn01232	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-Jn01235	CP	mg/kg	4.0	2.1	61	30%	Fail	Q15
Cadmium	S16-Jn01235	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S16-Jn01235	CP	mg/kg	14	11	18	30%	Pass	
Copper	S16-Jn01235	CP	mg/kg	6.3	5.6	13	30%	Pass	
Lead	S16-Jn01235	CP	mg/kg	16	13	20	30%	Pass	
Nickel	S16-Jn01235	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S16-Jn01235	CP	mg/kg	11	9.2	13	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons	3			Result 1	Result 2	RPD			
Acenaphthene	S16-Jn01236	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S16-Jn01236	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S16-Jn01236	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S16-Jn01236	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S16-Jn01236	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S16-Jn01236	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S16-Jn01236	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S16-Jn01236	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S16-Jn01236	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S16-Jn01236	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S16-Jn01236	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S16-Jn01236	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S16-Jn01236	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S16-Jn01236	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S16-Jn01236	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S16-Jn01236	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-Jn01236	CP	mg/kg	2.3	7.0	100	30%	Fail	Q15
Cadmium	S16-Jn01236	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S16-Jn01236	СР	mg/kg	15	16	6.0	30%	Pass	
Chromium	010 01 10 12 30			I -				T	
Copper	S16-Jn01236	CP	mg/kg	17	18	4.0	30%	Pass	
		CP CP	mg/kg mg/kg	17 91	18 87	4.0	30%	Pass	
Copper	S16-Jn01236			1				1 1	



mgt

Duplicate									
Total Recoverable Hydrocarbo	ns - 1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C10-C14	S16-Jn01242	СР	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S16-Jn01242	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S16-Jn01242	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate Duplicate	7 0 10 0 110 12 12	<u> </u>	19,9	100	100	**	0070	1	
Total Recoverable Hydrocarbo	ns - 2013 NFPM Fract	ions		Result 1	Result 2	RPD			
TRH >C10-C16	S16-Jn01242	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S16-Jn01242	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S16-Jn01242	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate Duplicate	010 0110 12-12		i iiig/kg	<u> </u>	<u> </u>		0070	1 455	
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-Jn01245	СР	mg/kg	< 2	3.0	70	30%	Fail	Q15
Cadmium	S16-Jn01245	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	QIJ
Chromium	S16-Jn01245	CP	mg/kg	14	19	31	30%	Fail	Q15
Copper	S16-Jn01245	CP	mg/kg	9.6	13	32	30%	Fail	Q15 Q15
Lead	S16-Jn01245	CP	mg/kg	11	16	35	30%	Fail	Q15 Q15
Nickel	S16-Jn01245	CP	mg/kg	6.1	8.3	30	30%	Pass	Q15 Q15
Zinc	S16-Jn01245	CP		15	22	37	30%	Fail	QIS
	310-31101243	I CF	mg/kg	13		31	30%	Fall	
Duplicate Polycyclic Aromatic Hydrocark				Result 1	Result 2	RPD	I		
	S16-Jn01246	СР	m a/l.a				200/	Door	
Acenaphthene		<u> </u>	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S16-Jn01246	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S16-Jn01246	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S16-Jn01246	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S16-Jn01246	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S16-Jn01246	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S16-Jn01246	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S16-Jn01246	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S16-Jn01246	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S16-Jn01246	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S16-Jn01246	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S16-Jn01246	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S16-Jn01246	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S16-Jn01246	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S16-Jn01246	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S16-Jn01246	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate						DD5			
Heavy Metals				Result 1	Result 2	RPD		+	
Arsenic	S16-Jn01246	CP	mg/kg	3.3	3.1	7.0	30%	Pass	
Cadmium	S16-Jn01246	CP	mg/kg	< 0.4	0.4	9.0	30%	Pass	
Chromium	S16-Jn01246	CP	mg/kg	15	15	2.0	30%	Pass	
Copper	S16-Jn01246	CP	mg/kg	10	10	2.0	30%	Pass	
Lead	S16-Jn01246	CP	mg/kg	24	24	<1	30%	Pass	
Nickel	S16-Jn01246	CP	mg/kg	< 5	5.2	11	30%	Pass	
Zinc	S16-Jn01246	CP	mg/kg	20	19	4.0	30%	Pass	



Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description

F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).

N01

Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.

N02

F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes. N04

Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs N07

Quantification of linear and branched isomers has been conducted as a single total response using the relative response factor for the corresponding linear standard.

The RPD reported passes Eurofins I mot's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report. Q15

Authorised By

N09

Andrew Black Analytical Services Manager Emily Rosenberg Senior Analyst-Metal (VIC) Harry Bacalis Senior Analyst-Volatile (VIC) Huong Le Senior Analyst-Inorganic (VIC) Mele Singh Senior Analyst-Organic (VIC) Rhys Thomas Senior Analyst-Asbestos (NSW) Richard Corner Senior Analyst-Organic (QLD) Ryan Hamilton Senior Analyst-Volatile (NSW)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

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

Uncertainty data is available on request

Eurofins. Impt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins I mgt be liable for consequential damages including, but no limited to, lot growing, damages for elabeline and lot she production arising from this report. This document shall not be reproduced or expect in full and retales only to the terms tested. Unless indicated otherwise, the tests were, the test she works, the tests were sindicated otherwise, the tests were.



Certificate of Analysis





NATA Accredited Accreditation Number 1261 Site Number 18217

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

Jacobs Group (Australia) P/L NSW Level 4, 100 Christie St St Leonards NSW 2065

Attention: Michael Stacey
Report 502799-AID

Project Name BANKSTOWN AIRPORT - SITE 2

Project ID IA110700
Received Date Jun 01, 2016
Date Reported Jun 08, 2016

Methodology:

Asbestos ID

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

Subsampling Soil Samples

The whole sample submitted is first dried and then sieved through a 10mm sieve followed by a 2mm sieve. All fibrous matter viz greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) Iron ores - Sampling and Sample preparation procedures is employed. Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis in accordance with AS 4964-2004.

Bonded asbestoscontaining material (ACM) The material is first examined and any fibres isolated and where required interfering organic fibres or matter may be removed by treating the sample for several hours at a temperature not exceeding 400 ± 30 °C. The resultant material is then ground and examined in accordance with AS 4964-2004.

Limit of Reporting

The nominal detection limit of the AS4964 method is around 0.01%. The examination of large sample sizes (at least 500 ml is recommended) may improve the likelihood of identifying asbestos material in the greater than 2 mm fraction. The NEPM screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. NOTE: NATA News, September 2011 – page 34, states, "Weighing of fibres is problematic and can lead to loss of fibres and potential exposure for laboratory analysts. To request laboratories to report information which is outside the scope of AS 4964-2004 and the scope of their accreditation is misleading and is most unwise" therefore such values reported are outside the scope of Eurofins | mgt NATA accreditation as designated by an asterisk.









NATA Accredited Accreditation Number 1261 Site Number 18217

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

Project Name BANKSTOWN AIRPORT - SITE 2

Project ID IA110700

Date Sampled May 30, 2016 to Jun 01, 2016

Report 502799-AID

Client Sample ID	Eurofins mgt Sample No.	Date Sampled	Sample Description	Result
A2_TP24_0.0	16-Jn01229	May 30, 2016	Approximate Sample 824g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}
A2_TP26_0.0	16-Jn01232	May 31, 2016	Approximate Sample 987g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}
A2_TP29_0.0	16-Jn01236	May 31, 2016	Approximate Sample 852g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}
A2_TP33_0.0	16-Jn01241	May 31, 2016	Approximate Sample 840g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}
A2_TP34_0.0	16-Jn01245	Jun 01, 2016	Approximate Sample 866g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}
A2_TP35_0.2	16-Jn01248	Jun 01, 2016	Approximate Sample 847g Sample consisted of: Pale grey fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected. ^{M11}

Eurofins | mgt Unit F3, Building F, 16 Mars Road, Lane Cove West, NSW, Australia, 2066 ABN: 50 005 085 521 Telephone: +61 2 9900 8400 Facsimile: +61 2 9420 2977

Report Number: 502799-AID



Sample History

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

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

DescriptionTesting SiteExtractedHolding TimeAsbestos - LTM-ASB-8020SydneyJun 01, 2016Indefinite



mgt

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Melbourne

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NATA # 1261 Phone : +61 2 9900 8400 Site # 1254 & 14271 NATA # 1261 Site # 18217

Sydney
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16 Mars Road
Lane Cove West NSW 2066
Phone: +61 2 9900 8400

Brisbane1/21 Smallwood Place
Murarrie QLD 4172
Phone: +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: Jun 1, 2016 3:45 PM

 Address:
 Level 4, 100 Christie St
 Report #:
 502799
 Due:
 Jun 8, 2016

 St Leonards
 Phone:
 02 9928 2100
 Priority:
 5 Day

NSW 2065 Fax: 02 9928 2504 Contact Name: Michael Stacey

Project Name: BANKSTOWN AIRPORT - SITE 2

Project ID: IA110700

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail							HOLD	втех	Eurofins mgt Suite B13	PFOS/PFOA/6:2FTS	Moisture Set	Eurofins mgt Suite B7
Melb	ourne Laborato	ory - NATA Site	# 1254 & 142	271			Х		Х		Х	Х
Sydı	ney Laboratory	- NATA Site # 1	8217			Х		Х				Х
Bris	bane Laborator	y - NATA Site #	20794							Χ		
Exte	rnal Laboratory	,										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID							
1	A2_TP24_0.0	May 30, 2016		Soil	S16-Jn01229	Х			Х	Х	Х	Х
2	A2_TP24_0.5	May 30, 2016		Soil	S16-Jn01230						Х	Х
3	A2_TP25_0.3	May 31, 2016		Soil	S16-Jn01231						Х	Х
4	A2_TP26_0.0	May 31, 2016		Soil	S16-Jn01232	Х			Х	Х	Х	Х
5	A2_TP26_1.0	May 31, 2016		Soil	S16-Jn01233						Х	Х
6	A2_TP27_0.0	May 31, 2016		Soil	S16-Jn01234						Χ	Х
7	A2_TP28_0.3	May 31, 2016		Soil	S16-Jn01235						Χ	Х
8	A2_TP29_0.0	May 31, 2016		Soil	S16-Jn01236	Х			Х	Χ	Χ	Х
9	A2_TP29_0.5	May 31, 2016		Soil	S16-Jn01237						Х	Х
10	A2_TP30_0.2	May 31, 2016		Soil	S16-Jn01238						Χ	Х



Melbourne

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Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400

NATA # 1261 Site # 18217

Received:

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

Jun 1, 2016 3:45 PM

ABN - 50 005 085 521 e.mail: EnviroSales@eurofins.com web: www.eurofins.com.au

Order No.:

IA110700

Company Name:

Jacobs Group (Australia) P/L NSW

Address:

Level 4. 100 Christie St

St Leonards

NSW 2065

Project Name: Project ID:

BANKSTOWN AIRPORT - SITE 2

IA110700

Report #: 502799 Due: Jun 8, 2016 Phone: 02 9928 2100 Priority: 5 Day Fax: 02 9928 2504 **Contact Name:** Michael Stacey

Eurofins | mgt Analytical Services Manager : Andrew Black

	Sample Detail						HOLD	ВТЕХ	Eurofins mgt Suite B13	PFOS/PFOA/6:2FTS	Moisture Set	Eurofins mgt Suite B7
Melk	ourne Laborato	ory - NATA Site	# 1254 & 142	71			Χ		Χ		Х	Х
Syd	ney Laboratory	- NATA Site # 1	8217			Х		Χ				Х
Bris	bane Laborator	y - NATA Site #	20794							Х		
Exte	rnal Laboratory											
11	A2_TP31_0.0	May 31, 2016		Soil	S16-Jn01239						Х	Χ
12	A2_TP32_0.0	May 31, 2016		Soil	S16-Jn01240						Х	Χ
13	A2_TP33_0.0	May 31, 2016		Soil	S16-Jn01241	Х			Х	Х	Х	Χ
14	A2_TP33_0.5	May 31, 2016		Soil	S16-Jn01242						Х	Χ
15	A2_QC05	May 31, 2016		Soil	S16-Jn01243						Х	Х
16	A2_QC07	May 31, 2016		Soil	S16-Jn01244						Х	Χ
17	A2_TP34_0.0	Jun 01, 2016		Soil	S16-Jn01245	Х			Χ	Х	Х	Х
18	A2_TP34_0.3	Jun 01, 2016		Soil	S16-Jn01246						Х	Х
19	A2_TP35_0.0	Jun 01, 2016		Soil	S16-Jn01247				Χ	Х	Х	Х
20	A2_TP35_0.2	Jun 01, 2016		Soil	S16-Jn01248	Х						
21	A2_TP35_1.0	Jun 01, 2016		Soil	S16-Jn01249						Χ	Х



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Melbourne

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NATA # 1261 Site # 18217

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

Company Name: Jacobs Group (Australia) P/L NSW Order No.: IA110700 Received: Jun 1, 2016 3:45 PM

Address: Level 4. 100 Christie St Report #: 502799 Due: Jun 8, 2016 St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 **Contact Name:** Michael Stacey

Project Name: **BANKSTOWN AIRPORT - SITE 2**

Project ID: IA110700 **Eurofins | mgt Analytical Services Manager : Andrew Black**

	Sample Detail							втех	Eurofins mgt Suite B13	PFOS/PFOA/6:2FTS	Moisture Set	Eurofins mgt Suite B7
Mell	oourne Laborato	ory - NATA Site	# 1254 & 142	271			Х		Х		Х	Х
Syd	ney Laboratory	- NATA Site # 1	8217			X		Х				Х
Bris	bane Laborator	y - NATA Site #	20794							Х		
Exte	rnal Laboratory											
22	TS160517-6	Jun 01, 2016		Soil	S16-Jn01250)		Х				
23	TB160517-6	Jun 01, 2016		Soil	S16-Jn01251			Х				
24	A2_TP24_1.0	May 30, 2016		Soil	S16-Jn01253	1	Х					
25	A2_TP25_0.0	May 31, 2016		Soil	S16-Jn01254		Х					
26	A2_TP25_0.5	May 31, 2016		Soil	S16-Jn01255	;	Х					
27	A2_TP25_1.0	May 31, 2016		Soil	S16-Jn01256	;	Х					
28	A2_TP26_0.4	May 31, 2016		Soil	S16-Jn01257		Х					
29	A2_TP26_0.6	May 31, 2016		Soil	S16-Jn01258	;	Х					
30	A2_TP27_0.3	May 31, 2016		Soil	S16-Jn01259)	Х					
31	A2_TP27_0.6	May 31, 2016		Soil	S16-Jn01260)	Х					
32	A2_TP27_1.0	May 31, 2016		Soil	S16-Jn01261		Х					



Company Name:

Project Name:

Address:

mgt

Jacobs Group (Australia) P/L NSW

BANKSTOWN AIRPORT - SITE 2

Level 4. 100 Christie St

St Leonards

NSW 2065

ABN - 50 005 085 521 e.mail: EnviroSales@eurofins.com web: www.eurofins.com.au

Melbourne

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Site # 1254 & 14271

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Order No.: IA110700 Received: Jun 1, 2016 3:45 PM

 Report #:
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 Phone:
 02 9928 2100
 Priority:
 5 Day

Fax: 02 9928 2504 Contact Name: Michael Stacey

Project ID: IA110700

Eurofins | mgt Analytical Services Manager : Andrew Black

	Sample Detail						HOLD	ВТЕХ	Eurofins mgt Suite B13	PFOS/PFOA/6:2FTS	Moisture Set	Eurofins mgt Suite B7
Melk	ourne Laborato	ory - NATA Site	# 1254 & 1427	71			Х		Х		Х	Х
Syd	ney Laboratory	- NATA Site # 1	8217			Х		Х				Х
Bris	bane Laborator	y - NATA Site #	20794							Х		
Exte	rnal Laboratory											
33	A2_TP28_0.0	May 31, 2016		Soil	S16-Jn01262		Х					
34	A2_TP28_0.5	May 31, 2016		Soil	S16-Jn01263		Х					
35	A2_TP28_1.0	May 31, 2016		Soil	S16-Jn01264		Х					
36	A2_TP29_0.3	May 31, 2016		Soil	S16-Jn01265		Х					
37	A2_TP29_1.0	May 31, 2016		Soil	S16-Jn01266		Х					
38	A2_TP30_0.0	May 31, 2016		Soil	S16-Jn01267		Х					
39	A2_TP30_0.5	May 31, 2016		Soil	S16-Jn01268		Х					
40	A2_TP30_1.0	May 31, 2016		Soil	S16-Jn01269		Х					
41	A2_TP31_0.5	May 31, 2016		Soil	S16-Jn01270		Х					
42	A2_TP31_1.0	May 31, 2016		Soil	S16-Jn01271		Х					
43	A2_TP32_0.2	May 31, 2016		Soil	S16-Jn01272		Х					

Report Number: 502799-AID



Melbourne Laboratory - NATA Site # 1254 & 14271

Jun 01, 2016

Sydney Laboratory - NATA Site # 18217

A2_TP32_0.5 | May 31, 2016

A2_TP32_1.0 | May 31, 2016

A2_TP33_0.2 May 31, 2016

A2_TP33_1.0 | May 31, 2016

A2_TP34_0.5 Jun 01, 2016

A2_TP35_0.5 Jun 01, 2016

Brisbane Laboratory - NATA Site # 20794

Soil

Soil

Soil

Soil

Soil

Soil

Soil

Sample Detail

ABN = 50 005 085 521 e-mail : EnviroSales@eurofins.com_web : www.eurofins.com.au

HOLD

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Χ Χ

Χ

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Χ

Χ

27 2 6

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S16-Jn01273

S16-Jn01274

S16-Jn01275

S16-Jn01276

S16-Jn01277

S16-Jn01278

S16-Jn01279

Asbestos - WA guidelines

Melbourne

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Site # 1254 & 14271

Sydney Unit F3. Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400 NATA # 1261 Site # 18217

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

02 9928 2504 **Contact Name:** Michael Stacey

Company Name:	Jacobs Group (Australia) P/L NSW	Order No.: IA110700	Received:	Jun 1, 2016 3:45 P
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Address: Level 4, 100 Christie St Report #: 502799 Due: Jun 8, 2016 St Leonards Phone: 02 9928 2100 **Priority:** 5 Day

NSW 2065 Fax: **Project Name: BANKSTOWN AIRPORT - SITE 2**

Project ID: IA110700 Eurofins | mgt Analytical Services Manager : Andrew Black

PFOS/PFOA/6:2FTS

Moisture Set Eurofins | mgt

Χ Χ

Suite

В7

Χ

Eurofins | mgt Suite B13

Χ

Х

Х

External Laboratory

A2_TP34_1.0

Test Counts



Internal Quality Control Review and Glossary

General

- 1. QC data may be available on request.
- 2. All soil results are reported on a dry basis, unless otherwise stated
- 3. Samples were analysed on an 'as received' basis.
- 4. This report replaces any interim results previously issued.

Holding Times

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

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

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w: weight for weight basis grams per kilogram
Filter loading: fibres/100 graticule areas

Reported Concentration: fibres/mL Flowrate: L/min

Terms

ΑF

Date Reported: Jun 08, 2016

Dry Where a moisture has been determined on a solid sample the result is expressed on a dry basis.

LOR Limit of Reporting.
COC Chain of custody
SRA Sample Receipt Advice

ISO International Stardards Organisation

AS Australian Standards

WA DOH Western Australia Department of Health

NOHSC National Occupational Health and Safety Commission

ACM Bonded asbestos-containing material means any material containing more than 1% asbestos and comprises asbestos-containing-material which is in sound condition,

although possibly broken or fragmented, and where the asbestos is bound in a matrix such as cement or resin. Common examples of ACM include but are not limited to: pipe and boiler insulation, sprayed-on fireproofing, troweled-on acoustical plaster, floor tile and mastic, floor linoleum, transite shingles, roofing materials, wall and ceiling plaster, ceiling tiles, and gasket materials. This term is restricted to material that cannot pass a 7 mm x 7 mm sieve. This sieve size is selected because it approximates the thickness of common asbestos cement sheeting and for fragments to be smaller than this would imply a high degree of damage and hence potential

for fibre release.

FA FA comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. This type of friable asbestos

is defined here as asbestos material that is in a degraded condition such that it can be broken or crumbled by hand pressure. This material is typically unbonded or

was previously bonded and is now significantly degraded (crumbling).

PACM Presumed Asbestos-Containing Material means thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later

than 1980 that are assumed to contain greater than one percent asbestos but have not been sampled or analyzed to verify or negate the presence of asbestos.

Asbestos fines (AF) are defined as free fibres, or fibre bundles, smaller than 7mm. It is the free fibres which present the greatest risk to human health, although very

small fibres (< 5 microns in length) are not considered to be such a risk. AF also includes small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve.

(Note that for bonded ACM fragments to pass through a 7 mm x 7 mm sieve implies a substantial degree of damage which increases the potential for fibre release.)

AC Asbestos cement means a mixture of cement and asbestos fibres (typically 90:10 ratios).

Page 9 of 10

Report Number: 502799-AID



Comments

Sample Integrity

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

Qualifier Codes/Comments

Code Description N/A Not applicable

M11 NATA accreditation does not cover the performance of this service.

Authorised by:

Rhys Thomas Senior Analyst-Asbestos (NSW)

Glenn Jackson

National Operations Manager

Final Report - this report replaces any previously issued Report

- Indicates Not Requested

Date Reported: Jun 08, 2016

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

Uncertainty data is available on request

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



ABN - 50 005 085 521

e.mail: EnviroSales@eurofins.com

web: www.eurofins.com.au

Melbourne 3-5 Kingston Town Close Oakleigh Vic 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400 NATA # 1261 Site # 18217 Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Sample Receipt Advice

Company name: Jacobs Group (Australia) P/L NSW

Contact name: Michael Stacey

Project name: BANKSTOWN AIRPORT - SITE 2

Project ID: IA110700 COC number: Not provided

Turn around time: 5 Day

Date/Time received: Jun 1, 2016 3:45 PM

Eurofins | mgt reference: 502799

Sample information

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

Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone: (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Michael Stacey - michael.stacey@jacobs.com.





CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

MEXICOLUMN MARKEN PLANTE DE APPROPRIE Y LIAMBER APPROPRIE 10 AM 2 019

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Eurofins mgt Sydney Lab

Unit F3Building F 16Mars Rd LaneCove West NSW 2066 P +612 9900 8400 E EnviroSampleNSW@eurofins.com.au

Eurofins | mgt Brisbons son Unit 1,21Smailwood Place Murarrie QLD 4172 P +617 3902 4600 E Enviros ampleQLD generof inscom au

Eurofins (mgt Molsourne Lab 2 Kingst on Town Close, Oakleigh, VIC 3196 P +61 38564 5000 F +6138564 5090 E Envir oSample Vic @eurof Ins com.au

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Page 1 of 5

CHAIN OF CUSTODY RECORD

ABN 50005 085 521

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Eurofine | mgt

Unit F3Building F 16Mars Rd, Lane Cove West, NSW 2066 P +612 9900 8400 E EnviroSampleNSW@eurof ins.com.au

Eurofins (mg1 Brisbano tab Unit 1,21SmallwoodPlace Murarrie QLD 4172 P +61739024600 E EnviroSampleQLD@eurofins.com au

Eurofine | mg1 Malbourne Lab 2 Kingsl on Town Close, Oakleigh, MC 3166 P +61 38564 5000 F +61 38564 5090 E Envir oSampleVic @eurof ins. com.au

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CHAIN OF CUSTODY RECORD

MET ME MARKET PERSONAL PROPERTY NAMED ASSESSMENT OF THE PERSON

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Eurofins | mg

Unit F3Building F 15Mars Rd Lane Cove West NSW 2066 P +512 9900 8400 E EnviroSampleNSW@eurofins.com.au

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Bankstown Airport - Site 2 BLAIR CUMMINCA Project Name TA 110700 Project Manager Purchase Order Jacobs Company Electronic Results ESdat Eurofinstmgt Quote 160413JACN TA110700 Project No Format Level 4 100 Christie Street Address St Leonards NSW 2066 Asbestos - WA/NEPM Guidelines - Quantitative (0.001% w/w) Michael.Stacey@jacobs.c ਲੋ Eurofins mgt Suite: B6 TRH/ BTEXN/ As, Cd, Cr, Cu, N, Polycyclic Aromatic Hydrocarbons (PAH) -. Trace Level **Email for Results** Perfluorooctanoic acid (PFOA) / Perfluorooctanesulfonic Perfluoroctanoic acid (PFOA) / Perfluoroctanesulfonic om, Blair Cumming @ jack com င် (6.2 FTS) / 6.2 fluorotelorner sulfonate (6.2 FTS) (PFOS) / 6:2 fluorotelomer suffonate (6:2 FTS) Michael Stacey Contact Name 잉 Eurofins mgt Suite: B13 OCP/ PCB 1DAY* Cation Exchange Capacity (CEC) Eurofins mgt Suite: B7 TRH/ BTEXN/ PAH/ As, Contact Phone 02 9032 1467 Turn Around Requirements 5DAY(SIG) Other(Special Direction Method of Shipment Containers Courier (B. Cummings Relinguished by Riml Amber Gar Hand Delivered (Signature) 106/16 (Time / Date) Sample Comments / DG Hazard Metrix Warning Client Sample ID Date 310216 Soil AZ_TP30_0.2 X AZ-TP30-0.5 AZ_TP30_1.0 AZ TP34. 0.0 A2-TP31-0.5 AZ-TP31-1.0 A2_TP32-0.0 X A2_TP32_0.2 A2-TP32-0.5 10 A2-TP32-1.0 × X X A2-TP33-0.0 A2-TP33-0.2-12 6,15 Temperature Time Signature BNE IN EL IPER IADL INEW IDAR Received By Laboratory Use Only Time Signature Report No Date __/_/_ SYD I BNE I MELIPER LADLINEW LOAR Received By Submission of samplest of the laboratory will be decined associeptance of Euroffris) ingl. Standard Term sand Conditions unless agreed of herwise. A copy of Euroffins I migl. Standard Terms and Conditionals

Page 3 of 5

2 Kingston Town Close Oakleigh, MC 3165 P. +61 Unit 1 21Smallwood Place, Murarrie, QLD 4172 P. Unit #38uilding F 16Mars Rd Lane Cove West HaW Ferstins Jmg1 Fur #f == 1 I met CHAIN OF CUSTODY RECORD +61739024600 P +612 9900 N-R00 Bellebaue Cab EnviroSampleQLD@eurofins.com au F EnviroSampleNSW@eurofins.com au Bankstown Auport - Site 2 BLAIR CUMMINGS Project Name IA110700 Project Manager Jacobs Purchase Order Company Electronic Results ESdat Eurofins|mgl Quote IA110700 160413JACN Project No Format Level 4 190 Christie Street Address St Leonards NSW 2065 Asbestos - WA/NEPM Guidelines - Cuantitative (0.001% w/w) Perfluomoctanoic acid (PFOA) / Perfluoroectanesulfonic acid Michael.Stacey@jacobs.c Perfluorocctanoic acid (PFOA) / Perfluorocctanesulfonic acid Eurofins mgt Suite: B6 TRH BTEXN As, Cd, Cr, Cu, Ni, om, Blair. Cummings & jacols com (PFOS) / 6:2 fluoratelenner sulfonate (6:2 FTS) Contact Name Michael Stacey Eurofins mgt Suite. B7 TRH BTEXN PAH As, Cd. Eurofins mgt Suite: B13 OCP/ PCB 20AY Cation Exchange Capacity (CEC) Contact Phone 02 9032 1467 Turn Around Ne 5 DAY(Std) Cher(Special Direction Method of Shipment Containers Courter (B. Cummings Relinquished by 125mL Amber Gieze Hand Delivered (Signature) (Time / Date) Sample Comments / DG Hazard M at rix Warning Client Sample ID Soil 31/05/11 A2-TP33-0.5 X 31/05/16 AZ-TP33_1.0 X AZ-QWS Please forward to ALS X A2.006 X AZ-QWT Please forward to AUS 31/05/16 AZ-QC08 7 X 1/06/16 X X X 42-TP34-00 AZ-TP34- 0.3 X AZ-TP34_ 0.5 AZ- TP34- 1.0 X X AZ-7P35_ 0.0 X AZ- TP35_ 0.2 16,16 Temperature BNE IMEL (PER JADL INEW JOAR Date Received By Laboratory Use Report No Only Date Signature 9YD (BNE [MELIPER | AOL | NEW DAR Received Dy

Report No

Signature

2Kingston Town Close Oakleigh MC 3166 P +61 Unit 1.21SmallwoodPlace Murarijie QLD 4172 P. Unit F3 Building F 16 Mars Rd Lane Cove West , NS W Eurpline | mgl CHAIN OF CUSTODY RECORD Eurotine tragt 385645000 E +613.8554.5000 P +512 9900 R-I60 Melbournetab Brisbacelab E EnviroSampleVic@euroLins.com au EnviroSampleQLD@eurofinscom au E EnviroSamplet(SW@eurofinscom au ABM/00005/08/5324 Bankstown Airport - Site 2 Esdat BLAIR CUMMINAS Project Name JA110700 Project Manager Jacobs Purchase Order Company Electronic Results Eurof ns mgt Quote IA110700 160413JACN Project No Level 4 100 Christie Street Address St Leonards NSW 2065 Asbestos - WANNEPM Guidelines - Quantitative (0.001% w/w) Perfluorooctanoic acid (PFOA) / Perfluorooctanes ulfonic acid Michael.Stacey@jacobs.c Eurofins mgt Suite: B6 TRH' BTEXNI As, Cd, Cr, Cu, NJ, Polycyclic Aromatic Hydrocarbons (PAH) - Trace Level Email for Results om, Blasi amming & jacos con (PFOS) / 6:2 fluorotelomer sulfonate (6:2 FTS) Michael Stacey Contact Name Eurofins mgt Suite. B7 TRH/ BTEXN/ PAH/ As, Cd. Eurofins mgt Suite: B13 OCP/ PCB Cation Exchange Capacity (CEC) Contact Phone 02 9032 1467 Turn Around Na Requirements SDAY(SId) | Other(Special Direction Method of Shipment Containers B. Cummings Courier (Relinquished by 125mL Amber Giarr Hand Delvers led (Signature) (Time / Date) Sample Comments | DG Hazard Matrix Client Sample ID Warning 1/06/16 AZ- TP35_ 0.5 Soil X AZ-TP35- 1.0 Soil TS 160517-6 X TB 160517-6 5-1 5 6 7 9 10 11 12 1.6.16 Signature Temperature Received By ST I BRIF I WELL I PER LADIL (NEW LOAR

Date

SYD TRNE THE LIPER FADLINEW LOAD

Laboratory Use

Only

Received By



Jacobs Group (Australia) P/L NSW Level 4, 100 Christie St St Leonards NSW 2065





Certificate of Analysis

NATA Accredited Accreditation Number 1261 Site Number 18217

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

Attention: Blair Cummings

Report 505196-W

Project name BANKSTOWN AIRPORT - SITE 2

Project ID IA110700
Received Date Jun 21, 2016

Client Sample ID			A2 - GW1	A2 - GW2	A2 - GW3	TS160614 - 16
Sample Matrix			Water	Water	Water	Water
Eurofins mgt Sample No.			S16-Jn19635	S16-Jn19636	S16-Jn19637	S16-Jn19638
Date Sampled			Jun 20, 2016	Jun 20, 2016	Jun 21, 2016	Jun 20, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Frac	tions					
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
ВТЕХ	•					
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	93%
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	92%
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	92%
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	93%
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	94%
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	93%
4-Bromofluorobenzene (surr.)	1	%	96	93	93	101
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	-
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
TRH C6-C10 less BTEX (F1)N04	0.02	mg/L	< 0.02	< 0.02	< 0.02	-
TRH >C10-C16 less Naphthalene (F2)N01	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
PFOS/PFOA/6:2FTS						
Perfluorooctanesulfonic acid (PFOS)	0.00001	mg/L	0.00004	0.00001	< 0.00001	-
Perfluorooctanoic acid (PFOA)	0.00001	mg/L	< 0.00001	< 0.00001	< 0.00001	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.00005	mg/L	< 0.00005	< 0.00005	< 0.00005	-
13C-PFHxA (surr.)	1	%	120	113	99	-
13C8-PFOS (surr.)	1	%	42	28	21	-
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	0.001	< 0.001	0.002	-
Cadmium (filtered)	0.0001	mg/L	< 0.0001	0.0003	0.0002	-
Chromium (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	0.014	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	0.018	-
Mercury (filtered)	0.0001	mg/L	0.0001	< 0.0001	< 0.0001	-



Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference Heavy Metals	LOR	Unit	A2 - GW1 Water S16-Jn19635 Jun 20, 2016	A2 - GW2 Water S16-Jn19636 Jun 20, 2016	A2 - GW3 Water S16-Jn19637 Jun 21, 2016	TS160614 - 16 Water S16-Jn19638 Jun 20, 2016
Nickel (filtered)	0.001	mg/L	0.003	0.034	0.21	-
Zinc (filtered)	0.005	mg/L	< 0.005	0.044	0.17	-

Client Sample ID			TB160614 - 16	A2 - QC09	A2 - GW1	A2 - GW2
Sample Matrix			Water	Water	Water (Trace)	Water (Trace)
Eurofins mgt Sample No.			S16-Jn19639	S16-Jn19640	S16-Jn19641	S16-Jn19642
Date Sampled			Jun 20, 2016	Jun 21, 2016	Jun 20, 2016	Jun 20, 2016
Test/Reference	LOR	Unit	J	3	20.11 20, 2010	
Total Recoverable Hydrocarbons - 1999 NEPM		Offic				
TRH C6-C9	0.02	mg/L	-	< 0.02	-	_
TRH C10-C14	0.05	mg/L	_	< 0.05	_	_
TRH C15-C28	0.03	mg/L	_	< 0.1	_	_
TRH C29-C36	0.1	mg/L	_	< 0.1	_	_
TRH C10-36 (Total)	0.1	mg/L	_	< 0.1	_	_
BTEX	1 0.1	g/ <u></u>		10.1		
Benzene	0.001	mg/L	< 0.001	< 0.001	-	_
Toluene	0.001	mg/L	< 0.001	< 0.001	-	-
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	-	-
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	-	-
o-Xylene	0.001	mg/L	< 0.001	< 0.001	-	-
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	-	-
4-Bromofluorobenzene (surr.)	1	%	93	92	-	-
Total Recoverable Hydrocarbons - 2013 NEPM	Fractions					
Naphthalene ^{N02}	0.01	mg/L	-	< 0.01	-	-
TRH C6-C10	0.02	mg/L	-	< 0.02	-	-
TRH C6-C10 less BTEX (F1)N04	0.02	mg/L	-	< 0.02	-	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	-	< 0.05	-	-
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Acenaphthylene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Anthracene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Benz(a)anthracene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Benzo(a)pyrene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Benzo(b&j)fluoranthene ^{N07}	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Benzo(g.h.i)perylene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Benzo(k)fluoranthene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Chrysene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Dibenz(a.h)anthracene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Fluoranthene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Fluorene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Indeno(1.2.3-cd)pyrene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Naphthalene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Phenanthrene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Pyrene	0.00001	mg/L	-	-	< 0.00001	< 0.00001
Total PAH*	0.00001	mg/L	-	-	< 0.00005	< 0.00005
2-Fluorobiphenyl (surr.)	1	%	-	-	101	106
p-Terphenyl-d14 (surr.)	1	%	-	-	104	120



Client Sample ID Sample Matrix			TB160614 - 16 Water	A2 - QC09 Water	A2 - GW1 Water (Trace)	A2 - GW2 Water (Trace)
Eurofins mgt Sample No.			S16-Jn19639	S16-Jn19640	S16-Jn19641	S16-Jn19642
Date Sampled			Jun 20, 2016	Jun 21, 2016	Jun 20, 2016	Jun 20, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
TRH >C10-C16	0.05	mg/L	=	< 0.05	-	-
TRH >C16-C34	0.1	mg/L	-	< 0.1	-	-
TRH >C34-C40	0.1	mg/L	-	< 0.1	-	-
PFOS/PFOA/6:2FTS						
Perfluorooctanesulfonic acid (PFOS)	0.00001	mg/L	-	< 0.00001	-	-
Perfluorooctanoic acid (PFOA)	0.00001	mg/L	-	< 0.00001	-	-
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	0.00005	mg/L	-	< 0.00005	-	-
13C-PFHxA (surr.)	1	%	-	105	-	-
13C8-PFOS (surr.)	1	%	-	26	-	-
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	-	0.002	-	-
Cadmium (filtered)	0.0001	mg/L	-	0.0002	-	-
Chromium (filtered)	0.001	mg/L	-	< 0.001	-	-
Copper (filtered)	0.001	mg/L	-	0.013	-	-
Lead (filtered)	0.001	mg/L	-	0.017	-	-
Mercury (filtered)	0.0001	mg/L	-	< 0.0001	-	-
Nickel (filtered)	0.001	mg/L	-	0.20	-	-
Zinc (filtered)	0.005	mg/L	-	0.17	-	-

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled			A2 - GW3 Water (Trace) S16-Jn19643 Jun 21, 2016	A2 - QC09 Water (Trace) S16-Jn19644 Jun 21, 2016
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons	1			
Acenaphthene	0.00001	mg/L	< 0.00001	< 0.00001
Acenaphthylene	0.00001	mg/L	< 0.00001	< 0.00001
Anthracene	0.00001	mg/L	< 0.00001	< 0.00001
Benz(a)anthracene	0.00001	mg/L	< 0.00001	< 0.00001
Benzo(a)pyrene	0.00001	mg/L	< 0.00001	< 0.00001
Benzo(b&j)fluoranthene ^{N07}	0.00001	mg/L	< 0.00001	< 0.00001
Benzo(g.h.i)perylene	0.00001	mg/L	< 0.00001	< 0.00001
Benzo(k)fluoranthene	0.00001	mg/L	< 0.00001	< 0.00001
Chrysene	0.00001	mg/L	< 0.00001	< 0.00001
Dibenz(a.h)anthracene	0.00001	mg/L	< 0.00001	< 0.00001
Fluoranthene	0.00001	mg/L	< 0.00001	< 0.00001
Fluorene	0.00001	mg/L	< 0.00001	< 0.00001
Indeno(1.2.3-cd)pyrene	0.00001	mg/L	< 0.00001	< 0.00001
Naphthalene	0.00001	mg/L	< 0.00001	< 0.00001
Phenanthrene	0.00001	mg/L	< 0.00001	< 0.00001
Pyrene	0.00001	mg/L	< 0.00001	< 0.00001
Total PAH*	0.00001	mg/L	< 0.00005	< 0.00005
2-Fluorobiphenyl (surr.)	1	%	99	92
p-Terphenyl-d14 (surr.)	1	%	112	100



Sample History

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

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

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

Description	Testing Site	Extracted	Holding Time
Eurofins mgt Suite B6 (filtered metals)			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Jun 22, 2016	7 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Sydney	Jun 21, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Jun 21, 2016	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Jun 22, 2016	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8 filtered	Sydney	Jun 21, 2016	28 Day
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			
Polycyclic Aromatic Hydrocarbons	Sydney	Jun 22, 2016	7 Day
- Method: E007 Polyaromatic Hydrocarbons (PAH)			
PFOS/PFOA/6:2FTS	Brisbane	Jun 21, 2016	14 Day

⁻ Method: LTM-ORG-2100 Analysis of PFCs in environmental samples by LC-MS/MS

Report Number: 505196-W



Melbourne

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Company Name: Jacobs Group (Australia) P/L NSW

Address: Level 4, 100 Christie St

> St Leonards NSW 2065

BANKSTOWN AIRPORT - SITE 2 Project Name:

Project ID: IA110700 Order No.: IA110700 Received: Jun 21, 2016 5:00 PM

Report #: 505196 Due: Jun 28, 2016 Phone: 02 9928 2100 Priority: 5 Day

Fax: 02 9928 2504 **Contact Name: Blair Cummings**

Eurofins | mgt Analytical Services Manager : Andrew Black

Molle			mple Detail	174		Polycyclic Aromatic Hydrocarbons	втех	PFOS/PFOA/6:2FTS	Eurofins mgt Suite B6 (filtered metals)
	ourne Laboratoney			.71		Х	Х		Х
	pane Laboratory						,	Х	
	rnal Laboratory								
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID				
1	A2 - GW1	Jun 20, 2016		Water	S16-Jn19635			Х	Х
2	A2 - GW2	Jun 20, 2016		Water	S16-Jn19636			Х	Х
3	A2 - GW3	Jun 21, 2016		Water	S16-Jn19637			Х	Х
4	TS160614 - 16	Jun 20, 2016		Water	S16-Jn19638		Х		
5	TB160614 - 16	Jun 20, 2016		Water	S16-Jn19639		Х		
6	A2 - QC09	Jun 21, 2016		Water	S16-Jn19640			Х	Х
7	A2 - GW1	Jun 20, 2016		Water (Trace)	S16-Jn19641	Х			
8	A2 - GW2	Jun 20, 2016		Water (Trace)	S16-Jn19642	Х			
9	A2 - GW3	Jun 21, 2016		Water (Trace)	S16-Jn19643	Х			
10	A2 - QC09	Jun 21, 2016		Water (Trace)	S16-Jn19644	Х			

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IA110700

Project ID:

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 Level 4, 100 Christie St
 Report #:
 505196
 Due:
 Jun 28, 2016

St Leonards Phone: 02 9928 2100 Priority: 5 Day

NSW 2065 Fax: 02 9928 2504 Contact Name: Blair Cummings

Project Name: BANKSTOWN AIRPORT - SITE 2

втех Polycyclic Aromatic Hydrocarbons PFOS/PFOA/6:2FTS Eurofins | mgt Suite B6 (filtered metals) Sample Detail Melbourne Laboratory - NATA Site # 1254 & 14271 Χ Sydney Laboratory - NATA Site # 18217 Χ Χ Brisbane Laboratory - NATA Site # 20794 Χ **External Laboratory** 4 2 **Test Counts**



Internal Quality Control Review and Glossary

General

- 1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 4. Results are uncorrected for matrix spikes or surrogate recoveries.
- 5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise
- 6. Samples were analysed on an 'as received' basis. 7. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

Units

 mg/kg: milligrams per Kilogram
 mg/l: milligrams per litre

 ug/l: micrograms per litre
 ppm: Parts per million

 ppb: Parts per billion
 %: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry Where a moisture has been determined on a solid sample the result is expressed on a dry basis.

LOR Limit of Reporting.

SPIKE Addition of the analyte to the sample and reported as percentage recovery.

RPD Relative Percent Difference between two Duplicate pieces of analysis.

LCS Laboratory Control Sample - reported as percent recovery
CRM Certified Reference Material - reported as percent recovery

Method Blank In the case of solid samples these are performed on laboratory certified clean sands

In the case of water samples these are performed on de-ionised water.

Surr - Surrogate The addition of a like compound to the analyte target and reported as percentage recovery.

DuplicateA second piece of analysis from the same sample and reported in the same units as the result to show comparison.

Batch Duplicate A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.

Batch SPIKE Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.

USEPA United States Environmental Protection Agency

APHA American Public Health Association

TCLP Toxicity Characteristic Leaching Procedure

COC Chain of Custody
SRA Sample Receipt Advice

CP Client Parent - QC was performed on samples pertaining to this report

NCP Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within

TEQ Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

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

QC Data General Comments

- 1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxaphene is not added to the Spike.
- 5. Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- 6. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time.

 Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- 8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- 9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Report Number: 505196-W



Quality Control Results

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Method Blank					
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	_				
TRH C6-C9	mg/L	< 0.02	0.02	Pass	
TRH C10-C14	mg/L	< 0.05	0.05	Pass	
TRH C15-C28	mg/L	< 0.1	0.1	Pass	
TRH C29-C36	mg/L	< 0.1	0.1	Pass	
Method Blank					
BTEX					
Benzene	mg/L	< 0.001	0.001	Pass	
Toluene	mg/L	< 0.001	0.001	Pass	
Ethylbenzene	mg/L	< 0.001	0.001	Pass	
m&p-Xylenes	mg/L	< 0.002	0.002	Pass	
o-Xylene	mg/L	< 0.001	0.001	Pass	
Xylenes - Total	mg/L	< 0.003	0.003	Pass	
Method Blank	<u> </u>				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene	mg/L	< 0.01	0.01	Pass	
TRH C6-C10	mg/L	< 0.02	0.02	Pass	
Method Blank	1119/2	1 0.02	0.02	1 400	
Polycyclic Aromatic Hydrocarbons				I	
Acenaphthene	mg/L	< 0.00001	0.00001	Pass	
Acenaphthylene	mg/L	< 0.00001	0.00001	Pass	
Anthracene	mg/L	< 0.00001	0.00001	Pass	
		< 0.00001	0.00001	Pass	
Benzo(a)anthracene Benzo(a)pyrene	mg/L	< 0.00001	0.00001	Pass	
Benzo(b&j)fluoranthene	mg/L mg/L	< 0.00001	0.00001	Pass	
Benzo(g.h.i)perylene		< 0.00001	0.00001	Pass	
	mg/L				
Benzo(k)fluoranthene	mg/L	< 0.00001	0.00001	Pass	
Chrysene Diagram (a h) anthropour	mg/L	< 0.00001	0.00001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.00001	0.00001	Pass	
Fluoranthene	mg/L	< 0.00001	0.00001	Pass	
Fluorene	mg/L	< 0.00001	0.00001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.00001	0.00001	Pass	
Naphthalene	mg/L	< 0.00001	0.00001	Pass	
Phenanthrene	mg/L	< 0.00001	0.00001	Pass	
Pyrene	mg/L	< 0.00001	0.00001	Pass	
Method Blank				I	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH >C10-C16	mg/L	< 0.05	0.05	Pass	
TRH >C16-C34	mg/L	< 0.1	0.1	Pass	
TRH >C34-C40	mg/L	< 0.1	0.1	Pass	
Method Blank		T T	T T	i	
PFOS/PFOA/6:2FTS	1				
Perfluorooctanesulfonic acid (PFOS)	mg/L	< 0.00001	0.00001	Pass	
Perfluorooctanoic acid (PFOA)	mg/L	< 0.00001	0.00001	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	mg/L	< 0.00005	0.00005	Pass	
Method Blank					
Heavy Metals					
Arsenic (filtered)	mg/L	< 0.001	0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0001	0.0001	Pass	
Chromium (filtered)	mg/L	< 0.001	0.001	Pass	
Copper (filtered)	mg/L	< 0.001	0.001	Pass	



Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Lead (filtered)	mg/L	< 0.001	0.001	Pass	
Mercury (filtered)	mg/L	< 0.0001	0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001	0.001	Pass	
Zinc (filtered)	mg/L	< 0.005	0.005	Pass	
LCS - % Recovery					
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	%	78	70-130	Pass	
TRH C10-C14	%	95	70-130	Pass	
LCS - % Recovery		,			
ВТЕХ					
Benzene	%	90	70-130	Pass	
Toluene	%	91	70-130	Pass	
Ethylbenzene	%	93	70-130	Pass	
m&p-Xylenes	%	96	70-130	Pass	
o-Xylene	%	96	70-130	Pass	
Xylenes - Total	%	96	70-130	Pass	
LCS - % Recovery					
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene	%	84	70-130	Pass	
TRH C6-C10	%	91	70-130	Pass	
LCS - % Recovery					
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	%	96	70-130	Pass	
Acenaphthylene	%	79	70-130	Pass	
Anthracene	%	109	70-130	Pass	
Benz(a)anthracene	%	105	70-130	Pass	
Benzo(a)pyrene	%	101	70-130	Pass	
Benzo(b&j)fluoranthene	%	116	70-130	Pass	
Benzo(g.h.i)perylene	%	108	70-130	Pass	
Benzo(k)fluoranthene	%	117	70-130	Pass	
Chrysene	%	117	70-130	Pass	
Dibenz(a.h)anthracene	%	99	70-130	Pass	
Fluoranthene	%	115	70-130	Pass	
Fluorene	%	93	70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	101	70-130	Pass	
Naphthalene	%	119	70-130	Pass	
Phenanthrene	%	103	70-130	Pass	
Pyrene	%	118	70-130	Pass	
LCS - % Recovery		T	T	ı	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH >C10-C16	%	101	70-130	Pass	
LCS - % Recovery					
PFOS/PFOA/6:2FTS	1 .	+		_	-
Perfluorooctanesulfonic acid (PFOS)	%	114	50-150	Pass	-
Perfluorooctanoic acid (PFOA)	%	118	50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTS)	%	119	50-150	Pass	
LCS - % Recovery		T T			
Heavy Metals	e:	1 00		_	
Arsenic (filtered)	%	98	70-130	Pass	-
Cadmium (filtered)	%	104	70-130	Pass	
Chromium (filtered)	%	96	70-130	Pass	
Copper (filtered)	%	97	70-130	Pass	
Lead (filtered)	%	106	70-130	Pass	
Mercury (filtered)	%	99	70-130	Pass	L



Te	est		Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Nickel (filtered)				99	70-130	Pass	
Zinc (filtered)			%	102	70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
Total Recoverable Hydrocarbo	ons - 1999 NEPM Fract	ions		Result 1			
TRH C6-C9	S16-Jn17400	NCP	%	78	70-130	Pass	
Spike - % Recovery							
BTEX				Result 1			
Benzene	S16-Jn17400	NCP	%	92	70-130	Pass	
Toluene	S16-Jn17400	NCP	%	93	70-130	Pass	
Ethylbenzene	S16-Jn17400	NCP	%	95	70-130	Pass	
m&p-Xylenes	S16-Jn17400	NCP	%	97	70-130	Pass	
o-Xylene	S16-Jn17400	NCP	%	97	70-130	Pass	
Xylenes - Total	S16-Jn17400	NCP	%	97	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbo	ons - 2013 NEPM Fract	ions		Result 1			
Naphthalene	S16-Jn17400	NCP	%	89	70-130	Pass	
TRH C6-C10	S16-Jn17400	NCP	%	88	70-130	Pass	
Spike - % Recovery							
Heavy Metals				Result 1			
Arsenic (filtered)	M16-Jn21216	NCP	%	105	70-130	Pass	
Cadmium (filtered)	M16-Jn21216	NCP	%	102	70-130	Pass	
Chromium (filtered)	M16-Jn21216	NCP	%	104	70-130	Pass	
Copper (filtered)	M16-Jn21216	NCP	%	85	70-130	Pass	
Lead (filtered)	M16-Jn21216	NCP	%	85	70-130	Pass	
Nickel (filtered)	M16-Jn21216	NCP	%	96	70-130	Pass	
Zinc (filtered)	M16-Jn21216	NCP	%	95	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbo	ons - 1999 NEPM Fract	ions		Result 1			
TRH C10-C14	S16-Jn19637	СР	%	97	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbo	ons - 2013 NEPM Fract	ions		Result 1			
TRH >C10-C16	S16-Jn19637	СР	%	102	70-130	Pass	
Spike - % Recovery							
Polycyclic Aromatic Hydrocar	bons			Result 1			
Acenaphthene	S16-Jn19642	СР	%	88	70-130	Pass	
Acenaphthylene	S16-Jn19642	СР	%	83	70-130	Pass	
Anthracene	S16-Jn19642	СР	%	99	70-130	Pass	
Benz(a)anthracene	S16-Jn19642	СР	%	109	70-130	Pass	
Benzo(a)pyrene	S16-Jn19642	СР	%	122	70-130	Pass	
Benzo(b&j)fluoranthene	S16-Jn19642	СР	%	121	70-130	Pass	
Benzo(g.h.i)perylene	S16-Jn19642	СР	%	96	70-130	Pass	
Benzo(k)fluoranthene	S16-Jn19642	СР	%	116	70-130	Pass	
Chrysene	S16-Jn19642	СР	%	108	70-130	Pass	
Dibenz(a.h)anthracene	S16-Jn19642	СР	%	90	70-130	Pass	
Fluoranthene	S16-Jn19642	СР	%	110	70-130	Pass	
Fluorene	S16-Jn19642	СР	%	89	70-130	Pass	
Indeno(1.2.3-cd)pyrene	S16-Jn19642	СР	%	94	70-130	Pass	
Naphthalene	S16-Jn19642	СР	%	105	70-130	Pass	
Phenanthrene	S16-Jn19642	CP	%	93	70-130	Pass	
Pyrene	S16-Jn19642	СР	%	112	70-130	Pass	



mgt

Test	Lab Sample ID	QA	Units	Result 1			Acceptance	Pass	Qualifying
	Lab Sample ID	Source	Offics	ixesuit i			Limits	Limits	Code
Duplicate	4000 NEDIA E			D 1: 4		222	T	Г	
Total Recoverable Hydrocarbons -			"	Result 1	Result 2	RPD	000/	_	
TRH C6-C9	S16-Jn17399	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	S16-Jn19635	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	S16-Jn19635	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	S16-Jn19635	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate				Donali 4	DII O	DDD	T	I	
BTEX	040 1 47000	NOD	"	Result 1	Result 2	RPD	000/	_	
Benzene	S16-Jn17399	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S16-Jn17399	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S16-Jn17399	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S16-Jn17399	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S16-Jn17399	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	S16-Jn17399	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate	0040 NEDM E			D 1/4	D # 0		T	I	
Total Recoverable Hydrocarbons -			"	Result 1	Result 2	RPD	000/	_	
Naphthalene	S16-Jn17399	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	S16-Jn17399	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate	2040 NEDIA E			D 1/4		DDD	T	Ι	
Total Recoverable Hydrocarbons -				Result 1	Result 2	RPD		_	
TRH >C10-C16	S16-Jn19635	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	S16-Jn19635	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	S16-Jn19635	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate				I	I I		T		
Heavy Metals	T			Result 1	Result 2	RPD		_	
Arsenic (filtered)	M16-Jn21215	NCP	mg/L	0.011	0.012	3.0	30%	Pass	
Cadmium (filtered)	M16-Jn21215	NCP	mg/L	0.0002	0.0002	<1	30%	Pass	
Chromium (filtered)	M16-Jn21215	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	M16-Jn21215	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	M16-Jn21215	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	M16-Jn21215	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	M16-Jn21215	NCP	mg/L	0.034	0.034	1.0	30%	Pass	
Zinc (filtered)	M16-Jn21215	NCP	mg/L	0.050	0.052	3.0	30%	Pass	
Duplicate				T	I . I		T		
PFOS/PFOA/6:2FTS	1			Result 1	Result 2	RPD			
Perfluorooctanesulfonic acid (PFOS)	S16-Jn19636	СР	mg/L	0.00001	0.00001	2.0	30%	Pass	
Perfluorooctanoic acid (PFOA)	S16-Jn19636	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
1H.1H.2H.2H-	0.00000	<u> </u>	9,	10.00001	10.00001		3070		
perfluorooctanesulfonic acid (6:2		0.5							
FTS)	S16-Jn19636	СР	mg/L	< 0.00005	< 0.00005	<1	30%	Pass	
Duplicate Control of the land	_			Donali 4	D It O	DDD		Π	
Polycyclic Aromatic Hydrocarbons		0.0	"	Result 1	Result 2	RPD	000/	_	
Acenaphthene	S16-Jn19641	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Acenaphthylene	S16-Jn19641	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Anthracene	S16-Jn19641	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benz(a)anthracene	S16-Jn19641	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(a)pyrene	S16-Jn19641	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(b&j)fluoranthene	S16-Jn19641	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(g.h.i)perylene	S16-Jn19641	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Benzo(k)fluoranthene	S16-Jn19641	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Chrysene	S16-Jn19641	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Dibenz(a.h)anthracene	S16-Jn19641	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Fluoranthene	S16-Jn19641	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Fluorene	S16-Jn19641	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	



Duplicate									
Polycyclic Aromatic Hydrocarb	Result 1	Result 2	RPD						
Indeno(1.2.3-cd)pyrene	S16-Jn19641	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Naphthalene	S16-Jn19641	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Phenanthrene	S16-Jn19641	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	
Pyrene	S16-Jn19641	CP	mg/L	< 0.00001	< 0.00001	<1	30%	Pass	

Report Number: 505196-W



Comments

Sample Integrity

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

Qualifier Codes/Comments

Code Description

F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).

N01

Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.

F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes. N04

Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs N07

Authorised By

N02

Andrew Black Analytical Services Manager Ivan Taylor Senior Analyst-Metal (NSW) Jonathon Angell Senior Analyst-Organic (QLD) Ryan Hamilton Senior Analyst-Organic (NSW) Ryan Hamilton Senior Analyst-Volatile (NSW)



Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

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

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

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



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Melbourne 3-5 Kingston Town Close Oakleigh Vic 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400 NATA # 1261 Site # 18217 Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Sample Receipt Advice

Company name: Jacobs Group (Australia) P/L NSW

Contact name: Blair Cummings

Project name: BANKSTOWN AIRPORT - SITE 2

Project ID: IA110700 COC number: Not provided

Turn around time: 5 Day

Date/Time received: Jun 21, 2016 5:00 PM

Eurofins | mgt reference: 505196

Sample information

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

Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone: (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Blair Cummings - Blair.Cummings@jacobs.com.





0.0	

CHAIN OF CUSTODY RECORD ABN 50005 085 521

Sydney Lab

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EnviroSampleOtD@eurotins.com.au

2Kingst on Town Close Oaklergh, VIC 3166 — P +6.1 F +613.85645090 E EnviroSampleVic@eurofins.com.au

Comp	any Jacobs	-	Purchase	Order	-	PAIL	0700				Projection	danager			umm1	1gr		Pro	jeci N	lame	10	Bar	nkst	ou f	trognit	- Site Z									
	tuni a ann Chairtin C	trant	Eurofinsim	gl Quote			160413	JACN			Proje	ct No	I	Allo	700				ronic I Formi	Result	3 1	ESa	lat												
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Contact			pyraifa "Telal" e		S	m	nesulf 22 FT	0.0)					5	Тгасе	anesul 6.2 F				-	_	-	1DA			20AY	3DAY									
Contact	Phone 02 9 03 2 1467		eser aprelife		AHV As	OCP/ PC	onate (6	antitativ		y (CEC)			As, Cd,	PAH) -	uorooct fonate (ound ments				,		* Surcharges apply									
pecial D	pirection		le se avenue de se	Soil	RH BTEXN/P Pb, Zn, Hg	uite: B13 (A) / Perflu	lines - Ou	pH (CaCl2)	ge Capaci	% Clay content	Water	√ BTEXN/ Zn, Hg	ocarbons	OA) / Perfi			-	-	Co	ont eine	-				of Shipment									
Relinqui (Signé	sture)	1 106/16	Analyzic MetetWhere mekeles		Eurolins mgt Suite. B7 TRH/ BTEXN/ PAH/ As, Cd. Cr, Pb, Zn, Hg	Eurofins mgt Suite: B13 OCP/ PCB	Perfluorooctanoic acid (PFOA) / Perfluorooctanesulfonic acid (PFOS) / 6.2 fluorotelomer suffonate (6:2 FTS)	Asbestos - WANEPM Guidelines - Quantitative (0.001% w/w)	Hq	H	됩	Æ	五	Cation Exchange Capacity (CEC)	Cation Excha	Cation Excha	Cation Exchar	Cation Exchan	**************************************			Eurofins mgt Suite: B6 TRH' BTEXNV As, Cd, Cr, Cu, N, Pb. Zn, Hg	Polycyclic Aromatic Hydrocarbons (PAH) - Trace Level	Perfluorooctanoic acid (PFOA) / Perfluorooctanesulfonic acid (PFOS) / 6.2 fluorolelorms sulfonate (6.2 FTS)	BTEX		11 Playès	250mLPlartic	125mLPlavie	Spent Amber Olare	in Lanter Glaz	Jer	ΙΔ	Courier (Hand Delivere	ed
(Time /	Client Sample ID	Date	Matrix		Eurofins		Perfluor	Asbesto					Eurofins	Polyc	Perfluo		4				2	121		S	Jample Comm W	nents / DG Hazard arning									
1	A2- QW1	20/06/16	Water				1						X	×	X					Ī															
2	AZ- GWZ	20/06/16	1										X	X	X								Ц												
3	A2- GW3	21/06/16											×	X	X						1	L	Ц												
4	TS 160614 - 16	20/06/16								1						X						+													
5	TB160614-16	20/06/16	+							-					ļ	×		1.			4	1	-												
6	AZ- 2009	21/06/1	Water						-		-		X	X	X		_			-	1	4	Ш	-											
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11				-			+	-	+		+	-	-	-	-				H																
12	Received By	SU GALL	-6/ -	0	SAD TURE	IMEL IPES	E JADL I NEW	DAR	1	Date	121	DC , []	a 1	ime	19	60	Signatur e		N	16	郑	1		1	Temperature	9.1									
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CERTIFICATE OF ANALYSIS

Work Order : EM1606431

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Contact : BLAIR CUMMINGS

Address : 100 CHRISTIE STREET P O BOX 164

ST LEONARDS NSW. AUSTRALIA 2065

Telephone : +61 02 9928 2100

Project : IA110700

Order number : ---C-O-C number : ----

Sampler : ----

Site : Bankstown Airport - Site 2

Quote number : --
No. of samples received : 2

No. of samples analysed : 2

Page : 1 of 6

Laboratory : Environmental Division Melbourne

Contact : Carol Walsh

Address : 4 Westall Rd Springvale VIC Australia 3171

Telephone : +61-3-8549 9608

Date Samples Received : 02-Jun-2016 12:45

Date Analysis Commenced : 03-Jun-2016

Issue Date : 08-Jun-2016 12:05

NATA Accredited Laboratory 825
Accredited for compliance with
ISO/IEC 17025.



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	Position	Accreditation Category
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	Senior Semivolatile Instrument Chemist	Melbourne Organics, Springvale, VIC
, ,		

Page : 2 of 6 Work Order : EM1606431

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : IA110700

ALS

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) 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.

Page : 3 of 6 : EM1606431 Work Order

: JACOBS GROUP (AUSTRALIA) PTY LTD : IA110700 Client

Project



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	A2-QC06	A2-QC08	 	
,	Cli	ient sampli	ng date / time	[31-May-2016]	[31-May-2016]	 	
Compound	CAS Number	LOR	Unit	EM1606431-001	EM1606431-002	 	
p				Result	Result	 	
EA055: Moisture Content							
Moisture Content (dried @ 103°C)		1	%	10.3	9.6	 	
EG005T: Total Metals by ICP-AES							
Arsenic	7440-38-2	5	mg/kg	5	<5	 	
Cadmium	7440-43-9	1	mg/kg	<1	<1	 	
Chromium	7440-47-3	2	mg/kg	11	10	 	
Copper	7440-50-8	5	mg/kg	<5	12	 	
Lead	7439-92-1	5	mg/kg	13	15	 	
Nickel	7440-02-0	2	mg/kg	<2	8	 	
Zinc	7440-66-6	5	mg/kg	<5	18	 	
EG035T: Total Recoverable Merc							
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	 	
EP075(SIM)B: Polynuclear Aroma	atic Hydrocarbons						
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	 	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	 	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	 	
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	 	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	 	
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	 	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	 	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	 	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	 	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	 	
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	 	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	 	
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	 	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	 	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	 	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	 	
^ Sum of polycyclic aromatic hydroc	arbons	0.5	mg/kg	<0.5	<0.5	 	
^ Benzo(a)pyrene TEQ (zero)		0.5	mg/kg	<0.5	<0.5	 	
^ Benzo(a)pyrene TEQ (half LOR)		0.5	mg/kg	0.6	0.6	 	
^ Benzo(a)pyrene TEQ (LOR)		0.5	mg/kg	1.2	1.2	 	
EP080/071: Total Petroleum Hydr	ocarbons						
C6 - C9 Fraction		10	mg/kg	<10	<10	 	

Page : 4 of 6 : EM1606431 Work Order

: JACOBS GROUP (AUSTRALIA) PTY LTD : IA110700 Client

Project

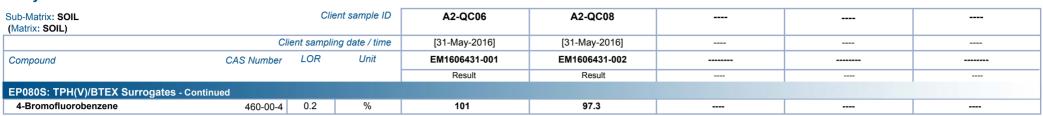


Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	A2-QC06	A2-QC08	 	
(1100111)	CI	ient sampli	ng date / time	[31-May-2016]	[31-May-2016]	 	
Compound	CAS Number	LOR	Unit	EM1606431-001	EM1606431-002	 	
•			-	Result	Result	 	
EP080/071: Total Petroleum Hydrocart	oons - Continued						
C10 - C14 Fraction		50	mg/kg	<50	<50	 	
C15 - C28 Fraction		100	mg/kg	<100	<100	 	
C29 - C36 Fraction		100	mg/kg	<100	<100	 	
^ C10 - C36 Fraction (sum)		50	mg/kg	<50	<50	 	
EP080/071: Total Recoverable Hydroc	arbons - NEPM 201	3 Fraction	ns				
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	 	
^ C6 - C10 Fraction minus BTEX	C6_C10-BTEX	10	mg/kg	<10	<10	 	
(F1)							
>C10 - C16 Fraction		50	mg/kg	<50	<50	 	
>C16 - C34 Fraction		100	mg/kg	<100	<100	 	
>C34 - C40 Fraction		100	mg/kg	<100	<100	 	
^ >C10 - C40 Fraction (sum)		50	mg/kg	<50	<50	 	
^ >C10 - C16 Fraction minus Naphthalene		50	mg/kg	<50	<50	 	
(F2)							
EP080: BTEXN							
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	 	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	 	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	 	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	 	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	 	
^ Sum of BTEX		0.2	mg/kg	<0.2	<0.2	 	
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	 	
Naphthalene	91-20-3	1	mg/kg	<1	<1	 	
EP075(SIM)S: Phenolic Compound Su							
Phenol-d6	13127-88-3	0.5	%	99.7	99.0	 	
2-Chlorophenol-D4	93951-73-6	0.5	%	100	99.6	 	
2.4.6-Tribromophenol	118-79-6	0.5	%	71.1	70.4	 	
EP075(SIM)T: PAH Surrogates							
2-Fluorobiphenyl	321-60-8	0.5	%	98.5	98.4	 	
Anthracene-d10	1719-06-8	0.5	%	119	116	 	
4-Terphenyl-d14	1718-51-0	0.5	%	109	112	 	
EP080S: TPH(V)/BTEX Surrogates							
1.2-Dichloroethane-D4	17060-07-0	0.2	%	101	98.3	 	
Toluene-D8	2037-26-5	0.2	%	86.5	81.1	 	

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Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : IA110700





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: JACOBS GROUP (AUSTRALIA) PTY LTD : IA110700 Client

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Surrogate Control Limits

Sub-Matrix: SOIL		Recovery	Limits (%)
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2.4.6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124





QUALITY CONTROL REPORT

Work Order : EM1606431

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Contact : BLAIR CUMMINGS

Address : 100 CHRISTIE STREET P O BOX 164

ST LEONARDS NSW, AUSTRALIA 2065

Telephone : +61 02 9928 2100

Project : IA110700

Order number : ----

C-O-C number : ----

Sampler : ----

Site : Bankstown Airport - Site 2

Quote number : ---
No. of samples received : 2

No. of samples analysed : 2

Page : 1 of 7

Laboratory : Environmental Division Melbourne

Contact : Carol Walsh

Address : 4 Westall Rd Springvale VIC Australia 3171

Telephone : +61-3-8549 9608

Date Samples Received : 02-Jun-2016

Date Analysis Commenced : 03-Jun-2016

Issue Date : 08-Jun-2016



NATA Accredited Laboratory 825 Accredited for compliance with ISO/IEC 17025.

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

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

Signatories

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

Signatories Position Accreditation Category

Dilani FernandoSenior Inorganic ChemistMelbourne Inorganics, Springvale, VICNancy WangSenior Semivolatile Instrument ChemistMelbourne Inorganics, Springvale, VICNancy WangSenior Semivolatile Instrument ChemistMelbourne Organics, Springvale, VIC

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Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : IA110700



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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						Laboratory I	Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Co	ntent (QC Lot: 474442)								
EM1606424-009	Anonymous	EA055-103: Moisture Content (dried @ 103°C)		1	%	22.2	21.2	4.83	0% - 20%
EM1606434-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)		1	%	8.1	6.7	18.8	No Limit
EG005T: Total Meta	ls by ICP-AES (QC Lot: 4	74725)							
EM1606400-015	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	4	4	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	7	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	9	6	31.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	145	122	17.2	0% - 20%
EM1606400-024	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	1	1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	4	4	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	9	8	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	11	13.8	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	12	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	32	26	20.0	No Limit
EG035T: Total Rec	overable Mercury by FIMS	G (QC Lot: 474726)							
EM1606400-015	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EM1606400-024	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP075(SIM)B: Polyr	uclear Aromatic Hydroca	rbons (QC Lot: 474677)							
EM1606429-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

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Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : IA110700



ub-Matrix: SOIL							Duplicate (DUP) Report		
aboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%
. /	nuclear Aromatic Hydro	carbons (QC Lot: 474677) - continued							
M1606429-001	Anonymous	EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
P080/071: Total Pe	troleum Hydrocarbons	(QC Lot: 474335)							
M1606411-036	Anonymous	EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.00	No Limit
M1606437-005	Anonymous	EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.00	No Limit
P080/071: Total Pe	etroleum Hydrocarbons	(QC Lot: 474676)							
M1606426-001	Anonymous	EP071: C15 - C28 Fraction		100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction		100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction		50	mg/kg	<50	<50	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)		50	mg/kg	<50	<50	0.00	No Limit
EM1606429-001	Anonymous	EP071: C15 - C28 Fraction		100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction		100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction		50	mg/kg	<50	<50	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)		50	mg/kg	<50	<50	0.00	No Limit
P080/071: Total Re	ecoverable Hydrocarbor	ns - NEPM 2013 Fractions (QC Lot: 474335)							
M1606411-036	Anonymous	EP080: C6 - C10 Fraction	C6 C10	10	mg/kg	<10	<10	0.00	No Limit
EM1606437-005	Anonymous	EP080: C6 - C10 Fraction	C6 C10	10	mg/kg	<10	<10	0.00	No Limit
P080/071: Total Re	•	ns - NEPM 2013 Fractions (QC Lot: 474676)	_		0 0				
M1606426-001	Anonymous	EP071: >C16 - C34 Fraction		100	mg/kg	<100	<100	0.00	No Limit
	•	EP071: >C34 - C40 Fraction		100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction		50	mg/kg	<50	<50	0.00	No Limit
		EP071: >C10 - C40 Fraction (sum)		50	mg/kg	<50	<50	0.00	No Limit
EM1606429-001	Anonymous	EP071: >C16 - C34 Fraction		100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction		100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction		50	mg/kg	<50	<50	0.00	No Limit
		EP071: >C10 - C40 Fraction (sum)		50	mg/kg	<50	<50	0.00	No Limit

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Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : IA110700



Sub-Matrix: SOIL						Laboratory L	Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC	Lot: 474335) - continue	ed							
EM1606411-036	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EM1606437-005	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

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Client ; JACOBS GROUP (AUSTRALIA) PTY LTD

Project : IA110700



Method Blank (MB) and Laboratory Control Spike (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 Spike (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	boratory Control Spike (LCS) Report		
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High	
EG005T: Total Metals by ICP-AES (QCLot: 474725)									
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	88.4	79	113	
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	100	87	115	
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	99.8	89	113	
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	99.4	90	116	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	95.9	85	107	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	101	89	111	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	99.3	89	111	
EG035T: Total Recoverable Mercury by FIMS (QCLot:	474726)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	92.4	85	103	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (Q0	CLot: 474677)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	101	80	121	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	93.1	70	130	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	110	80	120	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	104	70	124	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	106	80	122	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	111	80	126	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	106	70	128	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	105	80	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	88.6	70	130	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	103	80	126	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	3 mg/kg	88.7	70	124	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	88.5	75	125	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	85.2	65	125	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	78.8	65	128	
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	75.6	65	126	
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	78.1	65	127	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 474	4335)								
EP080: C6 - C9 Fraction		10	mg/kg	<10	36 mg/kg	106	66	130	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 474	4676)								
EP071: C10 - C14 Fraction		50	mg/kg	<50	751 mg/kg	94.5	65	131	
EP071: C15 - C28 Fraction		100	mg/kg	<100	3103 mg/kg	94.4	70	126	
EP071: C29 - C36 Fraction		100	mg/kg	<100	1482 mg/kg	111	70	122	
EP071: C10 - C36 Fraction (sum)		50	mg/kg	<50					

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Client ; JACOBS GROUP (AUSTRALIA) PTY LTD

Project : IA110700



Sub-Matrix: SOIL		Method Blank (MB)		Laboratory Control Spike (LC	S) Report			
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 20	13 Fractions (QCLo	ot: 474335)						
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	104	64	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 20	13 Fractions (QCLo	ot: 474676)						
EP071: >C10 - C16 Fraction		50	mg/kg	<50	1135 mg/kg	95.0	68	130
EP071: >C16 - C34 Fraction		100	mg/kg	<100	4080 mg/kg	98.0	72	116
EP071: >C34 - C40 Fraction		100	mg/kg	<100	162 mg/kg	106	38	132
EP071: >C10 - C40 Fraction (sum)		50	mg/kg	<50				
EP080: BTEXN (QCLot: 474335)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	112	74	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	113	75	129
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	108	72	124
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	4 mg/kg	113	72	132
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	113	76	130
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	110	66	132

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				M	atrix Spike (MS) Report		
				Spike	SpikeRecovery(%)	Recovery I	Limits (%)
aboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
G005T: Total Met	als by ICP-AES (QCLot: 474725)						
EM1606400-016	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	90.9	78	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	97.8	84	116
		EG005T: Chromium	7440-47-3	50 mg/kg	91.2	79	121
		EG005T: Copper	7440-50-8	50 mg/kg	90.7	82	124
		EG005T: Lead	7439-92-1	50 mg/kg	82.8	76	124
		EG005T: Nickel	7440-02-0	50 mg/kg	86.4	78	120
		EG005T: Zinc	7440-66-6	50 mg/kg	# Not	74	128
					Determined		
G035T: Total Re	coverable Mercury by FIMS (QCLot: 474726)						
M1606400-016	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	96.2	76	116
P075(SIM)B: Poly	vnuclear Aromatic Hydrocarbons (QCLot: 474677)						
M1606429-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	102	67	117
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	142	52	148

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Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : IA110700



Sub-Matrix: SOIL				Ma	trix Spike (MS) Report		
				Spike	SpikeRecovery(%)	Recovery L	mits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total F	Petroleum Hydrocarbons (QCLot: 474335) - continued						
EM1606411-040	Anonymous	EP080: C6 - C9 Fraction		28 mg/kg	79.5	42	131
EP080/071: Total F	Petroleum Hydrocarbons (QCLot: 474676)						
EM1606426-002	Anonymous	EP071: C10 - C14 Fraction		751 mg/kg	97.7	53	123
		EP071: C15 - C28 Fraction		3103 mg/kg	95.4	70	124
		EP071: C29 - C36 Fraction		1482 mg/kg	111	64	118
EP080/071: Total F	Recoverable Hydrocarbons - NEPM 2013 Fractions (QCI	_ot: 474335)					
EM1606411-040	Anonymous	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	73.9	39	129
EP080/071: Total F	Recoverable Hydrocarbons - NEPM 2013 Fractions (QCI	_ot: 474676)					
EM1606426-002	Anonymous	EP071: >C10 - C16 Fraction		1135 mg/kg	96.2	65	123
		EP071: >C16 - C34 Fraction		4080 mg/kg	98.7	67	121
		EP071: >C34 - C40 Fraction		162 mg/kg	116	44	126
EP080: BTEXN (Q	CLot: 474335)						
EM1606411-040	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	124	50	136
		EP080: Toluene	108-88-3	2 mg/kg	120	56	139



QA/QC Compliance Assessment to assist with Quality Review

Work Order : **EM1606431** Page : 1 of 4

Client : JACOBS GROUP (AUSTRALIA) PTY LTD Laboratory : Environmental Division Melbourne

 Contact
 : BLAIR CUMMINGS
 Telephone
 : +61-3-8549 9608

 Project
 : IA110700
 Date Samples Received
 : 02-Jun-2016

 Site
 : Bankstown Airport - Site 2
 Issue Date
 : 08-Jun-2016

Sampler :--- No. of samples received : 2
Order number :--- No. of samples analysed : 2

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

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

Summary of Outliers

Outliers: Quality Control Samples

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

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

Outliers: Analysis Holding Time Compliance

• NO Analysis Holding Time Outliers exist.

Outliers: Frequency of Quality Control Samples

NO Quality Control Sample Frequency Outliers exist.

Page : 2 of 4 Work Order : EM1606431

Client ; JACOBS GROUP (AUSTRALIA) PTY LTD

Project : IA110700

Outliers: Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: SOIL

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EM1606400016	Anonymous	Zinc	7440-66-6	Not		MS recovery not determined,
					Determined		background level greater than or
							equal to 4x spike level.

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.

Matrix: **SOIL**Evaluation: ▼ = Holding time breach; ✓ = Within holding time.

Soil Glass Jar - Unpreserved (EA055-103)	Matrix: GGIE						. Holding time	,	ir nording time.
EA055: Moisture Content Soil Glass Jar - Unpreserved (EA055-103) A2-QC08 A2-Q	Method		Sample Date	Ex	traction / Preparation			Analysis	
Soil Glass Jar - Unpreserved (EA055-103) A2-QC06, A2-QC08 31-May-2016	Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
A2-QC06, A2-QC08 31-May-2016 03-Jun-2016 14-Jun-2016 ✓ EG005T: Total Metals by ICP-AES Soil Glass Jar - Unpreserved (EG005T)	EA055: Moisture Content								
EG005T: Total Metals by ICP-AES Soil Glass Jar - Unpreserved (EG005T)	Soil Glass Jar - Unpreserved (EA055-103)								
Soil Glass Jar - Unpreserved (EG005T) A2-QC06, A2-QC08 31-May-2016 06-Jun-2016 27-Nov-2016 √ 07-Jun-2016 27-Nov-2016 √ 07-Jun-2016 27-Nov-2016 √ EG035T: Total Recoverable Mercury by FIMS Soil Glass Jar - Unpreserved (EG035T) A2-QC06, A2-QC08 31-May-2016 06-Jun-2016 28-Jun-2016 √ 07-Jun-2016 28-Jun-2016 √ 08-Jun-2016 18-Jul-2016 ✓ 08-Jun-2016 18-Jul-2016 ✓ 08-Jun-2016 18-Jul-2016 ✓ 08-Jun-2016 18-Jul-2016 ✓ 08-Jun-2016 18-Jul-2016 ✓ 08-Jun-2016 18-Jul-2016 ✓ 08-Jun-2016 18-Jul-2016 ✓ 08-Jun-2016 18-Jul-2016 ✓ 08-Jun-2016 18-Jul-2016 ✓ 08-Jun-2016 18-Jul-2016 ✓ 08-Jun-2016 18-Jul-2016 ✓ 08-Jun-2016 18-Jul-2016 ✓ 08-Jun-2016 18-Jul-	A2-QC06,	A2-QC08	31-May-2016				03-Jun-2016	14-Jun-2016	✓
A2-QC06, A2-QC08 31-May-2016 06-Jun-2016 27-Nov-2016 ✓ 07-Jun-2016 28-Jun-2016 28-Jun-2016 ✓ 07-Jun-2016 28-Jun-2016 ✓ 07-Jun-2016 28-Jun-2016 EG005T: Total Metals by ICP-AES									
EG035T: Total Recoverable Mercury by FIMS Soil Glass Jar - Unpreserved (EG035T)	Soil Glass Jar - Unpreserved (EG005T)								
Soil Glass Jar - Unpreserved (EG035T) A2-QC06, A2-QC08 31-May-2016 06-Jun-2016 28-Jun-2016 ✓ 07-Jun-2016 28-Jun-2016 ✓ 07-Jun-2016 28-Jun-2016 ✓ 07-Jun-2016 28-Jun-2016 ✓ 06-Jun-2016 ✓ EP080/071: Total Petroleum Hydrocarbons Soil Glass Jar - Unpreserved (EP071) A2-QC06, A2-QC08 31-May-2016 06-Jun-2016 14-Jun-2016 ✓ 06-Jun-2016 16-Jul-2016 ✓ EP075(SIM)B: Polynuclear Aromatic Hydrocarbons Soil Glass Jar - Unpreserved (EP075(SIM)) A2-QC06, A2-QC08 31-May-2016 06-Jun-2016 14-Jun-2016 ✓ 06-Jun-2016 16-Jul-2016 ✓ EP080/071: Total Petroleum Hydrocarbons Soil Glass Jar - Unpreserved (EP080)	A2-QC06,	A2-QC08	31-May-2016	06-Jun-2016	27-Nov-2016	✓	07-Jun-2016	27-Nov-2016	✓
A2-QC06, A2-QC08 31-May-2016 06-Jun-2016 28-Jun-2016 ✓ 07-Jun-2016 28-Jun-2016 ✓ 07-Jun-2016 28-Jun-2016 ✓ 07-Jun-2016 28-Jun-2016 ✓ 07-Jun-2016 ✓ 07-Jun-2	EG035T: Total Recoverable Mercury by FIMS								
EP080/071: Total Petroleum Hydrocarbons Soil Glass Jar - Unpreserved (EP071)	Soil Glass Jar - Unpreserved (EG035T)								
Soil Glass Jar - Unpreserved (EP071) A2-QC06, A2-QC08 31-May-2016 06-Jun-2016 14-Jun-2016 ✓ 06-Jun-2016 16-Jul-2016 ✓ EP075(SIM)B: Polynuclear Aromatic Hydrocarbons Soil Glass Jar - Unpreserved (EP075(SIM)) A2-QC06, A2-QC08 31-May-2016 06-Jun-2016 14-Jun-2016 ✓ 06-Jun-2016 16-Jul-2016 ✓ EP080/071: Total Petroleum Hydrocarbons Soil Glass Jar - Unpreserved (EP080)	A2-QC06,	A2-QC08	31-May-2016	06-Jun-2016	28-Jun-2016	✓	07-Jun-2016	28-Jun-2016	✓
A2-QC06, A2-QC08 31-May-2016 06-Jun-2016 14-Jun-2016 ✓ 06-Jun-2016 16-Jul-2016 ✓ EP075(SIM)B: Polynuclear Aromatic Hydrocarbons Soil Glass Jar - Unpreserved (EP075(SIM))	EP080/071: Total Petroleum Hydrocarbons								
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons Soil Glass Jar - Unpreserved (EP075(SIM)) A2-QC06, A2-QC08 31-May-2016 06-Jun-2016 √ 06-Jun-2016 06-Jun-2016 06-Jun-2016 06-Jun-2016 06-Jun-2016 06-Jun-2016 06-J	Soil Glass Jar - Unpreserved (EP071)								
Soil Glass Jar - Unpreserved (EP075(SIM))	A2-QC06,	A2-QC08	31-May-2016	06-Jun-2016	14-Jun-2016	✓	06-Jun-2016	16-Jul-2016	✓
A2-QC06, A2-QC08 31-May-2016 06-Jun-2016 14-Jun-2016 ✓ 06-Jun-2016 16-Jul-2016 ✓ EP080/071: Total Petroleum Hydrocarbons Soil Glass Jar - Unpreserved (EP080)	EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
EP080/071: Total Petroleum Hydrocarbons Soil Glass Jar - Unpreserved (EP080)	Soil Glass Jar - Unpreserved (EP075(SIM))								
Soil Glass Jar - Unpreserved (EP080)	A2-QC06,	A2-QC08	31-May-2016	06-Jun-2016	14-Jun-2016	✓	06-Jun-2016	16-Jul-2016	✓
	EP080/071: Total Petroleum Hydrocarbons								
A2-QC06, A2-QC08 31-May-2016 03-Jun-2016 14-Jun-2016 \(\sqrt{03-Jun-2016} \) 14-Jun-2016 \(\sqrt{03-Jun-2016} \) 14-Jun-2016	Soil Glass Jar - Unpreserved (EP080)								
	A2-QC06,	A2-QC08	31-May-2016	03-Jun-2016	14-Jun-2016	✓	03-Jun-2016	14-Jun-2016	✓

Page : 3 of 4
Work Order : EM1606431

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : IA110700



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.

the expected rate. A listing or breaches is provided in the Summary of Outliers.

Matrix: **SOIL**Evaluation: ★ = Quality Control frequency not within specification; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		C	ount		Rate (%)		Quality Control Specification
Analytical Methods	Method	OC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	18	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
_aboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
FRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
FRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	5.26	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	√	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	12	8.33	5.00	1	NEPM 2013 B3 & ALS QC Standard

Page : 4 of 4 Work Order : EM1606431

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : IA110700

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
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
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 (2013) 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 (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D 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 (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
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.





SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : EM1606431

Client : JACOBS GROUP (AUSTRALIA) PTY Laboratory : Environmental Division Melbourne

LTD

Contact : BLAIR CUMMINGS Contact : Carol Walsh

Address : 100 CHRISTIE STREET P O BOX 164 Address : 4 Westall Rd Springvale VIC Australia

ST LEONARDS NSW, AUSTRALIA 3171

2065

Telephone : +61 02 9928 2100 Telephone : +61-3-8549 9608 Facsimile : +61 02 9928 2272 Facsimile : +61-3-8549 9601

Project : IA110700 Page : 1 of 2

Order number : ---- Quote number : EP2016SINKNI0001 (EP/2013/15

WABQ)

C-O-C number : ---- QC Level : NEPM 2013 B3 & ALS QC Standard

Site : Bankstown Airport - Site 2

Sampler :

Dates

Date Samples Received : 02-Jun-2016 12:45 PM Issue Date : 02-Jun-2016

Client Requested Due : 09-Jun-2016 Scheduled Reporting Date : 09-Jun-2016

Date

Delivery Details

Mode of Delivery : Carrier Security Seal : Not Available

No. of coolers/boxes : 1 Temperature : 6.2°C - Ice present
Receipt Detail : No. of samples received / analysed : 2 / 2

General Comments

• This report contains the following information:

- Sample Container(s)/Preservation Non-Compliances
- Summary of Sample(s) and Requested Analysis
- Proactive Holding Time Report
- Requested Deliverables
- Sample(s) received in non-ALS container(s).
- Please direct any queries related to sample condition / numbering / breakages to Client Services.
- Sample Disposal Aqueous (14 days), Solid (60 days) from date of completion of work order.
- Analytical work for this work order will be conducted at ALS Springvale.
- Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.

: 02-Jun-2016 Issue Date

Page

2 of 2 EM1606431 Amendment 0 Work Order

Client : JACOBS GROUP (AUSTRALIA) PTY LTD



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

• No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package. If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by OIL - S-26 metals/TRH/BTEXN/PAH the laboratory for processing purposes and will be shown bracketed without a time component. OIL - EA055-103 **Noisture Content** Matrix: SOIL Client sample ID Laboratory sample Client sampling ID date / time EM1606431-001 [31-May-2016] A2-QC06 EM1606431-002 [31-May-2016] A2-QC08

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	au-ap@jacobs.com
BLAIR CUMMINGS		
 *AU Certificate of Analysis - NATA (COA) 	Email	blair.cummings@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	blair.cummings@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	blair.cummings@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	blair.cummings@jacobs.com
- A4 - AU Tax Invoice (INV)	Email	blair.cummings@jacobs.com
- Chain of Custody (CoC) (COC)	Email	blair.cummings@jacobs.com
- EDI Format - ENMRG (ENMRG)	Email	blair.cummings@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	blair.cummings@jacobs.com
- EDI Format - XTab (XTAB)	Email	blair.cummings@jacobs.com
MICHAEL STACEY (JACOB)		
 *AU Certificate of Analysis - NATA (COA) 	Email	michael.stacey@jacobs.com
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	michael.stacey@jacobs.com
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	michael.stacey@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	michael.stacey@jacobs.com
- Chain of Custody (CoC) (COC)	Email	michael.stacey@jacobs.com
- EDI Format - ENMRG (ENMRG)	Email	michael.stacey@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	michael.stacey@jacobs.com
- EDI Format - XTab (XTAB)	Email	michael.stacey@jacobs.com

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CERTIFICATE OF ANALYSIS

Work Order : ES1611169

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Contact : MR MICHAEL STACEY (JACOB)

Address : 100 CHRISTIE STREET P O BOX 164

ST LEONARDS NSW. AUSTRALIA 2065

Telephone : +61 02 9928 2100

Project : Bankstown Airport - Site 2

Order number : IA110700

C-O-C number : ---Sampler : ---Site : ---Quote number : ----

No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 6

Laboratory : Environmental Division Sydney

Contact :

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61-2-8784 8555

Date Samples Received : 24-May-2016 15:50

Date Analysis Commenced : 25-May-2016

Issue Date : 30-May-2016 12:14

NATA Accredited Laboratory 825 Accredited for compliance with ISO/IEC 17025.



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories Position Accreditation Category

Celine ConceicaoSenior SpectroscopistSydney Inorganics, Smithfield, NSWEdwandy FadjarOrganic CoordinatorSydney Organics, Smithfield, NSW

Page : 2 of 6 Work Order : ES1611169

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : Bankstown Airport - Site 2

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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

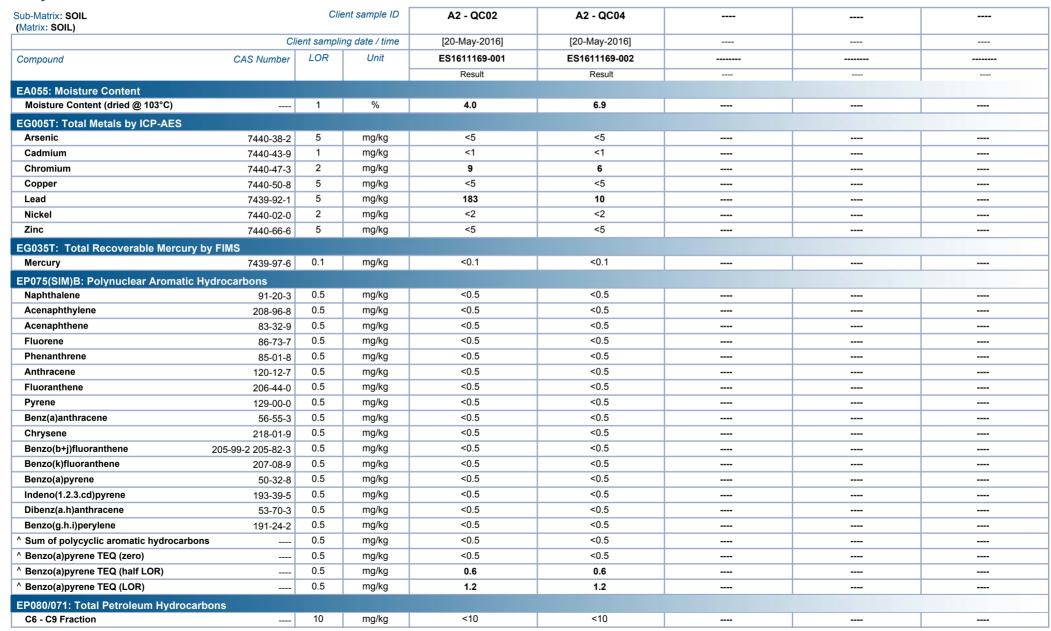
- ^ = This result is computed from individual analyte detections at or above the level of reporting
- ø = ALS is not NATA accredited for these tests.
- ~ = Indicates an estimated value.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic 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.



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Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : Bankstown Airport - Site 2

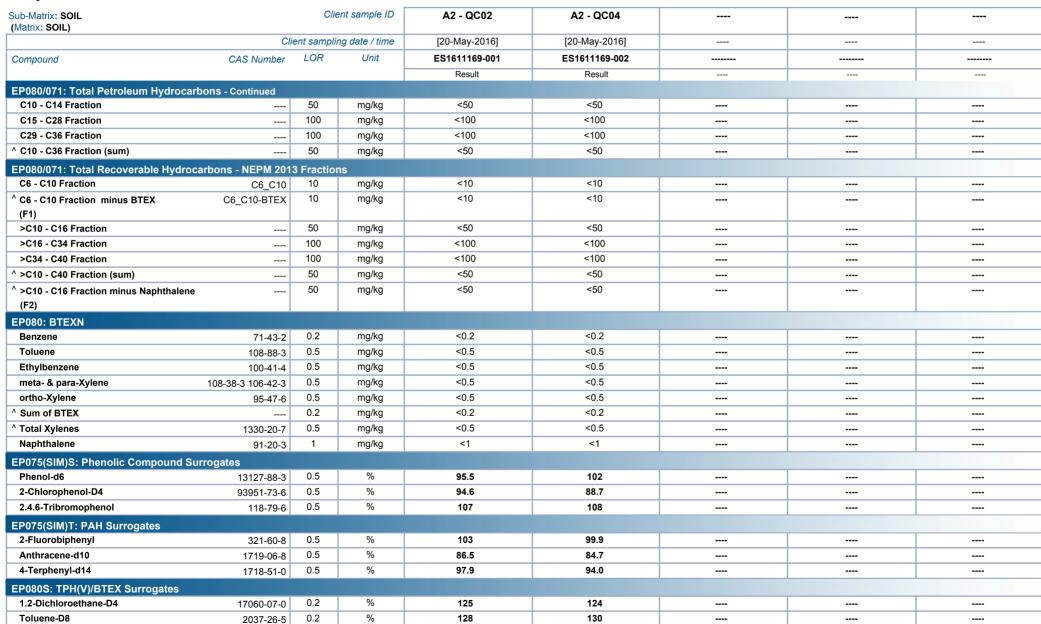




Page : 4 of 6 Work Order : ES1611169

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : Bankstown Airport - Site 2

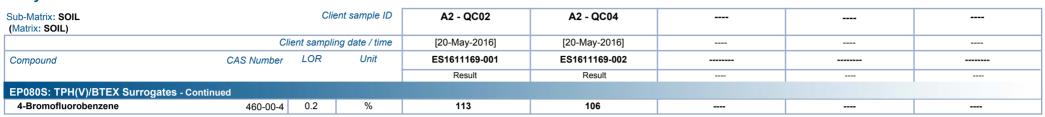




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Work Order : ES1611169

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : Bankstown Airport - Site 2





Page : 6 of 6 : ES1611169 Work Order

: JACOBS GROUP (AUSTRALIA) PTY LTD : Bankstown Airport - Site 2 Client

Project

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery	Limits (%)
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130





QUALITY CONTROL REPORT

Work Order : ES1611169

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Contact : MR MICHAEL STACEY (JACOB)

Address : 100 CHRISTIE STREET P O BOX 164

ST LEONARDS NSW, AUSTRALIA 2065

Telephone : +61 02 9928 2100

Project : Bankstown Airport - Site 2

Order number : IA110700

 C-O-C number
 : ---

 Sampler
 : ---

 Site
 : ---

 Quote number
 : ---

No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 7

Laboratory : Environmental Division Sydney

Contact

Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61-2-8784 8555

Date Samples Received : 24-May-2016

Date Analysis Commenced : 25-May-2016

Issue Date : 30-May-2016



NATA Accredited Laboratory 825 Accredited for compliance with ISO/IEC 17025.

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted.

This Quality Control Report contains the following information:

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

Signatories

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

Signatories Position Accreditation Category

 Celine Conceicao
 Senior Spectroscopist
 Sydney Inorganics, Smithfield, NSW

 Edwandy Fadjar
 Organic Coordinator
 Sydney Organics, Smithfield, NSW

Page : 2 of 7
Work Order : ES1611169

Client ; JACOBS GROUP (AUSTRALIA) PTY LTD

Project : Bankstown Airport - Site 2



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by 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						Laboratory I	Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Co	ntent (QC Lot: 464647)								
ES1611137-004	Anonymous	EA055-103: Moisture Content (dried @ 103°C)		1	%	8.3	8.5	2.36	No Limit
ES1611178-005	Anonymous	EA055-103: Moisture Content (dried @ 103°C)		1	%	3.0	2.6	12.0	No Limit
EG005T: Total Meta	ls by ICP-AES (QC Lot: 4	66492)							
ES1610540-027	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	35	22	46.7	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	27	25	7.90	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	5	34.6	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	7	56.7	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	17	12	35.4	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	48	36	27.0	No Limit
ES1611169-001	A2 - QC02	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	9	9	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	183	165	10.6	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EG035T: Total Rec	overable Mercury by FIMS	G (QC Lot: 466493)							
ES1610540-027	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1611169-001	A2 - QC02	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP075(SIM)B: Polyr	uclear Aromatic Hydroca	rbons (QC Lot: 464257)							
ES1611137-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Page : 3 of 7
Work Order : ES1611169

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : Bankstown Airport - Site 2



Sub-Matrix: SOIL						Laboratory	Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polyr	nuclear Aromatic Hydro	ocarbons (QC Lot: 464257) - continued							
ES1611137-001	Anonymous	EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic		0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		hydrocarbons							
		EP075(SIM): Benzo(a)pyrene TEQ (zero)		0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Pe	etroleum Hydrocarbons	(QC Lot: 464255)							
ES1611137-001	Anonymous	EP071: C15 - C28 Fraction		100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction		100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction		50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Pe	etroleum Hydrocarbons	(QC Lot: 464638)							
ES1611137-001	Anonymous	EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.00	No Limit
ES1611178-010	Anonymous	EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Re	ecoverable Hydrocarbo	ns - NEPM 2013 Fractions (QC Lot: 464255)							
ES1611137-001	Anonymous	EP071: >C16 - C34 Fraction		100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction		100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction		50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Re	ecoverable Hydrocarbo	ns - NEPM 2013 Fractions (QC Lot: 464638)							
ES1611137-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1611178-010	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC	C Lot: 464638)								
ES1611137-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		. ,	106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

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Work Order : ES1611169

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : Bankstown Airport - Site 2



Sub-Matrix: SOIL						Laboratory E	Duplicate (DUP) Report	!	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC	Lot: 464638) - continued								
ES1611178-010	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Page : 5 of 7
Work Order : ES1611169

Client ; JACOBS GROUP (AUSTRALIA) PTY LTD

Project : Bankstown Airport - Site 2



Method Blank (MB) and Laboratory Control Spike (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 Spike (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.

EG005T: Chromism	Sub-Matrix: SOIL				Method Blank (MB)		Laboratory Control Spike (LCS	S) Report	
ECOOST-Total Metals by ICP-AES QCLot: 486492					Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
EG005T: Ansenic	Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EGOOST: Cadmium	EG005T: Total Metals by ICP-AES (QCLot: 46649)	2)							
EGODST: Chromium	EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	95.8	86	126
EG005T: Copper	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	97.7	83	113
EG005T Lead	EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	93.7	76	128
EG005T: Nickel T44-00-0 2 mg/kg <2 55 mg/kg 99.9 87 123	EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	103	86	120
E005T: Zinc 7440-86-8 5 mg/kg <5 60.8 mg/kg 106 80 122	EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	95.2	80	114
E6035T: Total Recoverable Mercury by FIMS (QCLot: 466493) Co.35T: Mercury 7439-97-6 0.1 mg/kg < 0.1 2.57 mg/kg 96.1 70 105 EP075(SIMI): Replynuclear Aromatic Hydrocarbons (QCLot: 464257) EP075(SIMI): Abpthalene 91-20-3 0.5 mg/kg < 0.5	EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	99.9	87	123
EG035F. Mercury 7439-97-6 0.1 mg/kg -0.1 2.57 mg/kg 96.1 70 105	EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	106	80	122
EG035F. Mercury 7438-97-6 0.1 mg/kg <0.1 2.57 mg/kg 96.1 70 105	EG035T: Total Recoverable Mercury by FIMS (Q	CLot: 466493)							
EPO75(SIM): Naphthalene 91-20-3 0.5 mg/kg <0.5 6 mg/kg 92.7 77 125 EPO75(SIM): Acenaphthylene 208-96-8 0.5 mg/kg <0.5 6 mg/kg 91.6 72 124 EPO75(SIM): Acenaphthylene 83-32-9 0.5 mg/kg <0.5 6 mg/kg 95.7 73 127 EPO75(SIM): Fluorene 86-73-7 0.5 mg/kg <0.5 6 mg/kg 90.6 72 126 EPO75(SIM): Fluorene 86-73-7 0.5 mg/kg <0.5 6 mg/kg 90.6 72 126 EPO75(SIM): Fluorene 85-01-8 0.5 mg/kg <0.5 6 mg/kg 90.6 72 126 EPO75(SIM): Fluorene 85-01-8 0.5 mg/kg <0.5 6 mg/kg 90.6 72 126 EPO75(SIM): Fluorenthene 85-01-8 0.5 mg/kg <0.5 6 mg/kg 99.5 77 127 EPO75(SIM): Fluoranthene 206-44-0 0.5 mg/kg <0.5 6 mg/kg 93.3 73 127 EPO75(SIM): Fluoranthene 206-44-0 0.5 mg/kg <0.5 6 mg/kg 93.3 73 127 EPO75(SIM): Fluoranthene 56-55-3 0.5 mg/kg <0.5 6 mg/kg 93.3 73 127 EPO75(SIM): Fluoranthene 65-55-3 0.5 mg/kg <0.5 6 mg/kg 93.3 73 127 EPO75(SIM): Senzo(aphtracene 56-55-3 0.5 mg/kg <0.5 6 mg/kg 91.6 69 123 EPO75(SIM): Senzo(aphtracene 205-99-2 0.5 mg/kg <0.5 6 mg/kg 94.5 75 127 EPO75(SIM): Benzo(k)/fluoranthene 205-99-2 0.5 mg/kg <0.5 6 mg/kg 94.5 75 127 EPO75(SIM): Benzo(k)/fluoranthene 207-08-9 0.5 mg/kg <0.5 6 mg/kg 94.5 75 127 EPO75(SIM): Benzo(k)/fluoranthene 207-08-9 0.5 mg/kg <0.5 6 mg/kg 91.8 74 126 EPO75(SIM): Benzo(k)/fluoranthene 207-08-9 0.5 mg/kg <0.5 6 mg/kg 91.8 74 126 EPO75(SIM): Benzo(k)/fluoranthene 207-08-9 0.5 mg/kg <0.5 6 mg/kg 91.8 74 126 EPO75(SIM): Benzo(k)/fluoranthene 53-70-3 0.5 mg/kg <0.5 6 mg/kg 91.8 74 126 EPO75(SIM): Dibenz(a,h)anthracene 53-70-3 0.5 mg/kg <0.5 6 mg/kg 92.1 61 121 EPO75(SIM): Dibenz(a,h)anthracene 53-70-3 0.5 mg/kg <0.5 6 mg/kg 92.8 75 129 EPO75(SIM): Dibenz(a,h)anthracene 191-24-2 0.5 mg/kg <0.5 6 mg/kg 92.8 75 129 EPO75(SIM): Dibenz(a,h)anthracene 191-24-2 0.5 mg/kg <0.5 6 mg/kg 92.8 75 129 EPO75(SIM): Dibenz(a,h)anthracene 191-24-2 0.5 mg/kg <0.5 6 mg/kg 92.8 75 129 EPO75(SIM): Dibenz(a,h)anthracene 191-24-2 0.5 mg/kg <0.5 6 mg/kg 92.8 75 129 EPO71: C10- C14 Fraction 9.0 mg/kg <0.0 200 mg/kg 93.1 131 EPO75(SIM): Dibenz(a,h)anthracene 191-24-2 0.5 mg/kg <0.0 200 mg/kg 93.1 131 EPO71: C29- C36 Fraction 9	EG035T: Mercury		0.1	mg/kg	<0.1	2.57 mg/kg	96.1	70	105
EPO75(SIM): Naphthalene 91-20-3 0.5 mg/kg <0.5 6 mg/kg 92.7 77 125 EPO75(SIM): Acenaphthylene 208-96-8 0.5 mg/kg <0.5 6 mg/kg 91.6 72 124 EPO75(SIM): Acenaphthylene 83-32-9 0.5 mg/kg <0.5 6 mg/kg 95.7 73 127 EPO75(SIM): Fluorene 86-73-7 0.5 mg/kg <0.5 6 mg/kg 90.6 72 126 EPO75(SIM): Fluorene 86-73-7 0.5 mg/kg <0.5 6 mg/kg 90.6 72 126 EPO75(SIM): Fluorene 85-01-8 0.5 mg/kg <0.5 6 mg/kg 90.6 72 126 EPO75(SIM): Fluorene 85-01-8 0.5 mg/kg <0.5 6 mg/kg 95.5 75 127 EPO75(SIM): Fluorenthene 206-44-0 0.5 mg/kg <0.5 6 mg/kg 93.3 73 127 EPO75(SIM): Fluorenthene 206-44-0 0.5 mg/kg <0.5 6 mg/kg 93.3 73 127 EPO75(SIM): Fluorenthene 206-44-0 0.5 mg/kg <0.5 6 mg/kg 93.3 73 127 EPO75(SIM): Fluorenthene 206-44-0 0.5 mg/kg <0.5 6 mg/kg 93.3 73 127 EPO75(SIM): Fluorenthene 206-44-0 0.5 mg/kg <0.5 6 mg/kg 93.3 73 127 EPO75(SIM): Fluorenthene 206-90-0 0.5 mg/kg <0.5 6 mg/kg 93.3 73 127 EPO75(SIM): Elevacione 56-55-3 0.5 mg/kg <0.5 6 mg/kg 93.4 66 123 EPO75(SIM): Elevacione 208-90-2 0.5 mg/kg <0.5 6 mg/kg 94.5 75 127 EPO75(SIM): Benzo(k)/fluorenthene 205-90-2 0.5 mg/kg <0.5 6 mg/kg 94.5 75 127 EPO75(SIM): Benzo(k)/fluorenthene 207-08-9 0.5 mg/kg <0.5 6 mg/kg 94.5 75 127 EPO75(SIM): Benzo(k)/fluorenthene 207-08-9 0.5 mg/kg <0.5 6 mg/kg 91.8 74 128 EPO75(SIM): Benzo(k)/fluorenthene 207-08-9 0.5 mg/kg <0.5 6 mg/kg 91.8 74 128 EPO75(SIM): Benzo(k)/fluorenthene 50-32-8 0.5 mg/kg <0.5 6 mg/kg 91.8 74 128 EPO75(SIM): Dibenz(a,h))entracene 50-32-8 0.5 mg/kg <0.5 6 mg/kg 91.8 74 128 EPO75(SIM): Dibenz(a,h))entracene 50-30-3 0.5 mg/kg <0.5 6 mg/kg 92.1 61 121 EPO75(SIM): Dibenz(a,h))entracene 50-30-3 0.5 mg/kg <0.5 6 mg/kg 92.8 75 129 EPO75(SIM): Dibenz(a,h))entracene 50-30-3 0.5 mg/kg <0.5 6 mg/kg 93.9 0.3 0.3 121 EPO75(SIM): Dibenz(a,h))entracene 50-30-3 0.5 mg/kg <0.5 6 mg/kg 92.8 75 129 EPO75(SIM): Dibenz(a,h))entracene 50-30-3 0.5 mg/kg <0.5 6 mg/kg 93.9 0.3 0.3 121 EPO75(SIM): Dibenz(a,h))entracene 50-30-3 0.5 mg/kg <0.5 6 mg/kg 90.8 75 129 EPO71: C10- C14 Fraction 90-4 0.5 0.5 mg/kg <0.0 200 mg/kg 90.1 71 128 EPO71: C20 - C36 Fraction	EP075(SIM)B: Polynuclear Aromatic Hydrocarbor	ns (QCLot: 464257)							
EPO75(SIM): Acenaphthylene			0.5	mg/kg	<0.5	6 mg/kg	92.7	77	125
EPO75(SIM): Fluorene 83-32-9 0.5 mg/kg <0.5 6 mg/kg 95.7 73 127 EPO75(SIM): Fluorene 86-73-7 0.5 mg/kg <0.5 6 mg/kg 95.6 72 126 EPO75(SIM): Pluorente 85-01-8 0.5 mg/kg <0.5 6 mg/kg 95.5 75 127 EPO75(SIM): Pluoranthrene 120-12-7 0.5 mg/kg <0.5 6 mg/kg 95.5 75 127 EPO75(SIM): Fluoranthrene 206-44-0 0.5 mg/kg <0.5 6 mg/kg 93.3 73 127 EPO75(SIM): Pluoranthrene 206-44-0 0.5 mg/kg <0.5 6 mg/kg 93.3 73 127 EPO75(SIM): Pluoranthrene 56-55-3 0.5 mg/kg <0.5 6 mg/kg 95.5 74 128 EPO75(SIM): Portene 56-55-3 0.5 mg/kg <0.5 6 mg/kg 95.5 74 128 EPO75(SIM): Portene 56-55-3 0.5 mg/kg <0.5 6 mg/kg 95.5 74 128 EPO75(SIM): Portene 218-01-9 0.5 mg/kg <0.5 6 mg/kg 95.5 74 128 EPO75(SIM): Portene 218-01-9 0.5 mg/kg <0.5 6 mg/kg 91.6 69 123 EPO75(SIM): Portene 218-01-9 0.5 mg/kg <0.5 6 mg/kg 91.6 75 127 EPO75(SIM): Benzo(b+))fluoranthrene 205-99-2 0.5 mg/kg <0.5 6 mg/kg 93.4 66 116 EPO75(SIM): Benzo(k)fluoranthrene 207-08-9 0.5 mg/kg <0.5 6 mg/kg 93.4 68 116 EPO75(SIM): Benzo(k)fluoranthrene 207-08-9 0.5 mg/kg <0.5 6 mg/kg 91.6 70 128 EPO75(SIM): Benzo(a)pyrene 193-39-5 0.5 mg/kg <0.5 6 mg/kg 91.6 70 128 EPO75(SIM): Dibenz(a)pyrene 193-39-5 0.5 mg/kg <0.5 6 mg/kg 91.6 70 128 EPO75(SIM): Dibenz(a)pyrene 193-39-5 0.5 mg/kg <0.5 6 mg/kg 92.1 61 121 EPO75(SIM): Dibenz(a)pyrene 193-39-5 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EPO75(SIM): Dibenz(a)pyrene 193-39-5 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EPO75(SIM): Dibenz(a)pyrene 193-39-5 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EPO75(SIM): Dibenz(a)pyrene 193-39-5 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EPO75(SIM): Dibenz(a)pyrene 193-39-5 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EPO75(SIM): Dibenz(a)pyrene 193-39-5 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EPO75(SIM): Dibenz(a)pyrene 193-39-5 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EPO75(SIM): Dibenz(a)pyrene 193-39-5 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EPO75(SIM): Dibenz(a)pyrene 193-39-5 0.5 mg/kg <0.5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	. , , ,	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	91.6	72	124
EPO75(SIM): Pluorene 86-73-7 0.5 mg/kg <0.5 6 mg/kg 90.6 72 126 EPO75(SIM): Phenanthrene 85-01-8 0.5 mg/kg <0.5 6 mg/kg 95.5 75 127 EPO75(SIM): Phenanthrene 120-12-7 0.5 mg/kg <0.5 6 mg/kg 89.9 77 127 EPO75(SIM): Pluoranthene 206-44-0 0.5 mg/kg <0.5 6 mg/kg 93.3 73 127 EPO75(SIM): Pluoranthene 120-04-0 0.5 mg/kg <0.5 6 mg/kg 93.3 73 127 EPO75(SIM): Pluoranthene 120-04-0 0.5 mg/kg <0.5 6 mg/kg 95.5 74 128 EPO75(SIM): Benz(a)anthracene 56-55-3 0.5 mg/kg <0.5 6 mg/kg 95.5 74 128 EPO75(SIM): Benz(a)anthracene 56-55-3 0.5 mg/kg <0.5 6 mg/kg 91.6 69 123 EPO75(SIM): Benzo(b+j)fluoranthene 205-99-2 0.5 mg/kg <0.5 6 mg/kg 94.5 75 127 EPO75(SIM): Benzo(k)fluoranthene 205-99-2 0.5 mg/kg <0.5 6 mg/kg 93.4 68 116 EPO75(SIM): Benzo(k)fluoranthene 207-08-9 0.5 mg/kg <0.5 6 mg/kg 91.8 74 126 EPO75(SIM): Benzo(k)fluoranthene 505-32-8 0.5 mg/kg <0.5 6 mg/kg 91.8 74 126 EPO75(SIM): Benzo(k)fluoranthene 505-32-8 0.5 mg/kg <0.5 6 mg/kg 91.8 74 126 EPO75(SIM): Benzo(k)fluoranthene 505-32-8 0.5 mg/kg <0.5 6 mg/kg 91.8 74 126 EPO75(SIM): Benzo(k)fluoranthene 505-32-8 0.5 mg/kg <0.5 6 mg/kg 91.8 74 126 EPO75(SIM): Benzo(k)fluoranthene 505-32-8 0.5 mg/kg <0.5 6 mg/kg 91.8 74 126 EPO75(SIM): Dibenz(a)hjohtracene 50-32-8 0.5 mg/kg <0.5 6 mg/kg 92.1 61 121 EPO75(SIM): Dibenz(a)hjohtracene 50-32-8 0.5 mg/kg <0.5 6 mg/kg 92.1 61 121 EPO75(SIM): Dibenz(a)hjohtracene 50-32-8 0.5 mg/kg <0.5 6 mg/kg 93.9 63 122 EPO75(SIM): Benzo(k)hjohtracene 50-32-8 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EPO75(SIM): Dibenz(a)hjohtracene 50-32-8 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EPO75(SIM): Dibenz(a)hjohtracene 50-32-8 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EPO75(SIM): Dibenz(a)hjohtracene 50-32-8 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EPO75(SIM): Dibenz(a)hjohtracene 50-32-8 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EPO75(SIM): Dibenz(a)hjohtracene 50-32-8 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EPO75(SIM): Dibenz(a)hjohtracene 50-32-8 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EPO75(SIM): Dibenz(a)hjohtracene 50-32-8 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EPO75(SIM): Dibenz(a)hjohtracene 50-32-		83-32-9	0.5	mg/kg	<0.5	6 mg/kg	95.7	73	127
EP075(SIM): Anthracene 120-12-7 0.5 mg/kg < 0.5 6 mg/kg 89.9 77 127 127 127 127 127 127 127 127 127	EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	90.6	72	126
EP075(SIM): Fluoranthene 206-44-0 0.5 mg/kg <0.5 6 mg/kg 93.3 73 127 EP075(SIM): Pyrene 129-00-0 0.5 mg/kg <0.5 6 mg/kg 95.5 74 128 EP075(SIM): Benz(a)anthracene 56-5-3 0.5 mg/kg <0.5 6 mg/kg 91.6 69 123 EP075(SIM): Benz(a)anthracene 218-01-9 0.5 mg/kg <0.5 6 mg/kg 94.5 75 127 EP075(SIM): Benz(a)thracene 205-99-2 0.5 mg/kg <0.5 6 mg/kg 94.5 75 127 EP075(SIM): Benzo(b+j)fluoranthene 205-99-2 0.5 mg/kg <0.5 6 mg/kg 93.4 68 116 EP075(SIM): Benzo(b)throanthene 205-98-2 0.5 mg/kg <0.5 6 mg/kg 91.8 74 126 EP075(SIM): Benzo(b)throanthene 205-98-2 0.5 mg/kg <0.5 6 mg/kg 91.8 74 126 EP075(SIM): Benzo(a)pyrene 50-32-8 0.5 mg/kg <0.5 6 mg/kg 91.6 70 126 EP075(SIM): Benzo(a)pyrene 50-32-8 0.5 mg/kg <0.5 6 mg/kg 91.6 70 126 EP075(SIM): Dibenz(a,h)anthracene 53-70-3 0.5 mg/kg <0.5 6 mg/kg 92.1 61 121 EP075(SIM): Dibenz(a,h)anthracene 53-70-3 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EP075(SIM): Benzo(g,h,i)perylene 191-24-2 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EP071: C10 - C14 Fraction 5 50 mg/kg <0.5 6 mg/kg 93.9 63 121 EP071: C15 - C28 Fraction 5 50 mg/kg <100 300 mg/kg 96.1 71 129 EP071: C29 - C36 Fraction 5 50 mg/kg <100 200 mg/kg 96.1 71 129 EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638) EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638) EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638) EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638) EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638)	EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	95.5	75	127
EP075(SIM): Pyrene 129-0-0 0.5 mg/kg <0.5 6 mg/kg 95.5 74 128 EP075(SIM): Benz(a)anthracene 56-55-3 0.5 mg/kg <0.5 6 mg/kg 91.6 69 123 EP075(SIM): Chrysene 218-01-9 0.5 mg/kg <0.5 6 mg/kg 94.5 75 127 EP075(SIM): Benzo(b+j)fluoranthene 205-9-2-2 0.5 mg/kg <0.5 6 mg/kg 93.4 68 116 EP075(SIM): Benzo(b)fluoranthene 207-08-9 0.5 mg/kg <0.5 6 mg/kg 91.8 74 126 EP075(SIM): Benzo(k)fluoranthene 207-08-9 0.5 mg/kg <0.5 6 mg/kg 91.8 74 126 EP075(SIM): Benzo(a)pyrene 50-32-8 0.5 mg/kg <0.5 6 mg/kg 91.6 70 126 EP075(SIM): Dibenz(a,h)anthracene 193-39-5 0.5 mg/kg <0.5 6 mg/kg 92.1 61 121 EP075(SIM): Dibenz(a,h)anthracene 191-24-2 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EP080(D71: Total Petroleum Hydrocarbons (QCLot: 464255) EP071: C10 - C14 Fraction 9 100 mg/kg <100 200 mg/kg 96.1 71 129 EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638) EP080(C6 - C9 Fraction 9 100 mg/kg <10 26 mg/kg 97.3 68 128	EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	89.9	77	127
EP075(SIM): Benza(a)anthracene 56-55-3 0.5 mg/kg <0.5 6 mg/kg 91.6 69 123 EP075(SIM): Chrysene 218-01-9 0.5 mg/kg <0.5 6 mg/kg 94.5 75 127 EP075(SIM): Benza(b+j)fluoranthene 205-99-2 0.5 mg/kg <0.5 6 mg/kg 93.4 68 116 EP075(SIM): Benza(b,fluoranthene 207-09-9 0.5 mg/kg <0.5 6 mg/kg 91.8 74 126 EP075(SIM): Benza(a)pyrene 207-09-9 0.5 mg/kg <0.5 6 mg/kg 91.6 70 126 EP075(SIM): Benza(a)pyrene 50-32-8 0.5 mg/kg <0.5 6 mg/kg 91.6 70 126 EP075(SIM): Indeno(1.2.3.cd)pyrene 193-39-5 0.5 mg/kg <0.5 6 mg/kg 92.1 61 121 EP075(SIM): Dibenz(a,h)anthracene 53-70-3 0.5 mg/kg <0.5 6 mg/kg 92.1 61 121 EP075(SIM): Benza(a)h.jiperylene 191-24-2 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EP080/071: Total Petroleum Hydrocarbons (QCLot: 464255) EP080/071: C10 - C14 Fraction 100 mg/kg <100 300 mg/kg 96.1 71 129 EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638) EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638) EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638) EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638) EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638) EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638) EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638) EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638) EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638) EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638) EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638) EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638)	EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	93.3	73	127
EPO75(SIM): Chrysene 218-01-9 0.5 mg/kg <0.5 6 mg/kg 94.5 75 127 EPO75(SIM): Benzo(b+j)fluoranthene 205-99-2 0.5 mg/kg <0.5 6 mg/kg 93.4 68 116 EPO75(SIM): Benzo(k)fluoranthene 207-08-9 0.5 mg/kg <0.5 6 mg/kg 91.8 74 126 EPO75(SIM): Benzo(a)pyrene 50-32-8 0.5 mg/kg <0.5 6 mg/kg 91.6 70 126 EPO75(SIM): Dibenz(a,h)parthracene 193-39-5 0.5 mg/kg <0.5 6 mg/kg 91.6 70 126 EPO75(SIM): Dibenz(a,h)parthracene 53-70-3 0.5 mg/kg <0.5 6 mg/kg 96.3 62 118 EPO75(SIM): Benzo(a,h)perylene 191-24-2 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EPO80/O71: Total Petroleum Hydrocarbons (QCLot: 464255) EPO71: C10 - C14 Fraction 100 mg/kg <100 300 mg/kg 96.1 71 129 EPO80/O71: Total Petroleum Hydrocarbons (QCLot: 464638) EPO80/O71: Total Petroleum Hydrocarbons (QCLot: 4646488) EPO80/O71: Total Petroleum Hydrocarbons (QCLot: 464638)	EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	95.5	74	128
EPO75(SIM): Benzo(b+))fluoranthene	EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	91.6	69	123
EP075(SIM): Benzo(k)fluoranthene 207-08-9 0.5 mg/kg <0.5 6 mg/kg 91.8 74 126	EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	94.5	75	127
EP075(SIM): Benzo(k)fluoranthene 207-08-9 0.5 mg/kg <0.5	EP075(SIM): Benzo(b+j)fluoranthene		0.5	mg/kg	<0.5	6 mg/kg	93.4	68	116
EP075(SIM): Benzo(a)pyrene 50-32-8 0.5 mg/kg <0.5	FP075(SIM): Benzo(k)fluoranthene		0.5	mg/kg	<0.5	6 mg/kg	91.8	74	126
EP075(SIM): Indeno(1.2.3.cd)pyrene 193-39-5 0.5 mg/kg <0.5								70	126
EP075(SIM): Dibenz(a.h)anthracene 53-70-3 0.5 mg/kg <0.5	· / / / / /	193-39-5	0.5		<0.5		92.1	61	121
EP075(SIM): Benzo(g.h.i)perylene 191-24-2 0.5 mg/kg <0.5 6 mg/kg 93.9 63 121 EP080/071: Total Petroleum Hydrocarbons (QCLot: 464255) EP071: C10 - C14 Fraction 50 mg/kg <50		53-70-3	0.5		<0.5		96.3	62	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 464255) EP071: C10 - C14 Fraction 50 mg/kg <50		191-24-2	0.5	mg/kg	<0.5	6 mg/kg	93.9	63	121
EP071: C10 - C14 Fraction 50 mg/kg <50		ot: 464255)							
EP071: C15 - C28 Fraction 100 mg/kg <100	,		50	mg/kg	<50	200 mg/kg	92.8	75	129
EP071: C29 - C36 Fraction 100 mg/kg <100 200 mg/kg 96.1 71 129 EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638) EP080: C6 - C9 Fraction 10 mg/kg <10 26 mg/kg 97.3 68 128			100		<100				
EP080/071: Total Petroleum Hydrocarbons (QCLot: 464638) EP080: C6 - C9 Fraction 10 mg/kg <10	EP071: C29 - C36 Fraction		100		<100		96.1	71	129
EP080: C6 - C9 Fraction 10 mg/kg <10 26 mg/kg 97.3 68 128		ot: 464638)							
2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5			10	ma/ka	<10	26 ma/ka	97.3	68	128
					-10	20 1119/119	07.0		120

Page : 6 of 7 Work Order : ES1611169

Client ; JACOBS GROUP (AUSTRALIA) PTY LTD

Project : Bankstown Airport - Site 2



Sub-Matrix: SOIL				Method Blank (MB)		Laboratory Control Spike (LC	S) Report	
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM	2013 Fractions (QCL	ot: 464255) - con	ntinued					
EP071: >C10 - C16 Fraction		50	mg/kg	<50	250 mg/kg	99.6	77	125
EP071: >C16 - C34 Fraction		100	mg/kg	<100	350 mg/kg	108	74	138
EP071: >C34 - C40 Fraction		100	mg/kg	<100	150 mg/kg	97.4	63	131
EP080/071: Total Recoverable Hydrocarbons - NEPM	2013 Fractions (QCL	ot: 464638)						
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	97.5	68	128
EP080: BTEXN (QCLot: 464638)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	104	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	104	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	92.5	65	117
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	98.7	66	118
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	92.0	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	97.4	63	119

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				M	atrix Spike (MS) Report		
				Spike	SpikeRecovery(%)	Recovery	_imits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Met	tals by ICP-AES (QCLot: 466492)						
ES1610540-030	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	98.7	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	92.5	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	74.7	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	102	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	93.9	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	85.2	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	91.6	70	130
EG035T: Total Re	coverable Mercury by FIMS (QCLot: 466493)						
ES1610540-027	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	107	70	130
EP075(SIM)B: Poly	nuclear Aromatic Hydrocarbons (QCLot: 464257)						
ES1611137-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	81.8	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	79.8	70	130
EP080/071: Total F	Petroleum Hydrocarbons (QCLot: 464255)						
ES1611137-001	Anonymous	EP071: C10 - C14 Fraction		523 mg/kg	81.6	73	137
		EP071: C15 - C28 Fraction		2319 mg/kg	99.0	53	131

Page : 7 of 7 Work Order : ES1611169

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : Bankstown Airport - Site 2



Sub-Matrix: SOIL				Ma	atrix Spike (MS) Report		
				Spike	SpikeRecovery(%)	Recovery L	imits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total I	Petroleum Hydrocarbons (QCLot: 464255) - continued						
ES1611137-001	Anonymous	EP071: C29 - C36 Fraction		1714 mg/kg	111	52	132
EP080/071: Total I	Petroleum Hydrocarbons (QCLot: 464638)						
ES1611137-001	Anonymous	EP080: C6 - C9 Fraction		32.5 mg/kg	88.8	70	130
EP080/071: Total I	Recoverable Hydrocarbons - NEPM 2013 Fractions (QCI	ot: 464255)					
ES1611137-001	Anonymous	EP071: >C10 - C16 Fraction		860 mg/kg	86.7	73	137
		EP071: >C16 - C34 Fraction		3223 mg/kg	102	53	131
		EP071: >C34 - C40 Fraction		1058 mg/kg	112	52	132
EP080/071: Total I	Recoverable Hydrocarbons - NEPM 2013 Fractions (QCI	Lot: 464638)					
ES1611137-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	85.9	70	130
EP080: BTEXN (C	CLot: 464638)						
ES1611137-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	91.2	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	88.1	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	85.5	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	85.1	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	86.4	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	82.5	70	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order : **ES1611169** Page : 1 of 4

Client : JACOBS GROUP (AUSTRALIA) PTY LTD Laboratory : Environmental Division Sydney

Contact: MR MICHAEL STACEY (JACOB)Telephone: +61-2-8784 8555Project: Bankstown Airport - Site 2Date Samples Received: 24-May-2016Site: ---Issue Date: 30-May-2016

Sampler : --- No. of samples received : 2
Order number : IA110700 No. of samples analysed : 2

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

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

Summary of Outliers

Outliers: Quality Control Samples

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

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

Outliers: Analysis Holding Time Compliance

NO Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

• NO Quality Control Sample Frequency Outliers exist.

Page : 2 of 4
Work Order : ES1611169

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : Bankstown Airport - Site 2



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.

Matrix: SOIL

Evaluation: **x** = Holding time breach : ✓ = Within holding time.

Matrix. SOIL					Lvaluation	i. 🕶 – Holding time	breach, • - with	ir noluling tim
Method		Sample Date	E	ktraction / Preparation			Analysis	
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103)								
A2 - QC02,	A2 - QC04	20-May-2016				25-May-2016	03-Jun-2016	✓
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
A2 - QC02,	A2 - QC04	20-May-2016	26-May-2016	16-Nov-2016	✓	27-May-2016	16-Nov-2016	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
A2 - QC02,	A2 - QC04	20-May-2016	26-May-2016	17-Jun-2016	✓	27-May-2016	17-Jun-2016	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP071)								
A2 - QC02,	A2 - QC04	20-May-2016	25-May-2016	03-Jun-2016	✓	26-May-2016	04-Jul-2016	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarboi	ns							
Soil Glass Jar - Unpreserved (EP075(SIM))								
A2 - QC02,	A2 - QC04	20-May-2016	25-May-2016	03-Jun-2016	✓	26-May-2016	04-Jul-2016	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
A2 - QC02,	A2 - QC04	20-May-2016	25-May-2016	03-Jun-2016	✓	25-May-2016	03-Jun-2016	✓

Page : 3 of 4
Work Order : ES1611169

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : Bankstown Airport - Site 2



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.

the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**Evaluation: × = Quality Control frequency not within specification; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		C	ount		Rate (%)		Quality Control Specification
Analytical Methods	Method	OC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055-103	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	10	10.00	10.00	✓	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-AES	EG005T	2	18	11.11	10.00	✓	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	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	10	10.00	5.00	✓	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-AES	EG005T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
FRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	10	10.00	5.00	✓	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-AES	EG005T	1	18	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
FRH - Semivolatile Fraction	EP071	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
FRH Volatiles/BTEX	EP080	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
otal Metals by ICP-AES	EG005T	1	18	5.56	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	16	6.25	5.00	1	NEPM 2013 B3 & ALS QC Standard

Page : 4 of 4 Work Order : ES1611169

Client : JACOBS GROUP (AUSTRALIA) PTY LTD

Project : Bankstown Airport - Site 2



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
Moisture Content	EA055-103	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
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 (2013) 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 (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D 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 (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
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.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES1611169

Client : JACOBS GROUP (AUSTRALIA) PTY Laboratory : Environmental Division Sydney

LTD

Contact : MR MICHAEL STACEY (JACOB) Contact

Address : 100 CHRISTIE STREET P O BOX 164 Address : 277-289 Woodpark Road Smithfield

ST LEONARDS NSW, AUSTRALIA NSW Australia 2164

2065

Telephone : +61 02 9928 2100 Telephone : +61-2-8784 8555
Facsimile : +61 02 9928 2272 Facsimile : +61-2-8784 8500

Project : Bankstown Airport - Site 2 Page : 1 of 2

WABQ)

C-O-C number : ---- QC Level : NEPM 2013 B3 & ALS QC Standard

Site : ----Sampler :

Dates

Date Samples Received : 24-May-2016 3:50 PM Issue Date : 24-May-2016

Client Requested Due : 30-May-2016 Scheduled Reporting Date : 30-May-2016

Date

Delivery Details

Mode of Delivery : Undefined Security Seal : Not Available

No. of coolers/boxes : --- Temperature : 9.3

Receipt Detail : No. of samples received / analysed : 2 / 2

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.
- Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal Aqueous (14 days), Solid (60 days) from date of completion of work order.

: 24-May-2016 Issue Date

Page

2 of 2 ES1611169 Amendment 0 Work Order

Client : JACOBS GROUP (AUSTRALIA) PTY LTD



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

• No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package. If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by OIL - S-26 metals/TRH/BTEXN/PAH the laboratory for processing purposes and will be shown bracketed without a time component. OIL - EA055-103 **Noisture Content** Matrix: SOIL Client sample ID Laboratory sample Client sampling ID date / time ES1611169-001 [20-May-2016] A2 - QC02 ES1611169-002 [20-May-2016] A2 - QC04

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE (Brisbane) - A4 - AU Tax Invoice (INV)

BLAIR CUMMINGS		
 *AU Certificate of Analysis - NATA (COA) 	Email	blair.cummings@jacobs.com
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	blair.cummings@jacobs.com
 - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	blair.cummings@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	blair.cummings@jacobs.com
- Chain of Custody (CoC) (COC)	Email	blair.cummings@jacobs.com
- EDI Format - ENMRG (ENMRG)	Email	blair.cummings@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	blair.cummings@jacobs.com
- EDI Format - XTab (XTAB)	Email	blair.cummings@jacobs.com
MICHAEL STACEY (JACOB)		
- *AU Certificate of Analysis - NATA (COA)	Email	michael.stacey@jacobs.com
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	michael.stacey@jacobs.com
 - *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	michael.stacey@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	michael.stacey@jacobs.com
- Chain of Custody (CoC) (COC)	Email	michael.stacey@jacobs.com
- EDI Format - ENMRG (ENMRG)	Email	michael.stacey@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	michael.stacey@jacobs.com
- EDI Format - XTab (XTAB)	Email	michael.stacey@jacobs.com

Email

au-ap@jacobs.com

Contact Phone Contact Name Laboratory Use Only (Time ⊦Date) Compan OS 2004 JOHN HARMAN TO A PROPERTY OF THE ANGEL AND A PROPERTY OF THE PROPERTY AZ-AZ- QC02 AZ- TPZD- 0.5 AZ - QC04 A2- TP20- 1.0 AZ- OC03 AZ- TP19- 1.0 d AZ- TP19-0.5 AZ-TP19_0.2 91-7P20-0.0 A2_TP19_00 Client Sample ID Level 4 100 Christie Street St Leonards NSW 2065 B. Cummingo 02 9032 1467 Michael Stacey (00) 160517-1 Received By Received By 5 Jacobs 8 TRANK 85 20/05/16 11/20/02 Date G urofins/mgt Quote Purchase Order 4 Applysis | Walet Wheen metalinary region led , please agent to Talab' as "Piller 1"4" X (SD) (BNE) MEL | PER | ADL | NEW | DAR Eurofins mgt Suite: B7 TRH/ BTEXN/ PAH/ As, Cd, Cr, Cu, Ni STO I BNE | NEL | PER | ADL | NEW | DAR X X X X X X X Pb, Zn, Hg Eurofins mgt Suite: B13 OCP/ PCB 8 到10700 Perfluorooctanoic acid (PFOA) / Perfluorooctanesulfonic acid 160413JACN X (PFOS) / 6:2 fluorotelomer sulfonate (6:2 FTS) Asbestos - WA/NEPM Guidelines - Quantitative (0.001%w/w) X pH (CaCl2) Date Date Cation Exchange Capacity (CEC) 24,5,16 Project Manager 18 % Clay content Project Ne 12/16 Water Eurofins mgt Suite: B6 TRH/ BTEXN/ As, Cd, Cr, Cu, Ni, Pb, BLAIR CUMMINGS TAIIOTO Zn, Hg Ħ ime Polycyclic Aromatic Hydrocarbons (PAH) - .Trace Level Perfluorooctanoic acid (PFOA) / Perfluorooctanesulfonic acid 15.50 (PFOS) / 6:2 fluorotelomer sulfonate (6:2 FTS) Signature Signature Electronic Results Format 1L Plantic Email for Results Project Name Requirements Turn Around 250mLPlartic 125m L Plantic agreed otherwise. A copy of Eurolins| mg/ Standard Terms and Conditions! Containers 200m L Amber Glass Bankstown 40mLvial DAY(Std.) 1DAY om, Blair Cumming & Jacobs com Michael.Stacey@jacobs.c 125mL Amber Glass Jar Telephone: +61-2-8784 8556 **Environmental Division** Sydney
Work Order Reference
ES1611169 2DAY Courier (orner (Hand Delivered Please Please Postal Sample Comments / DG Hazard Temperature Report No Arrport -Method of Shipment Warning Panavare + Poward 3DAY Surcharges apply ٥ ئ، Site ð f

CHAIN OF CUSTODY RECORD

₹

Eurofins | mgt Sydney Lab

Unit F3Building F. 16 Mars Rd, Lane Cove West, NSW 2066 P: +512 9900 n4nn E: EnviroSampleNSW@eurofins.com.au

Eurofine imgt Brisbane Lab

Unit 1,219 mall wood Place, Murarrie QLD 4172 +617 3902 4600 E:

7

Eurofins (mgt Methourne Lab

2Kingst on Town Close, Oakheigh, Mc 3166 38564 5000 F:+6138564 5 E:EnviroSampleVic@eurofins.com.au

F:+61385645090

EnviroSampleQLD@eurofins.com au

Rige 6 of 7

Vely by Sean 24/5 10:00



email: sydney@envirolab.com.au envirolab.com.au

Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS 151807

Client:

Jacobs Group (Australia) Pty Ltd 100 Christie St St Leonards NSW 2065

Attention: M Stacey, B Cummings

Sample log in details:

Your Reference: <u>IA110700</u>
No. of samples: 4 Soils

Date samples received / completed instructions received 15/08/2016 / 15/08/2016

Analysis Details:

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

Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date: 22/08/16 / 19/08/16

Date of Preliminary Report: Not Issued

NATA accreditation number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing

Tests not covered by NATA are denoted with *.

Results Approved By:

David Springer General Manager



Asbestos ID - soils NEPM - ASB-001 Our Reference: Your Reference Date Sampled Type of sample	UNITS	151807-1 A2-TP17 N 12/08/2016 Soil	151807-2 A2-TP17E 12/08/2016 Soil	151807-3 A2-TP17 S 12/08/2016 Soil	151807-4 A2-TP17W 12/08/2016 Soil
Date analysed	=	19/08/2016	19/08/2016	19/08/2016	19/08/2016
Sample mass tested	g	1365.6	1782.3	1881.5	1925.7
Sample Description	-	Brown coarse- grained soil & rocks	Brown coarse- grained soil & rocks	Brown coarse- grained soil & rocks	Brown coarse- grained soil & rocks
Asbestos ID in soil (as per AS4964)	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected Synthetic mineral fibre detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos ^{#1}	g/kg	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	Chrysotile Amosite	Notapplicable	Not applicable	Not applicable
ACM >7mm Estimation*	g	0.0000	0.0000	0.0000	0.0000
FA and AF Estimation*	g	0.0196	0.0000	0.0000	0.0000
ACM>7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	0.0014	<0.001	<0.001	<0.001

Method ID	Methodology Summary
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation.
	NOTE #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF)
	NOTE ^{#2} The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres.
	Estimation = Estimated asbestos weight
	Results reported with "" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.

Report Comments:

Asbestos-ID in soil: NEPM

This report is consistent with the reporting recommendations in the National Environment

Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013.

This is reported outside our scope of NATA accreditation.

Asbestos ID was analysed by Approved Identifier: Paul Ching Asbestos ID was authorised by Approved Signatory: Paul Ching

INS: Insufficient sample for this test PQL: Practical Quantitation Limit NT: Not tested

NR: Test not required RPD: Relative Percent Difference NA: Test not required

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Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike: A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample): This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

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

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

Measurement Uncertainty estimates are available for most tests upon request.



SAMPLE RECEIPT ADVICE

Client Details	
Client	Jacobs Group (Australia) Pty Ltd
Attention	M Stacey, B Cummings

Sample Login Details	
Your Reference	IA110700
Envirolab Reference	151807
Date Sample Received	15/08/2016
Date Instructions Received	15/08/2016
Date Results Expected to be Reported	22/08/2016

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	4 Soils
Turnaround Time Requested	Standard
Temperature on receipt (°C)	NA
Cooling Method	Not applicable
Sampling Date Provided	

Comments
Samples will be held for 1 month for water samples and 2 months for soil samples from date of
receipt of samples

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	Phone: 02 9910 6200
Fax: 02 9910 6201	Fax: 02 9910 6201
Email: ahie@envirolabservices.com.	au Email: jhurst@envirolabservices.com.au

Sample and Testing Details on following page



Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
enquiries@envirolabservices.com.au
www.envirolabservices.com.au

Sample Id	Asbestos ID - soils NEPM - ASB-001
A2-TP17 N	✓
	,
A2-TP17 E	✓
A2-TP17 E A2-TP17 S	✓ ✓

a	2	
	1	1
	VIDOI DB	VIROLAB

Sydney Lab - Envirolab Services 12 Ashley St, Chatswood, NSW 2067 Ph 02 9910 6200 / sydney@envirolab.com.au Perth Lab - MPL Laboratories 16-18 Hayden Crt Myaree, WA 6154 Ph 08 9317 2505 / lab@mpl.com.au Melbourne Lab - Envirolab Services 14 Dalmore Drive Scoresby VIC 3179 Ph 03 9763 2500 / melbourne@envirolab.com.au Brisbane Lab - Envirolab Services 20a, 10-20 Depot St, Banyo, QLD 4014 Ph 07 3266 9532 / brisbane@envirolab.com.au Adelaide Lab - Envirolab Services 7 Palmerton Road Windsor Gardens, SA 5087 Ph 0406 350 706 / adelaide@envirolab.com.au								Ph 0406 350 706 / adelaide@envirolab.com.au	Comments		
DY - Client 122516 131 Phone number 1300 42 43 44	Client Project Name / Number / Site etc (ie report title):	PO No.:	Envirolab Quote No. :	Date results required:		Or choose standard same day / 1 day / 2 day / 3 day	Note: Inform lab in advance if urgent turnaround is required - surcharges apply	Lab comments:		Tests Required	
ENVIROLAB GROUP - National Phone number 1300 42 43 44	Client: Lace bs Contact Person: M. Stace	Project Mgr: R Cuulming S	Sampler: M. Cyc.SSO	Address: 100 Chwistic St	Steleonands MSW 2015		Phone: 9032 1467 Mob: 0406 861 835		Email: Wichael. stace-19, 1906 55 - Com	Sample information	

Comments	Provide as much information about the sample as you can				Envirolab Services	ENVIROLAB Charswood NSW 2067	Ph. (02) 9910 6200	TO SOL	Date Received: (S) 8	Time Received: ICS	Temp Cool/Ambient	Cooling: Ice/Icepack	Security: MactiBroken/None
naimhau seal	Sassash												
Cample Information	Type of sample 52 4 20 20 20 20 20 20 20 20 20 20 20 20 20	7	7	1	_			,)	0		_	
	Date		C)		+	51	2	R	1	1		2
	Depth				- Total Co.	-	G.	70	>	~	75	//	
	Client Sample ID or information	A2-TPIT N	AZ-TPIJ E	AZ-TPIT S	M2-TPIN W								
	Envirolab Sample ID	1	2	a	4								

Transported by: Hand delivered / courier White - Lab copy / Blue - Client copy / Pink - Retain in Book

Page No: 10+

(if applicable)

Temperature Received at:

Samples Received: Cool or Ambient (circle one)

Lab use only:

Received by (company): 675

10

Date & Time: Print Name:

Stacon girsam

Mehae 15.8.16

Date & Time: Print Name:

Signature:

Jacobs

Relinquished by (company):

Signature:

Form: 302 - Chain of Custody-Client, Issued 22/05/12, Version 5, Page 1 of 1.