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Posted
Faxed
Emailed Shi-en.lim@lciconsultants.com.au
Courier
By Hand
Contact: Ben McGiffin
Our Ref: P2007944JC09V01
Pages: 4 + Attachments
cc.

12 May 2021

LCI Consultants
Shi-En Lim
By email

Dear Shi-En

RE: REVIEW OF CONTAMINATED LAND REPORTS: 57 STATION ROAD, SEVEN HILLS, NSW

1. OVERVIEW AND BACKGROUND

This letter has been prepared by Martens and Associates (MA) to support a development application to Blacktown City Council for a commercial / industrial development comprising a large-scale data centre and site re-grading works at 57 Station Road, Seven Hills (the site).

Recently, a number of contaminated land investigations and remediation works have been undertaken at the site by both MA and RCA Australia (RCA). These works have been documented in the following reports:

- Martens and Associates (2020a) *Desktop contamination assessment: 57 Station Road Seven Hills* ref: P2007944JC02V02 date 22 October, 2020)
- Martens and Associates (2020b) *Environmental Screening assessment: 57 Station Road Seven Hills* ref: P2007944JR01V01, October, 2020)
- RCA Australia (2021a) Update of Phase 2 Environmental Site (Contamination Assessment): 57 Station Road, Toongabbie, NSW ref:14817 – 401/10.
- RCA Australia (2021b) *UPST Validation Report: 57 Station Road, Toongabbie, NSW* ref:14817 – 401/1.

The above-mentioned reports (attached to this letter) should be read in conjunction with this letter.

The objective of this letter is to briefly review relevant information outlined in current contaminated land reports and provide comment on the suitability of the site for the proposed commercial / industrial development.

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2. SITE INVESTIGATION INFORMATION REVIEW

Following our review of current site investigation reports, the following key points are noted:

- At the time of all site investigations, the site was currently used as an industrial site with three separate land uses being a non-operational timber mill (currently used as a timber yard), bulk waste bin storage facility and depot, and a car wreckers yard. The site is currently Zoned 4(a) Industrial – General.

- Site history (documented in MA, 2020b and RCA, 2021a) confirm that before its current commercial / industrial land use the site was primarily agricultural land with some market garden activity. The timber mill was the main land use onsite until some time in 2012 when the car scrap yard was established along with the waste bin storage yard.

- At the commencement of both MA and RCA investigation works, underground petroleum storage system (UPSS) infrastructure was present onsite including three underground storage tanks (USTs), fuel lines and bowsers.

- Both MA and RCA completed subsurface investigation works which included the installation of groundwater monitoring wells and the collection of soil samples. The sample density of the entire available data set (i.e. all samples collected and documented in the current reports) exceeds the minimum sampling requirements outlined in the NSW EPA (1995) *Sampling Design Guidelines* for a 2.6 ha site (approximate site area).

- In relation to soil investigation data, MA (2020b) found detection of total recoverable hydrocarbons (TRH) in soils adjacent to the USTs which exceeded management limits for commercial land use. RCA (2020) also encountered hydrocarbon impacts in soils adjacent to the USTs as well as hydrocarbon soil staining within the car wreckers yard. Both MA (2020b) and RCA (2021a) did not report any result which exceeded human health investigation level (HILs) provided in the *National Environment Protection (Assessment of Site) Contamination Measure* (NEPM) for commercial / industrial land use. RCA (2021a) did identify some exceedances of NEPM ecological criteria (EILs and ESL) for heavy metals, benzo(a)pyrene and TRH, however determined that due to the commercial / industrial nature of the site, there were no potential ecological receptors at risk and that no specific remediation or management would be required in relations to ecological exceedances.

- In relation to groundwater investigation data, MA (2020b) found detections of TRH at a groundwater well directly adjacent to the USTs. Results were below TRH human health screening levels (HSL) for potential vapour intrusion outlined in NEPM (2013). Additional, heavy metal concentrations exceed ecological screening criteria. RCA (2020) also identified TRH impacts in groundwater wells adjacent to USTs with all results below NEPM HSLs for commercial / industrial land use. RCA also identified exceedances of heavy metal ecological screening criteria. RCA concluded that groundwater TRH impacts presented a low risk to continued commercial / industrial land use and are localised around the UPSS infrastructure. Additionally, both RCA (2021a) and MA (2020b) note that heavy metal concentrations detected in groundwater are likely indicative of the regional groundwater aquifer quality given the surrounding industrial land use setting.

3. SITE REMEDIATION WORK AND VALIDATION REVIEW

Following our review of the RCA (2021b) site validation report, the following key points are noted:

- RCA supervised a site remediation program which included the removal of all UPSS infrastructure and the removal of soil material located within the car wreckers yard which was observed to be stained.

- All UPSS removal works was undertaken by a licensed contractor and completed in general accordance with requirements outlined in the UPSS regulations. All waste material (soil, concrete and UPSS infrastructure) was disposed offsite to suitably licenced waste facilities.

- Following UPSS removal, RCA completed a soil validation sampling program which included soil samples from the walls and base of UPSS excavations. Soil samples were analysed for TRH, BTEXN, PAH and heavy metals. All results were found to be less than relevant human health criteria for commercial / industrial land use outlined in NEPM (2013).

- RCA did not complete any additional groundwater sampling following UPSS removal, however concluded that previously noted hydrocarbon impacts at well adjacent to the USTs would be expected to improve with time now that UPSS removal has occurred. In this regard, RCA conclude that no groundwater remediation is necessary for the site.

4. CONCLUSION AND STATUS OF SITE CONTAMINATION

It is noted that the scope of works completed onsite by MA (MA 2020a and 2020b) were limited and did not generate enough site data to make a conclusion on the suitability of the site for the proposed development. However, the RCA (2021a) investigation meets the relevant NSW EPA (1995) sampling guidelines and when read in conjunction with MA investigation works, the combined data set is considered robust enough to determine the contaminated status of the site and its suitability to support the proposed development.

Therefore, based on the conclusions outlined in the RCA (2021a) investigation report and the RCA (2021b) site validation report, **the site is considered suitable for the proposed commercial / industrial development** which is understood to be the construction of a data centre and site regarding works.

Currently, no investigations (either my MA or RCA) have been completed within the footprints of current onsite buildings. Based on our understanding of the proposed development, all current site structures will be demolished. It is recommended that additional soil sampling works and visual inspection within existing structure footprints is undertaken following demolition works to confirm no unexpected contaminants are present.

5. LIMITATIONS

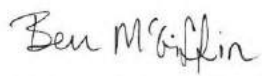
The conclusions outlined in this letter by MA are heavily reliant on the findings of third party (RCA) investigations. MA was not involved in the planning, sampling or interpretation of the results in any way and therefore provide no guarantee regarding the quality or validity of any data generated by RCA.

MA has undertaken this review for the purposes of assessing potential site contamination. No reliance on this report should be made for any other investigation or proposal. MA accepts no responsibility and provides no guarantee regarding the characteristics of areas of the site not specifically assessed by MA.

Please call our offices if you have any further queries regarding this matter.

For and on behalf of

MARTENS & ASSOCIATES PTY LTD



BEN MCGIFFIN

BEng Civil & Environmental

Environment Manager / Senior Engineer

Attachments

Martens and Associates (2020a) Desktop contamination assessment: 57 Station Road Seven Hills ref: P2007944JC02V02 date 22 October, 2020)

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Our Ref: P2007944JC02V02
Pages: 7 + Attachments
cc.

22 October 2020

LCI Consultants
Shi-En Lim
By email

Dear Shi-En,

RE: DESKTOP CONTAMINATION ASSESSMENT: 57 STATION ROAD, SEVEN HILLS, NSW

1. OVERVIEW AND OBJECTIVE

Martens and Associates (MA) have been engaged by LCI Consultants to prepare a desktop contamination assessment at 57 Station Road, Seven Hills, NSW ('the site'). The site is legally identified as Lot B in DP404669 and has an approximate area of 2.6 hectares. Site location is shown in Figure 1, Attachment A.

This desktop assessment is required as part of a due diligence exercise to assess the feasibility of the site for a proposed development.

The purpose of this assessment is to review available desktop and site specific data to identify historic or current activities which may have introduced contamination to the site.

This assessment includes a review of NSW EPA registers, historic aerial photographs of the site and surrounding land and observations made during a site walkover. Preliminary subsurface investigation works have recently been completed at the site which included an initial round of soil and groundwater sampling for laboratory analysis. At the time of preparing this report, laboratory test results were not yet available, however observation made during the works will be briefly discussed.

2. SITE DESCRIPTION

General site details are summarised in Table 1.

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Table 1: Summary of site details based on desktop review.

Item	Comment
Lot / DP	Lot B in DP404669
LGA	Blacktown City Council ('Council')
Topography	Within undulating terrain, on the northeast facing slope, approximately 35 m south of Blacktown Creek. The site is characterised by two near level terraces (western upper and eastern lower terraces) separated by a north-south aligned, approximately 4 m high steep embankment near the central portion of the site. A gravel driveway extends from the Station Road along the northern boundary of the site to access the lower terrace. A north west – south east aligned drainage depression extends along the eastern boundary of the site.
Typical slopes, aspect, elevation	The near level terraces have grades of less than approximately 10% down towards the northeast. The central steep embankment has grades between approximately 50 %. Site elevation ranges between approximately 30 mAHD in the north eastern corner and 38 mAHD in the south western corner of the site (Based on Google Earth).
Existing Development	There are currently three distinct land uses at the site. The eastern half of the site is currently occupied by a timber warehouse and supply plant and the western half of the site is divided with the south western portion used as car scrap yard and the north western portion used as a holding yard currently occupied by a waste company.
Drainage	Via overland flow towards the northeast into the drainage depression discharging to Blacktown Creek.
Neighbouring environment	The site is bordered by Station Road to the west, commercial developments to the north, forested land to the east and McCoy Street and McCoy park to the south.
Expected geology	Ashfield Shale comprising dark-grey to black claystone-siltstone and fine sandstone-siltstone laminite (*Penrith 1:100,000 Geological Series Sheet 9030*, 1991).
Expected soil landscape	The NSW Office of Environment and Heritage's (OEH) information system (eSPADE) indicates the site to be located in the Blacktown (bt) soil landscape, consisting of gently undulating rises on Wianamatta Group shales. This soil landscape is characterised by > 200 cm of soil on lower side slopes. This soil landscape is often associated with localised seasonal waterlogging, localised water erosion hazard, moderately reactive highly plastic subsoil and localised surface movement potential.
Hydrogeology	Review of the Bureau of Meteorology (BOM) Groundwater Explorer indicated four groundwater monitoring bores within 500 m of the site. No information regarding standing water levels or expected water bearing zones was provided in bore records. A map showing the location of monitoring bores near the site is shown in Attachment A.

3. SITE HISTORY AND INFORMATION REVIEW

Aerial Photograph Review

Aerial photographs taken of the site during between circa 1940 and 2020, were reviewed to investigate historical site land uses (Table 2). Copies of aerial photographs are provided in Attachment A.

The aerials indicated that the land use at the site was primarily rural residential until sometime in the 1960s when timbre processing infrastructure appears across the entire site. In 2012, the car scrap yard was established and in 2013 the holding yard appears to have been established. The holding yard appears to have had a variety of occupants including construction equipment, building material and more recently, skip bins and waste trucks.

Table 2: Aerial photograph observations from 1940s to 2020.

Year (Source)	Site Activity	Surrounding Land Use
circa 1940 (HAPE)	Two rural residences and associated sheds are present near the western boundary (adjacent to Station Road). The remainder of the site comprises grassed open space with heavier vegetation present in the eastern corner.	Surrounding land was grassed paddocks to the west and north, vegetated bushlands and market gardens to the south, and a dwelling and grassed paddock to the west. The western rail line is present directly across from station road.
circa 1960 (HAPE)	One of the dwellings has been demolished and the site use appears to have changed to timber processing. Large stockpiles of timber are visible across the site and several large sheds have been constructed. There appears to have been earthwork and possible filling in the eastern half of the site. A dam has been constructed adjacent to southern boundary in the south eastern portion of the site.	Residential development has occurred to the west of the site (across from Station Road). Commercial developments including large warehouses have occurred to the north of the site. Additional residential development is present to the south of the site. A drainage channel has been established east of the site which appears to flow to the recently constructed onsite dam.
2010 (Nearmap)	The remaining dwelling near the west side of the site and a large shed near the south of the site have been demolished. Timber processing now covers the entire site area. A large L shaped warehouse and rectangular warehouse have been constructed. Numerous timber and building material stockpiles are present across the entire site. The former dam has been filled in and additional earthworks appear to have taken place in the eastern portion of the site.	Significant commercial development has occurred to the north of the site. The remaining surrounding land uses consist of vegetated bushland to the northeast, recreational sporting fields to the east, a commercial property and residential housing development to the south, Station road to the west and a residential housing development and railway corridor to the west of Station Road. The drainage channel, identified in the 1960 aerial has been filled and surface water has likely been diverted to the current day Blacktown Creek, located adjacent to the site's eastern boundary.
2012 (Nearmap)	The car scrap yard has now been established in the south western portion of the site. No other major site changes observed.	Little to no change from previous.
2013 (Nearmap)	The holding yard has now been established in the north western portion of the site. Cars and car parts now occupy a majority of the footprint of the car wrecking yard. No other major site changes observed.	Little to no change from previous.
2015 (Nearmap)	Continued increase in activity observed in both the car scrap yard and the holding yard.	Little to no change from previous.

Year (Source)	Site Activity	Surrounding Land Use
2020 (Nearmap)	The site continues to consist of three operational areas – the timber processing operation to the east, a car scrap yard to the south west and a holding yard (now used for skip bins and waste vehicles) to the north west.	Little to no change from previous.

Council Historical Site Records

Council records were requested from the Blacktown City Council; however, they were not provided to Martens at the time that this report was issued.

NSW EPA Register of Contaminated Sites

One site was identified on the NSW EPA contaminated site public register within 500 m of the site.

A former waste oil refinery site located at 27 Powers Road, Seven Hills (approximately 350 m north of the site) was issued with a clean up notice in 2007 due to the presence of hydrocarbon and volatile halogenated compounds (VHC) in soil and groundwater at the refinery site. NSW EPA records indicate that the site was suitably remediated and a site audit statement was issued by an accredited site auditor in 2015. The site was declared formally remediated by the EPA in 2019.

NSW Government PFAS Investigation Program

No sites in the Seven Hills suburb were listed in the NSW Government PFAS Investigation Program (NSW EPA, 2020).

4. SITE WALKOVER INSPECTION

A site walkover was conducted by a MA Senior Engineer on 9 October, 2020. Observations during the site walkover inspection significant to potential site contamination risk are summarised below. It is noted that no access was available to the car scrap yard during the site walkover or subsequent subsurface investigation.

Timbre Yard

- The presence of fill material was observed across most of the footprint of the timber yard. These observations are supported by the historical aerials which indicate filling has occurred onsite. Several fragments of fibre cement sheeting were observed across the area and based on their age and appearance, are likely to be asbestos containing material (ACM).

- Plastic fuel storage containers were observed adjacent to the timber yard office housed in a wooden shed. The containers appeared to be in good condition and no staining or odours were observed within the shed.

- Several old steel drums with chemical labels (methyl ethyl ketone and diesel) were located in the north eastern corner of the timber yard. Nearby disused machinery including a small bobcat and general refuse was also observed within this area.

Holding Yard

- The yard primarily holds skip bins and large waste trucks. Most skip bins were empty at the time of inspection, however several general waste bins were noted as being full.

- Surface material was observed as being primarily a gravel road base material that was likely imported when the area was established as a holding yard.

- A large silo / concrete cylinder is present near the eastern boundary of the holding yard area. The contents of the silo are currently unknown.

- Two fuel bowsers (petrol and diesel) and multiple breather pipes and fill points were observed in the eastern portion of the holding yard. Based on these observations, it is expected there are multiple underground storage tanks (USTs) within the area.

- A BP logo was present on the fuel bowsers which may indicate the possible former use of the area as a service station.

Car Scrap Yard

- No access in the car scrap yard was available however observations from Station road show that a majority of the area footprint is covered in cars and car parts. Soil staining was also observed across most of the area.

5. PRELIMINARY SUBSURFACE OBSERVATIONS

As noted above, a preliminary subsurface investigation program has been completed which included soil and groundwater sampling. While laboratory results are currently not yet available, the following observation were made in relation to potential site contamination:

- Deep fill material up to 2.2 m was observed at the rear of the timber yard. Anthropogenic inclusions were recorded including building and demo waste, plastic and cloth.

- Prior to drilling in the holding yard, a service locator was engaged to conduct a ground penetrating radar (GPR) survey within the area suspected of containing USTs. Full access to the area is currently restricted, however one tank was confirmed as being present through the GPR survey. The full tank dimensions were unable to be measured due to skip bins blocking further access.

- Borehole BH101, excavated near identified UST, showed signs of potential hydrocarbon contamination in the form of strong hydrocarbon odours during drilling and elevated readings on the photoionization detector (PID) unit which is used as a screening tool for volatile organic compounds.

6. POTENTIAL CONTAMINATING ACTIVITIES

Based on our review of currently available site information and onsite observations, Table 3 summarises historic and current potentially contaminating activities.

Table 3: Potentially contaminating site activities

Activity	Location	Description and COPC
Timber mill / Timber manufacturing	Historically, the entire site has been used as a timber mill / timber yard.	Treatments used for timber preservation and pest control historically contained a wide variety of potential contaminants including hydrocarbons, heavy metals, pesticides, phenols and solvents.
Possible former use of the site as a service station	UPSS infrastructure (bowsers and USTs) are currently present in the eastern portion of the holding yard. This area may have been formally used as a service station.	Strong hydrocarbon odours were encountered during drilling works suggesting possible historic release of fuels from the tanks. Leaks from the UPSS have the potential to contaminate the soil and groundwater at the site with hydrocarbons and heavy metals.
Onsite chemical storage	Observations of chemical storage were made across the site, including older steel drums of solvents and diesel as well as current chemical storage associated with the timber yard. While no access was available, it is expected that chemical storage is also occurring within the car wreckers' yard.	Chemical storage has the potential to have introduced a wide range of contaminants to the site including hydrocarbons, heavy metals, pesticides and solvents. Chemical associated with the wrecking yard are likely to include hydrocarbons, heavy metals and solvents.
Site filling	The entire site appears to have been subject to some level of filling.	Fill from unknown sources has the potential to contaminate the soil with a wide range of potential contaminants including hydrocarbons, heavy metals, pesticides and asbestos.
Former structures and current buildings	Historically, there were multiple residences and multiple sheds / garages in various locations across the site. There are also multiple sheds currently being used at the site.	Pesticides and heavy metals may have been used underneath these structures for pest control. Building construction may have included the use of ACM, zinc treated (galvanised) metals, and lead based paints. Former sheds may have previously stored fuels, oils and chemicals.
Onsite storage of vehicles and machinery	Storage of vehicles and machinery has primarily occurred in the western portion of the site as part of the area use as a holding yard and car scrap yard.	The storage of machinery and vehicles has the potential to introduce contaminants through the leaking of fuels and oils. Primary contaminants may include heavy metals, hydrocarbons and solvents.

7. CONCLUSION

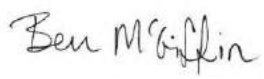
A number of potential contaminating activities have been identified across the site. Based on these findings, and the initial observations of deep fill and hydrocarbon odours, there is a risk of contamination being present onsite which will require some form of management and or remediation prior to any onsite development.

The results of preliminary environmental screening works (soil and groundwater sampling) along with additional site information searches currently being undertaken will be able to provide a better indication of potential site contamination risks.

A Detailed Site Investigation (DSI) in accordance with the *Nation Environmental Protection (Assessment of Site Contamination) Measure* (NEPM 2013) and the NSW EPA (2020) *Guidelines for Consultants Reporting on Contaminated Site*s will be required for the site prior to any onsite development works.

For and on behalf of

MARTENS & ASSOCIATES PTY LTD



BEN MCGIFFIN

BEng Civil & Environmental

Project Manager / Senior Engineer

ATTACHMENT A: Figures

Map	Title
Map 01	Site Location Map
Map 02	Bores Within 500 m Radius
Map 03	Sampling Locations
Map 04	Aerial Photo Circa 1940
Map 05	Aerial Photo Circa 1960
Map 06	Aerial Photo 2010
Map 07	Aerial Photo 2012
Map 08	Aerial Photo 2013
Map 09	Aerial Photo 2015
Map 10	Aerial Photo 2020

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Project No: P2007944 Map Set: MS01-R01 EPSG: 28356

Map Title / Figure:

Site Location Map

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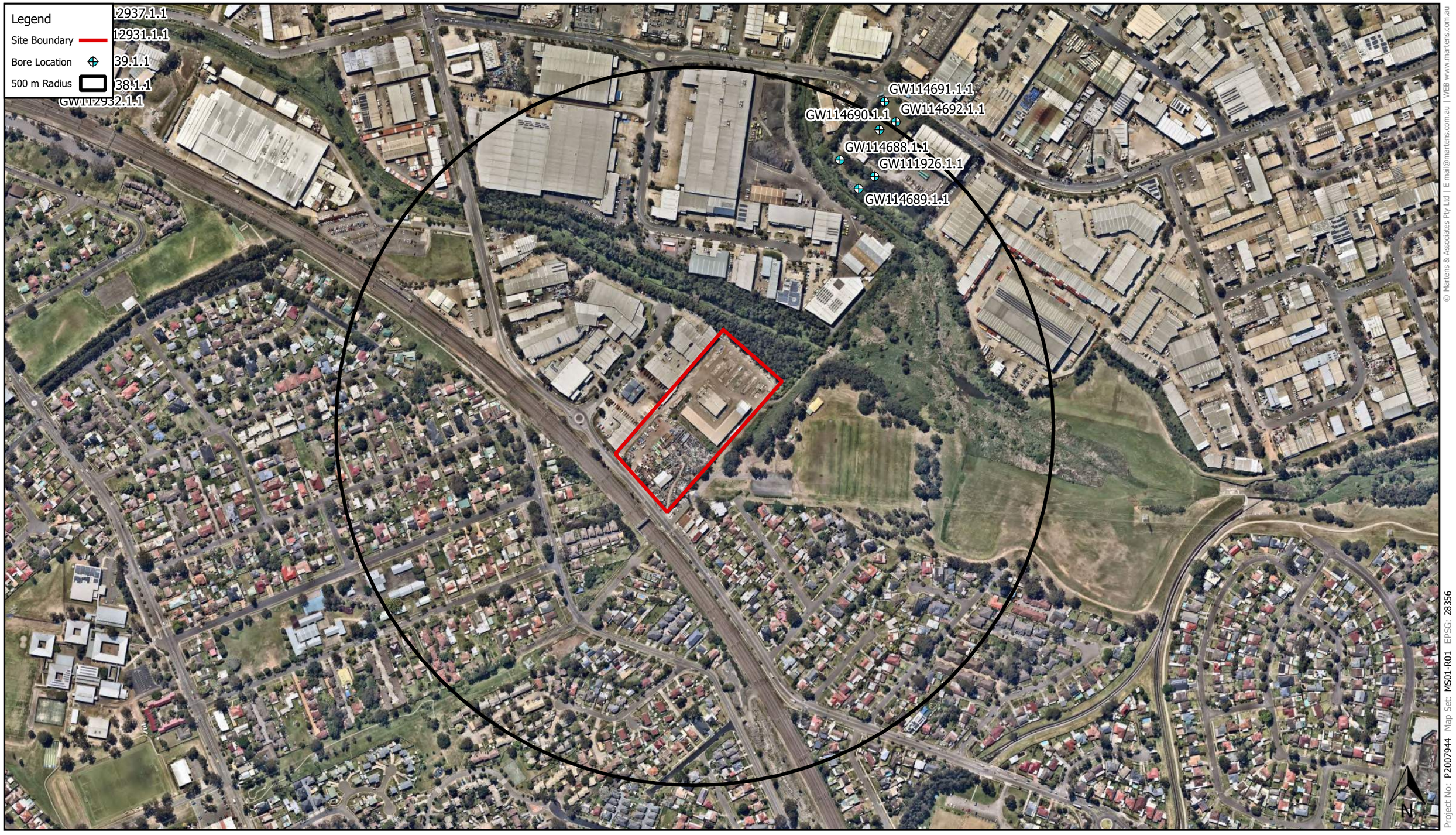
Map 01	Map
57 Station Road, Seven Hills, NSW	Site
Geotechnical & Contamination Assessment for Due Diligence	Project
Desktop Contamination Investigation	Sub-Project
LCI Consultants	Client
23/10/2020	Date



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Project No: P2007944 Map Set: MS01-R01 EPSG: 28356

Map Title / Figure:

Bores Within 500 m Radius

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Map 02	Map
57 Station Road, Seven Hills, NSW	Site
Geotechnical & Contamination Assessment for Due Diligence	Project
Desktop Contamination Investigation	Sub-Project
LCI Consultants	Client
23/10/2020	Date

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Map Title / Figure:
Sampling Locations

Map 03	Map
57 Station Road, Seven Hills, NSW	Site
Geotechnical & Contamination Assessment for Due Diligence	Project
Desktop Contamination Investigation	Sub-Project
LCI Consultants	Client
23/10/2020	Date

Project No: P2007944 Map Set: MS01-R01 EPSG: 28356

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Two rural residences and associated sheds are present near the western boundary (adjacent to Station Road).
The remainder of the site comprises grassed open space with heavier vegetation present in the eastern corner.

Map Title / Figure:

Aerial Photo Circa 1940

Map 04	Map
57 Station Road, Seven Hills, NSW	Site
Geotechnical & Contamination Assessment for Due Diligence	Project
Desktop Contamination Investigation	Sub-Project
LCI Consultants	Client
23/10/2020	Date

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One of the dwellings has been demolished and the site use appears to have changed to timber processing.
Large stockpiles of timber are visible across the site and several large sheds have been constructed.
There appears to have been earthwork and possible filling in the eastern half of the site.
A dam has been constructed adjacent to southern boundary in the south eastern portion of the site.

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Map Title / Figure:
Aerial Photo Circa 1960

Map 05	Map
57 Station Road, Seven Hills, NSW	Site
Geotechnical & Contamination Assessment for Due Diligence	Project
Desktop Contamination Investigation	Sub-Project
LCI Consultants	Client
23/10/2020	Date

Project No: P2007944 Map Set: MS01-R01 EPSG: 28356

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The remaining dwelling near the west side of the site and a large shed near the south of the site have been demolished.
Timber processin now covers the entire site area. A large L shaped warehouse and rectangular warehouse have been constructed.
Numerous timber and building materialstockpiles are present across the entire site.
The former dam has been filled in and additional earth works appear to have taken place in the eastern portion of the site.

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Map Title / Figure:
Aerial Photo 2010

Map 06	Map
57 Station Road, Seven Hills, NSW	Site
Geotechnical & Contamination Assessment for Due Diligence	Project
Desktop Contamination Investigation	Sub-Project
LCI Consultants	Client
23/10/2020	Date

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The car scrap yard has now been established in the southwestern portion of the site.
No other major site changes observed.

Map Title / Figure:

Aerial Photo 2012

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Map 07	Map
57 Station Road, Seven Hills, NSW	Site
Geotechnical & Contamination Assessment for Due Diligence	Project
Desktop Contamination Investigation	Sub-Project
LCI Consultants	Client
23/10/2020	Date

Project No: P2007944 Map Set: MS01-R01 EPSG: 28356

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The holding yard has now been established in the northwestern portion of the site. Cars and car parts now occupy a majority of the footprint of the car wrecking yard. No other major site changes observed.

Map Title / Figure:

Aerial Photo 2013

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Map 08	Map
57 Station Road, Seven Hills, NSW	Site
Geotechnical & Contamination Assessment for Due Diligence	Project
Desktop Contamination Investigation	Sub-Project
LCI Consultants	Client
23/10/2020	Date

Project No: P2007944 Map Set: MS01-R01 EPSG: 28356

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Continued increase in activity observed in both the car scrap yard and the holding yard.

Map Title / Figure:

Aerial Photo 2015

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Map 09	Map
57 Station Road, Seven Hills, NSW	Site
Geotechnical & Contamination Assessment for Due Diligence	Project
Desktop Contamination Investigation	Sub-Project
LCI Consultants	Client
23/10/2020	Date

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The site continues to consist of three operational areas – the timber processing operation to the east, a car scrap yard to the southwest and a holding yard (now used for skip bins and waste vehicles) to the northwest.

Map Title / Figure:

Aerial Photo 2020

Map 10	Map
57 Station Road, Seven Hills, NSW	Site
Geotechnical & Contamination Assessment for Due Diligence	Project
Desktop Contamination Investigation	Sub-Project
LCI Consultants	Client
23/10/2020	Date

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Project No: P2007944 Map Set: MS01-R01 EPSG: 28356

Martens and Associates (2020b) Environmental Screening assessment: 57 Station Road Seven Hills ref: P2007944JR01V01, October, 2020)

LCI Consultants

Environmental Screening Assessment, 57 Station Road, Seven Hills, NSW

P2007944JR01V02
December 2020

ENVIRONMENTAL

WATER

WASTEWATER

GEOTECHNICAL

CIVIL

PROJECT MANAGEMENT

Limitations Statement

The sole purpose of this report and the associated services performed by Martens & Associates Pty Ltd is to provide a limited environmental screening assessment in accordance with the scope of services set out in the contract / quotation between Martens & Associates Pty Ltd and LCI Consultants (hereafter known as the Client). The scope of works and services were defined by the requests of the Client, by the time and budgetary constraints imposed by the Client, and by the availability of access to the site.

Martens & Associates Pty Ltd derived the data in this report primarily from a number of sources which may include for example site inspections, correspondence regarding the proposal, examination of records in the public domain, interviews with individuals with information about the site or the project, and field explorations conducted on the dates indicated. The passage of time, manifestation of latent conditions or impacts of future events may require further examination / exploration of the site and subsequent data analyses, together with a reevaluation of the findings, observations and conclusions expressed in this report.

In preparing this report, Martens & Associates Pty Ltd may have relied upon and presumed accurate certain information (or absence thereof) relative to the site. Except as otherwise stated in the report, Martens & Associates Pty Ltd has not attempted to verify the accuracy of completeness of any such information (including for example survey data supplied by others).

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All enquiries regarding this project are to be directed to the Project Manager.

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Tables

General Abbreviations

AASS	Actual acid sulfate soil
ABC	Ambient background concentrations
ACM	Asbestos containing material
AEC	Area of environmental concern
AF	Asbestos fines
AMP	Asbestos Management Plan
ANZECC	Australia and New Zealand Environment Conservation Council
ANZG	Australian and New Zealand Governments
ASC NEPM	National Environmental Protection (Assessment of Site Contamination) Measure (2013)
ASS	Acid sulfate soil
ASSMAC	Acid Sulfate Soils Management Advisory Committee
AST	Above ground storage tank
BGL	Below ground level
BH	Borehole
BTEXN	Benzene, toluene, ethylbenzene, xylene, naphthalene
CEMP	Construction Environmental Management Plan
COC	Chain of custody
COPC	Contaminants of potential concern
DA	Development application
DBT	Dibutyltin
DEC	Department of Environment and Conservation
DECC	Department of Environment and Climate Change
DNAPL	Dense non aqueous phase liquid
DP	Deposited Plan
DPI	NSW Department of Primary Industry
DPIW	NSW Department of Primary Industry – Water
DQI	Data quality indicators
DQO	Data quality objectives
DSI	Detailed Site Investigation
EAC	Ecological assessment criteria
EIL	Ecological investigation level
EMP	Environmental Management Plan
EPA	NSW Environmental Protection Authority
EQL	Estimated quantitation limit (interchangeable with PQL and LOR)
ESA	Environmental Site Assessment
ESL	Ecological screening level
FA	Fibrous asbestos
GIL	Groundwater investigation level
HIL	Health investigation level
HM	Heavy metals
HSL	Health screening level
IA	Investigation area
ISQG	Interim Sediment Quality Guideline
ITP	Inspection Testing Plan
LGA	Local government area
LNAPL	Light non aqueous phase liquid
LOR	Limit of reporting (interchangeable with EQL and PQL)
MA	Martens & Associates Pty Ltd
mAHD	Metres, Australian Height Datum
mbgl	Metres below ground level
MBT	Monobutyltin
MEK	Methyl Ethyl Ketone
MPE	Multi phase extraction
NAPL	Non aqueous phase liquid
NATA	National Association of Testing Authorities
ND	No data
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
OCP	Organochloride pesticides
OEH	NSW Office of Environment and Heritage
OPP	Organophosphorus pesticides
PACM	Potential asbestos containing material
PAH	Polycyclic aromatic hydrocarbons
PASS	Potential acid sulfate soil
PCB	Polychlorinated biphenyl
PCEMP	Post Construction Environmental Management Plan
PESA	Preliminary Environmental Site Assessment
PFAS	Per and polyfluoroalkyl substances
PID	Photoionisation detector
ppb	Parts per billion
ppm	Parts per million
PQL	Practical quantitative limit (interchangeable with EQL and LOR)
PSI	Preliminary Site Investigation
QA/QC	Quality assurance / quality control
RAC	Remediation acceptance criteria
RAP	Remedial Action Plan
HHRA	Human Health Risk Assessment
RPD	Relative percentage difference
SAC	Site assessment criteria
SAQP	Sampling and Analysis Quality Plan
SEPP	State Environmental Planning Policy
SIL	Soil investigation level
SOP	Standard operating procedure
SWL	Standing water level
SWMS	Safe Work Method Statement
TB	Trip blank
TBT	Tributyl tin
TCLP	Toxicity characteristics leaching procedure
TEQ	Toxic equivalency factor
TP	Test pit
TPH	Total petroleum hydrocarbons
TRH	Total recoverable hydrocarbons
TS	Trip spike
UCL	Upper confidence limit
UPSS	Underground petroleum storage system
UST	Underground storage tank
VHC	Volatile halogenated compounds
VOC	Volatile organic compounds
WHS	Work health and safety
WHSP	Work Health and Safety Plan

1 Introduction

1.1 Overview

This report, prepared by Martens and Associates (MA), documents an Environmental Screening Assessment (ESA) of potentially contaminating activities, to support the feasibility of the construction of a data centre at 57 Station Road, Seven Hills, NSW (the site).

There are currently three distinct land uses at the site. The eastern half of the site is currently occupied by a timber warehouse and supply mill and the western half of the site is divided north / south. The south western portion used as a car scrap yard and the north western portion as a holding yard currently occupied by a waste recycling company.

The site boundary for this ESA is shown in Attachment A.

1.2 Proposed Development

We understand from that the proposed development will include an at grade multistorey hyperscale data centre and car parking areas.

1.3 Objectives

The primary objective of this ESA is to conduct preliminary investigation of areas of potential environmental concern and associated contaminants of potential concern (COPC) within the site which were identified in the Desktop Contamination Assessment (MA, 2020).

It is noted that testing methodology and locations were primarily dictated by a geotechnical investigation which was conducted in conjunction with this ESA.

1.4 Scope of Works

The scope of works completed as part of this ESA includes:

- Collection of soil samples from 5 bores undertaken as part of the site geotechnical investigation across the timber yard and holding yard.
- Collection of soil samples from 4 bores excavated within the car scrap yard.
- Collection of groundwater from two groundwater well, installed during site geotechnical investigation.
- Soil and groundwater laboratory analysis for a range of COPCs.

1.5 Reference Guidelines

This assessment was prepared in general accordance with the following guidelines:

- ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality.
- NEPC (1999, amended 2013) National Environmental Protection (Assessment of Site Contamination) Measure. Referred to as ASC NEPM (2013).
- NSW DEC (2007) Guidelines for the Assessment and Management of Groundwater Contamination.
- NSW EPA (2017) 3rd Ed. Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme.
- NSW EPA (2020) Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites.

2 Site Background Information

2.1 Site Details

Site information is summarised in Table 1, with the site area and general surrounds plans provided in Attachment A

Table 1: Site information.

Item	Description / Detail
Site address	57 Station Road, Seven Hills, NSW
Legal Identifier	Lot B DP404669
Approximate area	2.61 ha (SixMaps)
Local Government Area	Blacktown City Council
Current zoning and land use	Zoned IN1 – General Industrial (NSW Planning Portal). Site is currently used for industrial purposes.
Proposed land use	Construction of a new data centre.
Site description	The site appeared to be divided into three operational areas – a timber supply operation to the east, a car scrap yard operation to the southwest and a holding yard to the northwest. A petroleum UPSS system is located in the holding yard to the northwest. It is known to contain at least one underground storage tank (UST) and two bowsers. It is suspected of containing additional USTs. The location of the UPSS is shown in Attachment A.
Surrounding land uses	Commercial properties to the north, vegetated bushland to the east, a recreational sporting field to the southeast, a commercial property to the south with a residential subdivisons south of the commercial property, Station Road to the west with railway corridor and residential housing development to the west of Station Road.
Topography	The site is relatively flat with grades < 5%. Site elevation ranges between approximately 39 mAHD near the west side of the site and 32 mAHD in the northeast portion of the site (Google Earth).
Expected geology	The *Sydney 1:100,000 Geological Sheet 9030* describes site geology as Bringelly Shale Formation within the Wianamatta Group, containingshale with some sandstone beds. The NSW Environment and Heritage eSPADE website identifies the site as having soils of the Blacktown landscape having shallow to moderately deep hard setting mottled texture contrast soils, red and brown podzolic soils on crests grading to yellow podzolic soils on lower slopes and in drainage lines.

2.2 Hydrogeology

Review of the Bureau of Meteorology (BOM) Groundwater Explorer indicated four groundwater monitoring bores within 500 m of the site, however, no information on standing water level or encountered groundwater depth was provided.

No springs were listed within 500 m of the site in the NSW Government Hydrography Spatial Data (SEED, 2019).

Two groundwater monitoring wells were constructed in BH101 (MW01) and BH103 (MW02).

A summary of standing groundwater level readings in MW01 and MW02, recorded on 16 and 20 October 2020 is provided in Table 2.

Table 2: Summary of standing groundwater levels measured in monitoring wells.

Location	Approximate Surface Level (mAHD) [1]	Standing Water Levels (mAHD / mbgl)	
		16/10/2020	20/10/2020
MW01	37.0	36.45 / 0.55	33.5 / 3.50
MW02	31.0	28.2 / 2.80	27.91 / 3.09

Notes:

1. Surface level estimated from Google Earth.

The expected groundwater flow direction is to the north towards Blacktown Creek. The installation of additional groundwater monitoring wells and monitoring events would be required to confirm these initial conclusions.

3 Previous Site Investigations

3.1 Desktop Contamination Assessment: 57 Station Road, Seven Hills, NSW

A Desktop Contamination Assessment (MA, 2020) was completed for the site, which identified potential sources of contamination. Key findings are summarised in Table 3.

Table 3: Desktop Contamination Assessment (MA, 2020) summary.

Investigation Details	Investigation Task and Finding
Scope of works	The following comprised the Desktop Contamination Assessment scope of works: o Desktop review of previous reports, historical aerial photographs and online databases. o Review of local geology, hydrogeology and topography maps. o Site walkover to review existing site conditions.
Key findings of historical site review and walkover	Historical aerials indicated that the site land use was primarily rural residential until sometime in the 1960s when timber processing use commences across the entire site. In 2012, the car scrap yard was established and in 2013 the holding yard appears to have been established. The holding yard appears to have had a variety of occupants including construction equipment, building material and more recently, skip bins and waste trucks. The site walkover identified the following in the timber yard, holding yard, and cars scrap yard: <u>Timber Yard</u> o The presence of fill material was observed across most of the footprint of the timber yard. These observations are supported by the historical aerials which indicate filling has occurred onsite. Several fragments of fibre cement sheeting were observed across the area and based on their age and appearance, are likely to be asbestos containing material (ACM). o Plastic fuel storage containers were observed adjacent to the timber yard office housed in a wooden shed. The containers appeared to be in good condition and no staining or odours were observed within the shed. o Several old steel drums with chemical labels (methyl ethyl ketone (MEK) and diesel) were located in the north eastern corner of the timber yard. Disused machinery (small bobcat) and general refuse was also observed within this area. <u>Holding Yard</u> o The yard primarily holds skip bins and large waste trucks. Most skip bins were empty at the time of inspection; however, several bins were full. o Surface material was observed as being primarily a gravel road base material. o A large silo / concrete cylinder is present near the eastern boundary of the holding yard area. The contents of the silo are currently unknown. o Two fuel bowsers (petrol and diesel) and multiple breather pipes and fill points were observed in the eastern portion of the holding yard. Based on these observations, it is expected there

Investigation Details	Investigation Task and Finding
	are at least two underground storage tanks (USTs) within the area. o A BP logo was present on the fuel bowsers. <u>Car Scrap Yard</u> o The operators of the car scrap yard were in the process of vacating the site at the time of MA's site inspection and sampling works. o Site infrastructure included several demountable buildings and an open warehouse. o Groundcover at the time of inspection was primarily made up of gravely sandy road base. Approximately 30 – 40% of the area was covered in car parts including engines, car fuel tanks and general part of car bodies (i.e. doors, bonnets). o Soil staining was observed in multiple areas across the site generally adjacent to a stockpile of car parts.
Identified potential contaminating activities, COPC	Identified potentially contaminating activities and COPC included: o Timber mill / timber processing: COPC include hydrocarbons, heavy metals, pesticides, phenols and solvents. o UPSS: COPC include hydrocarbons and heavy metals. o Onsite chemical storage: COPC include hydrocarbons, heavy metals, pesticides and solvents o Site filling: COPC include hydrocarbons, heavy metals, pesticides and asbestos. o Former structures and current buildings: COPC include heavy metals, fuels, oils, chemicals and asbestos. o Onsite storage of vehicles and machinery: COPC include heavy metals, hydrocarbons, solvents and asbestos.

3.2 Available Anecdotal Information

MA have been provided with a document that references a Phase 1 and 2 assessment that was completed for the site in 2007 by RCA Australia. MA have not been provided with a copy of the Phase 1 and 2 assessment and can not verify the validity of the provided document. Of note, the document states that as part of the Phase 1 and 2 assessment, two USTs where identified in the holding yard area of the site. A 16,000 L tank used for diesel storage and a 13,500 L tanks used for petrol storage. This aligns with the observations made by MA as part of the site walkover and desktop assessment, in particular the presence of a diesel and petrol bowser.

4 Sampling, Analytical and Quality Plan

A Sampling Analytical and Quality Plan (SAQP) was developed to ensure that data collected for the ESA is representative and provides a robust basis for site assessment decisions. Preparation of the SAQP was completed in general accordance with ASC NEPM (2013) methodology and includes:

- Data quality objectives (DQO).
- Data quality indicators (DQI).
- Sampling methodologies and procedures.
- Field screening methods.
- Sample handling, preservation and storage procedures.
- Analytical QA / QC.

The following sections summarise the DQO, DQI and QA / QC.

4.1 Data Quality Objectives

DQO were prepared as statements specifying qualitative and quantitative data required to support project decisions. DQO were prepared in general accordance with NSW EPA (2017), EPA (2014) and NEPM (2013) guidelines, and are presented in Table 4.

Table 4: Data quality objectives.

Step 1 **Stating the Problem**	A recently completed desktop contamination assessment (MA, 2020) identified potential contamination risks at the site which may impact the proposed future site development and use.
Step 2 **Identifying the Decision(s)**	To assess the suitability of the site for future commercial land use, decisions are to be made based on the following questions: o Has previous or current site use impacted the site that may pose a risk to humans or the environment for future land use? o Does the site require remediation or management prior to the proposed development?
Step 3 **Identification of Inputs to the Decision**	The inputs to the assessment include: o Soil sampling at nominated locations across the site. o Groundwater sampling at two constructed monitoring wells. o Laboratory analytical results for relevant COPC. o Assessment of analytical results against site suitable guidelines.
Step 4 **Study Boundary Definitions**	Study boundaries are as follows: o Lateral – Lateral boundary of the assessment is defined by the site boundary. o Vertical – Vertical boundary is governed by the maximum depth reached during subsurface investigations. o Temporal – one round of soil and groundwater sampling has been undertaken at this stage.
Step 5 **Development of Decision Rules**	The decision rule for this investigation is as follows: If the concentration of contaminants exceeds the adopted assessment criteria, a risk assessment is required. Should the risk be unacceptable, further investigations to remediate and / or manage the onsite impacts, in relation to the proposed development, will be undertaken.
Step 6 **Specification of Limits on Decision Errors**	Guidance found in ASC NEPM (2013) Schedule B2 regarding 95% upper confidence limit (UCL) states that the 95% UCL of the arithmetic mean provides a 95% confidence level that the true population mean will be less than or equal to this value. Therefore, a decision can be made based on a probability that 95% of the data collected will satisfy the site acceptance criteria. A limit on decision error will be 5% that a conclusive statement may be incorrect.
Step 7 **Optimisation of Sampling Design**	ESA testing locations were generally based on the requirements of the geotechnical investigation. Soil sampling locations were set subject to site access and selected using a judgemental pattern across the site. BH101 was targeted near observed USTs.

4.2 Data Quality Indicators

In accordance with NSW EPA (2017), the investigation data set has been compared with DQI outlined in Table 5 to ensure that collected data meets the project needs and that DQO has been met.

Table 5: Data quality indicators.

Assessment Measure (DQI)	Comment
Precision – A measure of the variability (or reproducibility) of data.	Precision is assessed by calculating the relative percent difference (RPD) between blind field duplicates and primary samples. Data precision is deemed acceptable where results are 0 - 10 x EQL or where RPDs <50% (10 - 30 x EQL) or <30% (>30 x EQL). Exceedance of this range may still be considered acceptable where heterogeneous materials such as fill are sampled.
Accuracy – A measure of the closeness of reported data to the "true value".	Data accuracy is assessed by: o Field spikes and blanks. o Laboratory control samples.
Representativeness – The confidence that data are representative of each media present on the site.	To ensure data representativeness the following field and laboratory procedures are followed: o Ensure that the design and implementation of the sampling program have been completed in accordance with MA standard operating procedures (SOP). o Trip blank and trip spike samples shall be used for volatiles during field sampling to ensure no cross contamination or laboratory artefacts. o Ensure that all laboratory hold times are met and that sample handling and transport are completed in accordance with the MA SOP.
Completeness – A measure of the amount of usable data from a data collection activity.	To ensure data set completeness, the following is required: o Confirmation that all sampling methodology was completed in general accordance with the MA SOP. o COC and receipt forms. o Results from all laboratory QA / QC samples (lab blanks, trip blank, trip spike, lab duplicates). o NATA accreditation stamp on all laboratory reports.
Comparability - The confidence that data may be considered to be equivalent for each sampling and analytical event.	Data comparability is maintained by ensuring that: o All site sampling events are undertaken following methodologies outlined in MA SOP and published guidelines. o NATA accredited laboratory methodologies shall be followed on all laboratory analysis.

4.3 Methodology and Quality Assurance / Quality Control

Site investigation and soil sampling methodology as shown in Table 6, was completed to meet the project DQO.

Table 6: Investigation and sampling methodology.

Activity	Detail / Comments
Fieldworks	<u>Timber yard and holding yard</u> Surface and subsurface soil investigations were completed on 15 and 16 October 2020 (timber yard and holding yard and involved: o Ground penetrating radar (GPR) used to locate an underground storage tank within the UPSS system in the holding yard. It is noted that access to the USTs where limited by the presence of skip bins. o Installation and development of two boreholes / monitoring wells (MW1/ BH101 and MW2 / BH103)). Borehole / monitoring well MW01 / BH101 was located approximately 2 – 3 metres west of the underground petroleum storage system (UPSS). o Three investigation boreholes (BH102, BH104, BH105) and the collection of representative samples. o Collection and analysis of representative soil and groundwater samples. o Collection of number QA / QC samples for laboratory analysis. <u>Car scrap yard</u> Surface and subsurface soil investigations were completed on 12 November 2020 and involved: o Four investigation boreholes (BH201 to BH204) to a maximum depth of 0.9 mbgl and the collection of representative samples. o Collection of one surface soil sample (SS01). o Collection and analysis of representative soil samples. Soil and groundwater sampling locations are shown in Attachment A and borehole logs are provided in Attachment B.
Soil sampling and field screening	Soil sampling was completed by the MA environmental consultant using a clean pair of nitrile gloves for each sample. Generally, shallow soil samples (<1 m) were collected directly from the auger while deeper soil samples were collected following SPT testing to allow for the collection of undisturbed samples. Soil samples were screened in the field using a calibrated photoionisation detector (PID). Each sample was placed into a laboratory supplied, 250 mL glass jar with no headspace to limit volatile loss and labelled with a unique identification number.
Groundwater sampling	Groundwater sampling was completed by the MA environmental consultant using a clean pair of nitrile gloves for each sample. Each well was developed after construction and sampling undertaken on 20 October 2020. Wells were purged using peristaltic low flow, by photoionization reading three consecutive water quality parameters through a flow cell until pH, EC and temperature have stabilised. Samples were collected into laboratory supplied bottles with appropriate preservations. Samples for metal analysis were field filtered.
QA / QC sampling	QA samples were collected for the initial investigation as follows: o One soil and groundwater duplicate sample was collected for intra laboratory analysis during investigations. o One soil trip blank and one trip spike sample were used during soil and groundwater sampling.
Sample handling and transport	Sample collection, storage and transport were conducted according to MA SOP. Collected soil and groundwater samples were placed immediately into an ice chilled cooler box. Samples were dispatched to NATA accredited laboratories under chain of custody documentation within holding times.

4.4 Laboratory Analytical Suite

Laboratory analysis was carried out by Envirolab Pty Ltd a NATA accredited laboratory. Summary of laboratory analyses is provided in Table 7 and Table 8.

Table 7: Summary of soil laboratory analyses.

COPC	Primary Samples Analysed	QA / QC Samples Analysed
BTEXN	17	1 trip spike, 1 trip blank
TRH	17	1 trip blank
PAH	17	
Heavy metals[1]	17	1 duplicate
OCP / OPP	9	
Speciated phenols	5	
Hexavalent chromium	5	
MEK	5	

Notes
[1]-Heavy metals – arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc.

Table 8: Summary of groundwater laboratory analyses.

COPC	Primary Samples Analysed	QA / QC Samples Analysed
BTEX	4	1 trip spike; 1 trip blank
TRH	3	1 trip blank
PAH	2	
Heavy metals[1]	3	1 duplicate
OCP	2	
PCB	2	
Speciated phenols	2	
Per-fluorinated compounds (PFAS / PFOA)	2	
Chlorinated Hydrocarbons (VHC)	2	
MEK	2	

Laboratory chain of custody documentation are provided in Attachment C.

5 Site Assessment Criteria

The site assessment criteria (SAC) adopted for this ESA is based on the proposed development of a data centre. A summary of adopted SAC is outlined Table 9.

Table 9: Site assessment criteria.

Media	Adopted Guidelines	Applicability
Soil	ASC NEPM (2013)	Health investigation levels (HIL) HIL D – Commercial / industrial was adopted based on the proposed land use. Health screening levels (HSL) HSL D – Commercial / industrial land use for clay was adopted based on fine grained material observed. Management Limits Commercial / industrial land use, fine soil. Asbestos Assessed on a detect / non detect basis.
Groundwater	ANZG (2018)	95 % species protection for freshwater

Given the historical commercial / industrial land use and the proposed continued commercial land use, there are considered to be limited sensitive ecological receptors with site soils and ecological assessment has not been considered as part of this assessment.

6 Results

6.1 General Field and Subsurface Observations

The following general field observations were made in relation to potential site contamination:

- Deep site filling was observed up to 2.2 m below ground level. Deeper fill was generally located in BH103 – BH105 (eastern half of the site). Only minor anthropogenic inclusions were observed in the material however the investigation was limited to boreholes which may not achieve full characterisation of anthropogenic conclusions.
- PID field screening of the soil samples generally reported <5 ppm with the exception of samples from BH101 (adjacent to UST) which reported up to 108.7 ppm (sample 7944/BH101/1.5-2) for volatile organic compounds (VOC).
- A hydrocarbon odour was evident during the drilling of BH101.
- Significant soil staining was observed across the car scrap yard area.
- Several cement fibre sheeting fragments were observed at the surface of the timber yard and the car scrap yard.
- Natural soils generally consisted of silty clays overlying shale. Borehole logs are provided in Attachment B.

6.2 Soil Analytical Results

A summary of soil laboratory analytical results is provided in Table 10.

Table 10: Summary of soil analytical results.

Analyte	Summary of Results
Heavy metals	Only minor detections of elevated heavy metals (zinc and chromium) were reported. These are may be associated with site fill material or CCA timber. Concentrations of all heavy metals were reported below the adopted assessment criteria.
Total Recoverable Hydrocarbons (TRH)	Timber yard and holding yard TRH was detected in soil samples in BH101, BH102 and BH105. The detections in BH101 were from a depth range between 1.0 – 2.7 mbgl and are likely associated with the onsite UST. The reported hydrocarbon range for samples from BH101 (C_{10} – C_{36}) is within the diesel hydrocarbon range. The detection in BH102 and BH105 were both in shallow surface samples and are likely associated with site vehicle use.

Analyte	Summary of Results
	All detectable concentrations of TRH were below the adopted assessment criteria. Car scrap yard TRH was detected in all surface soil samples collected at each borehole as well as surface sample SS01. Sample SS01 exceed the various management limits for C_{10} – C_{40} hydrocarbon ranges and surface samples collected at BH201 – BH204 exceeded the various management limits for C_{16} – C_{40} hydrocarbon ranges. Samples collected directly below surface samples in BH201 – BH204 all reported TRH concentration less than the laboratory reporting limit.
PAH	Minor PAH concentrations were detected in samples collected from fill material in BH103 - BH105 and BH201 - 204. These concentrations were less than the adopted assessment criteria. Minor PAH detections (below the assessment criteria) were also recorded in a deep sample in BH101. All detections of PAH were below the adopted assessment criteria.
Speciated phenols	All results below laboratory detection limits and the assessment criteria.
Hexavalent chromium	All results below laboratory detection limits and the assessment criteria.
MEK	All results below laboratory detection limits and the assessment criteria.
Asbestos	Asbestos not detected in all soil samples.

6.3 Groundwater Observations and Analytical Results

Groundwater samples were collected on 21 October 2020, with field parameters summarised in Table 11 and laboratory analytical results summarised in Table 12.

Table 11: Groundwater field water quality indicators.

Well ID	Water level [mbgl]	Temp. [°C]	DO [ppm]	EC [µS/cm]	pH	ORP (mV)
MW01	3.58	20.4	0.21	2,881	6.35	106.7
MW02	3.09	21.6	0.19	2,703	6.67	72.7

Table 12: Summary of groundwater analytical results.

Analyte	Results Compared to SAC
Heavy metals	Concentrations of cadmium, copper, nickel and zinc were recorded in MW01 which exceeded the adopted assessment criteria. The source of elevated heavy metals is currently unknown, however, is likely indicative of regional groundwater quality due to the surrounding commercial / industrial land use.
Total Recoverable	TRH concentrations were reported in groundwater at MW01.

Analyte	Results Compared to SAC
Hydrocarbons (TRH)	TRH F2 (C_{10} – C_{16}) was detected at 200 µg/L. These concentrations are below the adopted assessment criteria. The detections in MW01 are likely associated with the onsite UST. The hydrocarbon range identified in the MW01 sample is similar to soil samples collected from BH101 (MW01).
BTEX	All results below laboratory detection limits and the assessment criteria.
OCP / OPP	All results below laboratory detection limits and the assessment criteria.
PAH	All results below laboratory detection limits and the assessment criteria.
Speciated phenols	All results below laboratory detection limits and the assessment criteria.
Per-fluorinated compounds (PFAS / PFOA)	All results below laboratory detection limits and the assessment criteria.
Chlorinated Hydrocarbons (VHC)	All results below laboratory detection limits with the exception of chloroform which was identified in MW01 at 7 µg/L. The source of chloroform is unknown at this stage.
MEK	All results below laboratory detection limits and the assessment criteria.

6.4 Quality Assurance and Quality Control

Field QA / QC data was collected in accordance with the SAQP. A review of QA / QC procedure has been completed and is presented in the data validation report in Attachment E.

The report concludes that data is suitable for the purposes of the assessment.

7 Discussion

7.1 Results

This ESA has been completed as part of an initial due diligence exercise to provide a preliminary assessment of potential contamination risk at the site which may impact future site development and use as a commercial (data centre) property.

MA (2020) desktop contamination assessment identified multiple potential contaminating activities based on the current and historical use of the site.

Of primary concern is the presence of underground storage tanks (USTs) and associated above and below ground infrastructure (bowsers, fuels lines). Total recoverable hydrocarbons (TRH) were identified in both soil and groundwater from the single testing location targeting the USTs. These detections suggest that some form of hydrocarbon release has occurred (or may still be occurring) which is impacting both soil and groundwater in the vicinity of the USTs. One single soil boring / monitoring well is insufficient to delineate the extent of potential hydrocarbon impacts. Based on MA observation and anecdotal information, it appears likely there are at least two USTs currently onsite. To fully characterise potential contamination risk and risk to any future development or land use, additional soil and groundwater testing locations surrounding the USTs and associated infrastructure will be required.

The presence of deep fill in BH103 – BH105 is unlikely to present a long term land use risk given the intended commercial / industrial use. However, addition investigation should be considered as boreholes are not an adequate investigation method for fill material. While the current boreholes did not encounter significant anthropogenic material, it is possible that building waste and or asbestos containing material (ACM) is present within the fill profile which may impact on future construction works and waste classification of material requiring offsite disposal (if required). This report provides no comment on the geotechnical suitability of the encountered fill.

Shallow soils within the holding yard have some hydrocarbon impact which is likely associated with historical vehicle use. The results are below commercial / industrial land use and not considered to be a major contamination risk during construction or future proposed land use.

Shallow soils within the car scrap yard also have total recoverable hydrocarbon (TRH) impacts which currently exceed management limits for commercial land use. These impacts are likely associated with the

storage of car engines, fuel tanks and other car parts which appear to have leaked oils and fuel onto the surface of the site (as indicated by the soil staining). The contamination appears to be limited to near surface soils as all underlying samples (collected from 0.2 mbgl) of natural clays did not detect TRH concentration above the laboratory reporting limit.

Preliminary sampling and laboratory analysis of soil and groundwater has not identified any contaminants associated with the historical and current use of the site as a timber mill / timber yard. There is however significant limitation in the number of sampling locations. For a 2.6 ha site, the NSW EPA (1995) soil sampling guidelines require 36 unique sampling locations as the minimum number for adequate site characterisation. Further soil and groundwater sampling will be required prior to address this data gap before any assessment of long term site contamination risk can be made.

7.2 Potential Remediation Methodology

Based on the findings of the current site testing, at a minimum, site remediation to remove USTs and address associated soil contamination and to remediate shallow soils within the car scrap yard are required.

Following further site testing (to fully characterise the site), a remediation action plan (RAP) should be prepared to outline remediation objectives and methodology to render the site fit for the intended use.

A likely remediation strategy for shallow soil contamination would be for formal waste classification and offsite removal to a licenced waste facility. Following offsite removal, a validation program will be required to confirm remediation objectives have been completed.

UST removal will need to be completed by a licenced contractor and fully validated by a suitably qualified environmental consultant. The UST removal process may include excavation of contaminated soil surrounding the USTs. In some cases, hydrocarbon impacts can extend a significant distance from a leaking UST and may include soil vapour impacts. Site testing to date has not fully delineated the extent of hydrocarbon impacts and further testing is required to confirm remediation requirements.

8 Conclusions and Recommendations

Following completion of this ESA, MA make the following conclusions:

- There are currently USTs and associated infrastructure onsite which require further assessment. There is only limited anecdotal evidence in relation to the number and size of USTs but it is understood that a 16,000 L diesel tank and a 13,500 L petrol tank are both present on site.

- It is unclear if there is still 'product' within the USTs, however soil and groundwater samples adjacent to the UST area have identified the presence of hydrocarbons suggesting some form of hydrocarbon release has occurred (or may still be occurring).

- UST removal will almost certainly be required prior to the proposed development. Some form of soil and or groundwater remediation / management will also likely be required. Further testing in the vicinity of the USTs will be required to confirm the extent of hydrocarbon impact and to inform remediation / management works.

- Deep fill was encountered during excavation of BH103 – 105 in the eastern portion of the site (timber yard). Only minor anthropogenic inclusions were observed within the fill material, however, further investigation through test pitting should be considered if deep excavation within this area are proposed as part of any future site development.

- Shallow soils within the car scrap yard have concentrations of TRH which exceed management limits for commercial land use. Remediation and validation will be required prior to site development.

- The detection of elevated heavy metals in site groundwater is likely considered to be indicative of regional groundwater quality and not a risk to future site development or site use.

It is recommended that a detailed site investigation (DSI) is undertaken to address existing data gaps, primarily being the extent of hydrocarbon impacts from onsite USTs and only limited sampling locations within the site.

The DSI should be designed to be compliant with relevant NSW EPA endorsed guidelines including the NSW EPA (1995) sampling design guidelines and NEPM (2013) guidelines.

Following the findings of the DSI, a remediation action plan (RAP) will be required to facilitate the removal of existing USTs and to manage shallow soils within the car scrap yard. This may also include the offsite removal of hydrocarbon impacted soils and further long term groundwater monitoring to assess potential risk to both on and offsite receptors.

9 Limitations

The scope of works completed as part of this assessment are limited and significantly reduced from those required for full site characterisation. Works completed do not represent a detailed site investigation (DSI) of site, primarily due to limited sampling and testing density.

Regardless of the completed testing density, no land contamination study can be considered to be a complete and exhaustive characterisation of a site nor can it be guaranteed that any assessment shall identify and characterise all areas of potential contamination or all past potentially contaminating land uses. Prior to the preparation of a development application, additional testing may be required to assess the contamination status of the site.

MA has undertaken this assessment for the purposes of preparing a preliminary due diligence assessment of potential site contamination. No reliance on this report should be made for any other investigation or proposal. MA accepts no responsibility, and provides no guarantee regarding the characteristics of areas of the site not specifically located with the study investigation area.

10 References

ASC NEPM (1999, amended 2013) *National Environmental Protection (Assessment of Site Contamination) Measure, 2013.*

Bureau of Meteorology (2020) Groundwater Explorer. http://www.bom.gov.au/water/groundwater/explorer/

Martens (2020) Desktop Contamination Assessment: 57 Station Road, Seven Hills, NSW. (Ref: P20007944JC02V01)

Nearmap – Aerial photographs.

NSW Department of Environment & Heritage (eSPADE, NSW soil and land information), www.environment.nsw.gov.au.

NSW Department of Mineral Resources (1965) *Sydney 1:250,000 Geological Series Sheets Sheet S1 56-5*.

NSW EPA (2017) 3rd Ed. *Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme.*

NSW EPA (2020) *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites, 2nd Edition.*

NSW EPA (2020) The NSW Government PFAS Investigation Program. https://www.epa.nsw.gov.au/your-environment/contaminated-land/pfas-investigation-program

State Environmental Planning Policy No. 55 – *Remediation of Contaminated Land*.

Standards Australia (1997) Australian Standard AS 4482.1 – *Guide to sampling and investigation of potentially contaminated soil: Part 2: Non-volatile and semi-volatile substances.*

Standards Australia (1999) Australian Standard AS 4482.1 – *Guide to sampling and investigation of potentially contaminated soil: Part 2: Volatile substances.*

Attachment A: Mapset

Map	Title
EN01	Borehole / Monitoring Well Location Map
EN02	UPSS Area

0 10 20 30 40 50 m

1:1250 @ A3

Map Title / Figure:

Borehole / Monitoring Well Location Map

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EN01	Map
57 Station Road, Seven Hills, NSW	Site
Geotechnical & Contamination Assessment for Due Diligence	Project
Environmental Screening Assessment	Sub-Project
LCI Consultants	Client
28/10/2020	Date

Project No: P2007944 Map Set: MS02-R01 EPSG: 28356

0 1 2 3 4 5 m

1:100 @ A3

Map Title / Figure:

UPSS Area

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EN02	Map
57 Station Road, Seven Hills, NSW	Site
Geotechnical & Contamination Assessment for Due Diligence	Project
Environmental Screening Assessment	Sub-Project
LCI Consultants	Client
28/10/2020	Date

Project No: P2007944 Map Set: MS02-R01 EPSG: 28356

Attachment B: Borehole Logs

CLIENT	LCI Consultants		COMMENCED	16/10/2020	COMPLETED	16/10/2020	**REF BH101**
PROJECT	Preliminary Geotechnical Assessment		LOGGED	WB	CHECKED	SVK/SK	Sheet 1 OF 2
SITE	57 Station Road, Seven Hills, NSW		GEOLOGY	Ashfield Shale	VEGETATION	None	PROJECT NO. P2007944
EQUIPMENT		4WD truck-mounted hydraulic drill rig	EASTING	150.947614	RL SURFACE	37 m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 7.20 m depth	NORTHING	-33.779433	ASPECT	East	SLOPE <5%

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
				37.00	PID 0.00 m 0.3 ppm			CI-CH	FILL: Silty CLAY; medium to high plasticity; dark brown, brown, grey, pale grey; trace sand; trace mixed gravels; inferred moderately compacted.			FILL
				0.30	0.00-0.1/Dup02 D0.1							
				36.70	0.00-0.10 m			CH				RESIDUAL SOIL
					0.00-0.1/S/1 D				Silty CLAY; high plasticity; red, red-brown, pale grey; strong hydro carbon odour.			
					0.00-0.10 m							
AD/V	M				0.00-0.3/S/1 D							
				1.00	0.00-0.30 m					M	VSt	
				36.00	0.4-1.0/CBR/1 CBR			CI	Silty CLAY; medium plasticity; brown, red-brown, pale grey; strong hydro carbon odour.	(<PL)		
					0.40-1.00 m							
					PID 0.50 m 0.2 ppm							
					0.6-0.8/S/1 D							
				1.60	0.60-0.80 m							
	H			35.40	SPT 1.00-1.45 m				Trace ironstone gravels; inferred hard.		H	
					5,8,9							
			2	*2.10*	N=17							
					PID 1.00 m 0.8 ppm							
				34.90	1				SHALE; grey, red-brown, brown; highly weathered; inferred low strength.			WEATHERED ROCK
					1.0-1.5/S/1 D							2.10: V-bit refusal.
					1.00-1.50 m							
	M				PID 1.10 m 43 ppm							
					PID 2.00 m 108.7 ppm							
					2.7-2.8/R/1 D							
				3.10	2.70-2.80 m							
				33.90	PID 2.80 m 25.6 ppm				Grey; inferred low to medium strength.			
AD/T		Not Observed			3.1-3.3/R/1 D							
					3.10-3.30 m							
					PID 3.30 m 5.2 ppm							
	H		4									
				4.64								
									Continued as Cored Borehole			
			6									
			8									
			10									

EXCAVATION LOG TO BE READ IN CONJUCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

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Engineering Log - BOREHOLE

CLIENT	LCI Consultants		COMMENCED	16/10/2020	COMPLETED	16/10/2020	**REF BH101/MW01**
PROJECT	Preliminary Geotechnical Assessment		LOGGED	WB	CHECKED	SVK/SK	Sheet 1 OF 1
SITE	57 Station Road, Seven Hills, NSW		GEOLOGY	Ashfield Shale	VEGETATION	None	PROJECT NO. P2007944
EQUIPMENT		4WD truck-mounted hydraulic drill rig	EASTING	150.947614	RL SURFACE	37 m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 7.20 m depth	NORTHING	-33.779433	ASPECT	East	SLOPE <5%

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level
AD/V	M	16/11/20		37.00	0.00-0.1/Dup02 D0.1		CI-CH	FILL: Silty CLAY; medium to high plasticity; dark brown, brown, grey, pale grey; trace sand; trace mixed gravels; inferred moderately compacted.				Concrete; Cuttings
				0.30	0.00-0.10 m							
				36.70	0.00-0.1/S/1 D							
					0.00-0.10 m		CH	Silty CLAY; high plasticity; red, red-brown, pale grey; strong hydro carbon odour.				
					0.00-0.3/S/1 D							
					0.00-0.30 m							
					0.4-1.0/CBR/1 CBR							
				1.00	0.40-1.00 m					M (<PL)	VSt	Bentonite
				36.00	0.6-0.8/S/1 D		CI	Silty CLAY; medium plasticity; brown, red-brown, pale grey; strong hydro carbon odour.				Casing
					0.60-0.80 m							
					1							
				1.60	1.0-1.5/S/1 D							
	H			35.40	1.00-1.50 m			Trace ironstone gravels; inferred hard.			H	
			2	*2.10*								
				34.90				SHALE; grey, red-brown, brown; highly weathered; inferred low strength.				
AD/T	M				2.7-2.8/R/1 D							
					2.70-2.80 m							
				3.10								Screen
				33.90	3.1-3.3/R/1 D			Grey; inferred low to medium strength.				
		20/10/20			3.10-3.30 m							
			4									Sand
				4.64								
NMLC	H			32.36	1 C 4.64-7.20 m			SHALE; dark grey and brown; thinly laminated.				
					C 5.20-5.28 m							
				5.80								
				31.20				Black with dark grey.				
			6									
					C 6.78-6.86 m							
				7.20								
								Hole Terminated at 7.20 m				
			8									
			10									

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Engineering Log - TEST

CLIENT	LCI Consultants		COMMENCED	16/10/2020	COMPLETED	16/10/2020	**REF BH102**
PROJECT	Preliminary Geotechnical Assessment		LOGGED	WB	CHECKED	SVK/SK	Sheet 1 OF 1
SITE	57 Station Road, Seven Hills, NSW		GEOLOGY	Ashfield Shale	VEGETATION	None	PROJECT NO. P2007944
EQUIPMENT		4WD truck-mounted hydraulic drill rig	EASTING	150.947696	RL SURFACE	35 m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 5.70 m depth	NORTHING	-33.779003	ASPECT	Northeast	SLOPE <5%

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/V				*0.20* 34.80	0.00-0.2/S/1 D 0.00-0.20 m PID 0.10 m 1.8 ppm 0.3-1.0/CBR/1 CBR 0.30-1.00 m			SM	FILL: Silty SAND; pale grey, pale brown; trace mixed gravels; inferred moderately compacted; poorly graded.	D		FILL
								CH	Silty CLAY; high plasticity; red, red-brown, orange; pale grey.			RESIDUAL SOIL
	M			*0.80* 34.20	0.4-0.5/S/1 D 0.40-0.50 m 0.8-0.9/S/1 D 0.80-0.90 m				Brown, pale grey, red-brown.		VSt	
				1.40 33.60	SPT 1.00-1.45 m 4,6,10 N=16				Pale grey, red-brown; inferred hard.	M (<<PL)		
	H		2		PID 1.00 m 0.2 ppm 1 1.0-1.45/S/1 D 1.00-1.45 m						H	
				2.30 32.70	PID 1.50 m 1.9 ppm 1.80-2.00/S/1 D 1.80-2.00 m PID 2.30 m 0.2 ppm				SHALE; grey, pale grey, red-brown; highly weathered; inferred low strength.			WEATHERED ROCK 2.30: V-bit refusal.
AD/T	M	Not Encountered		*2.80* 32.20					Black with dark grey.			
			4	*4.00* 31.00					Inferred low to medium strength.			
	H			*5.70*								
			6						Hole Terminated at 5.70 m			5.70: TC-bit refusal on inferred medium strength shale.
			8									
			10									

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Engineering Log - BOREHOLE

CLIENT	LCI Consultants		COMMENCED	15/10/2020	COMPLETED	15/10/2020	**REF BH103**
PROJECT	Preliminary Geotechnical Assessment		LOGGED	WB	CHECKED	SVK/SK	Sheet 1 OF 2
SITE	57 Station Road, Seven Hills, NSW		GEOLOGY	Ashfield Shale	VEGETATION	None	PROJECT NO. P2007944
EQUIPMENT		4WD truck-mounted hydraulic drill rig	EASTING	150.948642	RL SURFACE	31 m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 8.82 m depth	NORTHING	-33.778558	ASPECT	Northeast	SLOPE <5%

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
				31.00	PID 0.00 m 7.1 ppm 0.00-0.2/S/1 D 0.00-0.20 m PID 0.10 m 8 ppm			CL-CI	FILL: Silty CLAY; low to medium plasticity; pale grey, grey, brown, red-brown; trace fine siltstone and shale gravel; inferred poorly to moderately compacted.			FILL
					SPT 1.00-1.45 m 3,5,6 N=11 1 1.0-1.45/S/1 D 1.00-1.45 m PID 1.50 m 8 ppm					M (<<PL)		
			2		1.8-2.0/S/1 D 1.80-2.00 m							
				2.20								
				28.80	2.3-2.5/S/1 D 2.30-2.50 m			CI-CH	Silty CLAY; medium to high plasticity; dark grey; trace fine subrounded to rounded gravels; organic smell.			ALLUVIUM
AD/V	M				SPT 2.50-2.95 m 2,3,3 N=6						F	
				3.00								
				28.00	PID 2.50 m 7 ppm 2 2.5-2.95/S/1 D 2.50-2.95 m			CH	Silty CLAY; high plasticity; brown, red-brown, grey; trace fine ironstone gravels; inferred stiff.			RESIDUAL SOIL
					2.9-3.0/S/1 D 2.90-3.00 m PID 3.00 m 7.3 ppm					M (<PL)		
			4	***4.00***	3.7-4.0/S/1 D 3.70-4.00 m PID 4.00 m 7 ppm				Brown, red-brown, orange, grey and pale grey.		St	
				27.00	4.5-4.8/S/1 D 4.50-4.80 m							
		▽		***5.50***								
AD/T				***5.65***	PID 5.50 m 7.4 ppm				SHALE; dark grey; highly weathered; inferred low strength.			WEATHERED ROCK
									Continued as Cored Borehole			5.50: V-bit refusal.
			6									
			8									
			10									

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Engineering Log - BOREHOLE

CLIENT	LCI Consultants		COMMENCED	15/10/2020	COMPLETED	15/10/2020	**REF BH103/MW02**
PROJECT	Preliminary Geotechnical Assessment		LOGGED	WB	CHECKED	SVK/SK	Sheet 1 OF 1
SITE	57 Station Road, Seven Hills, NSW		GEOLOGY	Ashfield Shale	VEGETATION	None	PROJECT NO. P2007944
EQUIPMENT		4WD truck-mounted hydraulic drill rig	EASTING	150.948642	RL SURFACE	31 m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 8.82 m depth	NORTHING	-33.778558	ASPECT	Northeast	SLOPE <5%

Drilling					Sampling		Field Material Description				
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level
AD/V		16/10/20		31.00	0.00-0.2/S/1 D 0.00-0.20 m			CL-CI	FILL: Silty CLAY; low to medium plasticity; pale grey, grey, brown, red-brown; trace fine siltstone and shale gravel; inferred poorly to moderately compacted.			MW02
					1 1.0-1.45/S/1 D 1.00-1.45 m					M (<<PL)		
			2		1.8-2.0/S/1 D 1.80-2.00 m							
				2.20 28.80				CI-CH	Silty CLAY; medium to high plasticity; dark grey; trace fine subrounded to rounded gravels; organic smell.		F	
					2.3-2.5/S/1 D 2.30-2.50 m							
					2 2.5-2.95/S/1 D 2.50-2.95 m							
		20/10/20		*3.00* 28.00	2.9-3.0/S/1 D 2.90-3.00 m			CH	Silty CLAY: high plasticity; brown, red-brown, grey; trace fine ironstone gravels; inferred stiff.			
					3.7-4.0/S/1 D 3.70-4.00 m					M (<PL)		
			4	*4.00* 27.00					Brown, red-brown, orange, grey and pale grey.		St	
	M				4.5-4.8/S/1 D 4.50-4.80 m							
				5.50								
AD/T				*5.65* 25.35	1 C 5.65-8.82 m				SHALE; dark grey; highly weathered; inferred low strength. SHALE; black with dark grey; thinly laminated.			
			6									
				6.70 24.30					Water loss.			
NMLC										M (<PL)		
			8									
				8.82					Hole Terminated at 8.82 m			
			10									

PIEZOMETER DETAILS: Concrete; Cuttings; Casing; Bentonite; Screen; Sand

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Engineering Log - TEST

CLIENT	LCI Consultants		COMMENCED	15/10/2020	COMPLETED	16/10/2020	**REF BH104**
PROJECT	Preliminary Geotechnical Assessment		LOGGED	WB	CHECKED	SVK/SK	Sheet 1 OF 2
SITE	57 Station Road, Seven Hills, NSW		GEOLOGY	Ashfield Shale	VEGETATION	None	PROJECT NO. P2007944
EQUIPMENT		4WD truck-mounted hydraulic drill rig	EASTING	150.948763	RL SURFACE	30 m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 8.50 m depth	NORTHING	-33.778073	ASPECT	East	SLOPE <5%

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/V	H			30.00	PID 0.00 m 1.3 ppm 0.1-0.3/S/1 D 0.10-0.30 m			CI-CH	FILL: Silty CLAY; medium to high plasticity; grey, brown; trace sand; trace mixed gravels; inferred moderately compacted.	M (<<PL)		FILL
				0.50								
AD/T	L			29.50	PID 0.60 m 0.3 ppm 0.7-0.8/S/1 D 0.70-0.80 m			CI	FILL: Silty CLAY; medium to high plasticity; grey, dark grey, brown, red-brown; trace mixed gravels; trace wood; trace fabric; inferred poorly compacted.			
	L				SPT 1.00-1.45 m 2,4,5 N=9							
				1.50	1							
				28.50	PID 1.50 m 9.1 ppm 1.6-1.8/S/1 D 1.60-1.80 m			CI	Silty CLAY; medium plasticity; grey; organic smell; inferred firm to stiff.		F - St	ALLUVIUM
			2	*2.20*						M (<PL)		
				27.80	2.3-2.4/S/1 D 2.30-2.40 m			CH	Silty CLAY; high plasticity; brown, grey; with shale bands.			RESIDUAL SOIL
AD/V	M				SPT 2.50-2.95 m 2,5,6 N=11							
					PID 2.50 m 7 ppm 2						St	
				3.50								
				26.50				CI	Silty CLAY; medium plasticity; brown; trace sand; trace fine shale gravels.			
					3.8-4.0/S/1 D							
			4	*4.00*	3.80-4.00 m							
		▽		26.00	SPT 4.00-4.45 m 2,3,5 N=8				Brown, red-brown, grey, orange; trace fine ironstone gravels.	M (>PL)		
	H			*4.40*							VSt - H	
AD/T				*4.60*	PID 4.00 m 7.6 ppm				Inferred very stiff to hard.			
	M			*4.72*	3				SHALE; dark grey; highly weathered; inferred low strength.			WEATHERED ROCK
					4.0-4.45/S/1 D 4.00-4.45 m				Continued as Cored Borehole			4.60: V-bit refusal.
			6									
			8									
			10									

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Engineering Log - BOREHOLE

CLIENT	LCI Consultants		COMMENCED	16/10/2020	COMPLETED	16/10/2020	**REF BH105**
PROJECT	Preliminary Geotechnical Assessment		LOGGED	WB	CHECKED	SVK/SK	Sheet 1 OF 1
SITE	57 Station Road, Seven Hills, NSW		GEOLOGY	Ashfield Shale	VEGETATION	None	PROJECT NO. P2007944
EQUIPMENT		4WD truck-mounted hydraulic drill rig	EASTING	150.949336	RL SURFACE	30 m	DATUM AHD
EXCAVATION DIMENSIONS		Ø100 mm x 5.20 m depth	NORTHING	-33.778533	ASPECT	East	SLOPE <5%

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS / ASCS CLASSIFICATION	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T	H			30.00	PID 0.10 m 2.1 ppm 0.2-0.3/S/1 D 0.20-0.30 m PID 0.50 m 3.9 ppm			SM	FILL: Silty SAND; fine to medium grained; grey, brown, pale grey; trace concrete fragments; trace mixed gravels; inferred moderately compacted; poorly graded.	M		FILL
				1.00	0.9-1.0/S/1 D							
	L	▽		29.00	0.90-1.00 m SPT 1.00-1.45 m 3,4,5 N=9				Trace clay; inferred poorly to moderately compacted.	W		
				1.50								
AD/V	M		2	28.50 *1.80* 28.20	PID 1.00 m 0.5 ppm 1 1.0-1.45/S/1 D 1.00-1.45 m 1.6-1.7/S/1 D 1.60-1.70 m 1.9-2.0/S/1 D 1.90-2.00 m PID 2.25 m 0.1 ppm SPT 2.50-2.95 m 3,6,7 N=13 2 2.5-2.95/S/1 D 2.50-2.95 m			CL-CI CI	Silty CLAY; low to medium plasticity; grey, hydrocarbon smell; inferred stiff. Silty CLAY; medium plasticity; brown, grey.	M (>PL)	St	ALLUVIUM RESIDUAL SOIL
			4	*4.30*								
AD/T				25.70					SHALE; dark grey; highly weathered; inferred low strength.			WEATHERED ROCK 4.30: V-bit refusal.
				5.20					Hole Terminated at 5.20 m			5.20: TC-bit refusal on inferred medium strength shale.
			6									
			8									
			10									

EXCAVATION LOG TO BE READ IN CONJUCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS & ASSOCIATES PTY LTD
Suite 201, 20 George St. Hornsby, NSW 2077 Australia
Phone: (02) 9476 9999 Fax: (02) 9476 8767
mail@martens.com.au WEB: http://www.martens.com.au

Engineering Log - BOREHOLE

Attachment C: Laboratory Certificates

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 253712

Client Details

Client	Martens & Associates Pty Ltd
Attention	Mark Laidlaw
Address	Suite 201, 20 George St, Hornsby, NSW, 2077

Sample Details

Your Reference	**P2007944-57 Station Road, Seven Hills**
Number of Samples	12 Soil
Date samples received	19/10/2020
Date completed instructions received	19/10/2020

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	26/10/2020
Date of Issue	26/10/2020

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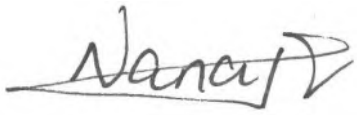
Asbestos Approved By
Analysed by Asbestos Approved Identifier: Panika Wongchanda
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Dragana Tomas, Senior Chemist
Hannah Nguyen, Senior Chemist
Josh Williams, Senior Chemist
Lucy Zhu, Asbestos Supervisor
Priya Samarawickrama, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

VOCs in soil						
Our Reference		253712-1	253712-5	253712-6	253712-7	253712-8
Your Reference	UNITS	7944/BH101/0.0-0.1	7944/BH102/0.0-0.1	7944/BH103/0.0-0.1	7944/BH104/0.5-0.6	7944/BH105/0.0-0.1
Date Sampled		15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
MEK	mg/kg	<10	<10	<10	<10	<10

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		253712-1	253712-2	253712-3	253712-4	253712-5
Your Reference	UNITS	7944/BH101/0.0-0.1	7944/BH101/1.0-1.1	7944/BH101/1.8-2	7944/BH101/2.7-2.8	7944/BH102/0.0-0.1
Date Sampled		15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	111	100	93	100	95

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		253712-6	253712-7	253712-8	253712-11	253712-12
Your Reference	UNITS	7944/BH103/0.0-0.1	7944/BH104/0.5-0.6	7944/BH105/0.0-0.1	7944/TS	7944/TB
Date Sampled		15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	[NA]	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	[NA]	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	[NA]	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	109%	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	111%	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	114%	<1
m+p-xylene	mg/kg	<2	<2	<2	113%	<2
o-Xylene	mg/kg	<1	<1	<1	114%	<1
naphthalene	mg/kg	<1	<1	<1	[NT]	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	[NT]	<3
Surrogate aaa-Trifluorotoluene	%	107	84	101	101	100

svTRH (C10-C40) in Soil						
Our Reference		253712-1	253712-2	253712-3	253712-4	253712-5
Your Reference	UNITS	7944/BH101/0.0-0.1	7944/BH101/1.0-1.1	7944/BH101/1.8-2	7944/BH101/2.7-2.8	7944/BH102/0.0-0.1
Date Sampled		15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
TRH C_{10} - C_{14}	mg/kg	<50	120	340	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	390	730	<100	110
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	170
TRH >C_{10} -C_{16}	mg/kg	<50	260	640	54	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	260	640	54	<50
TRH >C_{16} -C_{34}	mg/kg	<100	240	430	<100	240
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	210
Total +ve TRH (>C10-C40)	mg/kg	<50	500	1,100	50	450
Surrogate o-Terphenyl	%	93	#	#	103	88

svTRH (C10-C40) in Soil				
Our Reference		253712-6	253712-7	253712-8
Your Reference	UNITS	7944/BH103/0.0-0.1	7944/BH104/0.5-0.6	7944/BH105/0.0-0.1
Date Sampled		15-16/10/2020	15-16/10/2020	15-16/10/2020
Type of sample		Soil	Soil	Soil
Date extracted	-	20/10/2020	20/10/2020	20/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	130
TRH C_{29} - C_{36}	mg/kg	<100	<100	240
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	320
TRH >C_{34} -C_{40}	mg/kg	<100	<100	370
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	690
Surrogate o-Terphenyl	%	85	91	101

PAHs in Soil						
Our Reference		253712-1	253712-2	253712-3	253712-4	253712-5
Your Reference	UNITS	7944/BH101/0.0-0.1	7944/BH101/1.0-1.1	7944/BH101/1.8-2	7944/BH101/2.7-2.8	7944/BH102/0.0-0.1
Date Sampled		15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Naphthalene	mg/kg	<0.1	<0.1	0.5	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	0.3	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	0.9	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	1.2	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	0.4	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	3.5	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	98	93	93	92	98

PAHs in Soil				
Our Reference		253712-6	253712-7	253712-8
Your Reference	UNITS	7944/BH103/0.0-0.1	7944/BH104/0.5-0.6	7944/BH105/0.0-0.1
Date Sampled		15-16/10/2020	15-16/10/2020	15-16/10/2020
Type of sample		Soil	Soil	Soil
Date extracted	-	20/10/2020	20/10/2020	20/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	0.1	0.6
Anthracene	mg/kg	<0.1	<0.1	0.2
Fluoranthene	mg/kg	0.2	0.1	0.8
Pyrene	mg/kg	0.2	0.1	0.7
Benzo(a)anthracene	mg/kg	<0.1	<0.1	0.3
Chrysene	mg/kg	0.1	<0.1	0.4
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	0.8
Benzo(a)pyrene	mg/kg	0.08	<0.05	0.4
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.3
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1	<0.1	0.5
Total +ve PAH's	mg/kg	0.77	0.3	5.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	0.6
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	0.7
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	0.7
Surrogate p-Terphenyl-d14	%	97	94	95

Organochlorine Pesticides in soil						
Our Reference		253712-1	253712-5	253712-6	253712-7	253712-8
Your Reference	UNITS	7944/BH101/0.0-0.1	7944/BH102/0.0-0.1	7944/BH103/0.0-0.1	7944/BH104/0.5-0.6	7944/BH105/0.0-0.1
Date Sampled		15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	103	105	108	106	103

Organophosphorus Pesticides in Soil						
Our Reference		253712-1	253712-5	253712-6	253712-7	253712-8
Your Reference	UNITS	7944/BH101/0.0-0.1	7944/BH102/0.0-0.1	7944/BH103/0.0-0.1	7944/BH104/0.5-0.6	7944/BH105/0.0-0.1
Date Sampled		15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	103	105	108	106	103

Speciated Phenols in Soil						
Our Reference		253712-1	253712-5	253712-6	253712-7	253712-8
Your Reference	UNITS	7944/BH101/0.0-0.1	7944/BH102/0.0-0.1	7944/BH103/0.0-0.1	7944/BH104/0.5-0.6	7944/BH105/0.0-0.1
Date Sampled		15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Date analysed	-	22/10/2020	22/10/2020	22/10/2020	22/10/2020	22/10/2020
Phenol	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
2-Chlorophenol	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
4-Chloro-3-methylphenol	mg/kg	<1	<1	<1	<1	<1
2-Methylphenol (o-cresol)	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
3/4-Methylphenol (m/p-cresol)	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
2-Nitrophenol	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
2,4 -Dimethylphenol	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
2,4-Dichlorophenol	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
2,6-Dichlorophenol	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
2,4,5-Trichlorophenol	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
2,4,6-Trichlorophenol	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
2,4-Dinitrophenol	mg/kg	<4	<4	<4	<4	<4
4-Nitrophenol	mg/kg	<4	<4	<4	<4	<4
2346-Tetrachlorophenol	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
2-methyl-4,6-Dinitrophenol	mg/kg	<2	<2	<2	<2	<2
Pentachlorophenol	mg/kg	<1	<1	<1	<1	<1
Surrogate 2-fluorophenol	%	107	95	102	100	97
Surrogate Phenol-d_6	%	120	106	114	104	111
Surrogate 2,4,6-Tribromophenol	%	124	96	88	103	83
Surrogate p-Terphenyl-d_{14}	%	117	108	110	106	107

Acid Extractable metals in soil						
Our Reference		253712-1	253712-2	253712-3	253712-4	253712-5
Your Reference	UNITS	7944/BH101/0.0-0.1	7944/BH101/1.0-1.1	7944/BH101/1.8-2	7944/BH101/2.7-2.8	7944/BH102/0.0-0.1
Date Sampled		15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Arsenic	mg/kg	9	9	<4	<4	9
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	25	10	2	6	19
Copper	mg/kg	41	19	7	29	25
Lead	mg/kg	35	17	28	11	30
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	30	5	<1	1	9
Zinc	mg/kg	82	17	2	13	76

Acid Extractable metals in soil					
Our Reference		253712-6	253712-7	253712-8	253712-10
Your Reference	UNITS	7944/BH103/0.0-0.1	7944/BH104/0.5-0.6	7944/BH105/0.0-0.1	7944/Dup2
Date Sampled		15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Arsenic	mg/kg	5	5	19	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	13	10	27	16
Copper	mg/kg	35	35	56	26
Lead	mg/kg	15	41	17	16
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	20	13	20	17
Zinc	mg/kg	61	74	110	47

Moisture						
Our Reference		253712-1	253712-2	253712-3	253712-4	253712-5
Your Reference	UNITS	7944/BH101/0.0-0.1	7944/BH101/1.0-1.1	7944/BH101/1.8-2	7944/BH101/2.7-2.8	7944/BH102/0.0-0.1
Date Sampled		15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Date analysed	-	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
Moisture	%	0.8	19	15	12	1.3

Moisture					
Our Reference		253712-6	253712-7	253712-8	253712-10
Your Reference	UNITS	7944/BH103/0.0-0.1	7944/BH104/0.5-0.6	7944/BH105/0.0-0.1	7944/Dup2
Date Sampled		15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Date analysed	-	21/10/2020	21/10/2020	21/10/2020	21/10/2020
Moisture	%	5.4	15	4.1	0.1

Asbestos ID - soils						
Our Reference		253712-1	253712-5	253712-6	253712-7	253712-8
Your Reference	UNITS	7944/BH101/0.0-0.1	7944/BH102/0.0-0.1	7944/BH103/0.0-0.1	7944/BH104/0.5-0.6	7944/BH105/0.0-0.1
Date Sampled		15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	26/10/2020	26/10/2020	26/10/2020	26/10/2020	26/10/2020
Sample mass tested	g	Approx. 50g	Approx. 50g	Approx. 50g	Approx. 40g	Approx. 50g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	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	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	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	No asbestos detected

Misc Soil - Inorg						
Our Reference		253712-1	253712-5	253712-6	253712-7	253712-8
Your Reference	UNITS	7944/BH101/0.0-0.1	7944/BH102/0.0-0.1	7944/BH103/0.0-0.1	7944/BH104/0.5-0.6	7944/BH105/0.0-0.1
Date Sampled		15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020	15-16/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Hexavalent Chromium, Cr^{6+}	mg/kg	<1	<1	<1	<2	<1

Method ID	Methodology Summary
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.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-024	Hexavalent Chromium (Cr6+) - determined colourimetrically. Waters samples are filtered on receipt prior to analysis.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.

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

QUALITY CONTROL: VOCs in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	253712-6
Date extracted	-			20/10/2020	1	20/10/2020	20/10/2020		20/10/2020	20/10/2020
Date analysed	-			20/10/2020	1	20/10/2020	20/10/2020		20/10/2020	20/10/2020
MEK	mg/kg	10	Org-023	<10	1	<10	<10	0	116	112

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	253712-6
Date extracted	-			20/10/2020	1	20/10/2020	20/10/2020		20/10/2020	20/10/2020
Date analysed	-			20/10/2020	1	20/10/2020	20/10/2020		20/10/2020	20/10/2020
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	102	97
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	102	97
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	106	100
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	98	92
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	103	97
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	102	98
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	105	99
naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	111	1	111	90	21	120	107

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			20/10/2020	1	20/10/2020	20/10/2020		20/10/2020	[NT]
Date analysed	-			20/10/2020	1	20/10/2020	20/10/2020		20/10/2020	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	109	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	<100	<100	0	98	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	<100	<100	0	92	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	<50	<50	0	109	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	<100	<100	0	98	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	<100	<100	0	92	[NT]
Surrogate o-Terphenyl	%		Org-020	90	1	93	92	1	95	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			20/10/2020	1	20/10/2020	20/10/2020		20/10/2020	[NT]
Date analysed	-			20/10/2020	1	20/10/2020	20/10/2020		20/10/2020	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	91	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	101	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	96	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	100	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	<0.05	<0.05	0	100	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	98	1	98	100	2	94	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			20/10/2020	1	20/10/2020	20/10/2020		20/10/2020	[NT]
Date analysed	-			20/10/2020	1	20/10/2020	20/10/2020		20/10/2020	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	94	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	119	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	97	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	97	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	97	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	93	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	68	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	84	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	106	1	103	102	1	99	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date extracted	-			20/10/2020	1	20/10/2020	20/10/2020		20/10/2020	[NT]
Date analysed	-			20/10/2020	1	20/10/2020	20/10/2020		20/10/2020	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	76	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	125	[NT]
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	98	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	71	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	106	1	103	102	1	99	[NT]

QUALITY CONTROL: Speciated Phenols in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	253712-6
Date extracted	-			20/10/2020	1	20/10/2020	20/10/2020		20/10/2020	20/10/2020
Date analysed	-			22/10/2020	1	22/10/2020	22/10/2020		22/10/2020	22/10/2020
Phenol	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	122	120
2-Chlorophenol	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	100	96
4-Chloro-3-methylphenol	mg/kg	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
2-Methylphenol (o-cresol)	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	72	68
3/4-Methylphenol (m/p-cresol)	mg/kg	0.4	Org-022/025	<0.4	1	<0.4	<0.4	0	[NT]	[NT]
2-Nitrophenol	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
2,4 -Dimethylphenol	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
2,4-Dichlorophenol	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
2,6-Dichlorophenol	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	96	92
2,4,5-Trichlorophenol	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
2,4,6-Trichlorophenol	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
2,4-Dinitrophenol	mg/kg	4	Org-022/025	<4	1	<4	<4	0	[NT]	[NT]
4-Nitrophenol	mg/kg	4	Org-022/025	<4	1	<4	<4	0	90	86
2346-Tetrachlorophenol	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
2-methyl-4,6-Dinitrophenol	mg/kg	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Pentachlorophenol	mg/kg	1	Org-022/025	<1	1	<1	<1	0	124	60
Surrogate 2-fluorophenol	%		Org-022/025	93	1	107	99	8	96	101
Surrogate Phenol-d_6	%		Org-022/025	108	1	120	112	7	111	114
Surrogate 2,4,6-Tribromophenol	%		Org-022/025	115	1	124	117	6	111	111
Surrogate p-Terphenyl-d_{14}	%		Org-022/025	110	1	117	111	5	110	108

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date prepared	-			20/10/2020	[NT]	[NT]	[NT]	[NT]	20/10/2020	[NT]
Date analysed	-			20/10/2020	[NT]	[NT]	[NT]	[NT]	20/10/2020	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	110	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	106	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	253712-6
Date prepared	-			20/10/2020	1	20/10/2020	20/10/2020		20/10/2020	20/10/2020
Date analysed	-			20/10/2020	1	20/10/2020	20/10/2020		20/10/2020	20/10/2020
Hexavalent Chromium, Cr^{6+}	mg/kg	1	Inorg-024	<1	1	<1	<1	0	103	89

Result Definitions

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

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

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

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.

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

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

Report Comments

TRH Soil C10-C40 NEPM - # Percent recovery for the surrogate/matrix spike is not possible to report as the high concentration of analytes in sample/s 253712-2,3 have caused interference.

MISC_INORG_CRVI: Hexavalent Chromium PQL has been raised due to matrix interferences, samples were diluted and reanalysed however same results were achieved.

Asbestos: Excessive sample volume was provided for asbestos analysis. A portion of the supplied sample was sub-sampled according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g (50mL) of sample in its own container as per AS4964-2004.
Note: Samples were sub-sampled from jars provided by the client.

martens
consulting engineers since 1989

SOIL ANALYSIS CHAIN OF CUSTODY FORM

Additional Testing												
Name	P2007944 – 57 Station Road, Seven Hills											
Martens Contact Officer	Mark Laidlaw					**Contact Email**	mlaidlaw@martens.com.au; bmcgiffin@martens.com.au					
Sampling and Shipping	**Sample Date**	15,16/10/2020		**Dispatch Date**		19.10.2020	**Turnaround Time**					
	Our Reference	P2007944COC01V01				**Shipping Method (X)**	**Hand**		**Post**		**Courier**	X
	On Ice (X)	X	**No Ice (X)**		**Other (X)**							

Laboratory								
Name	EnviroLab							
Sample Delivery Address	12 Ashley Street, Chatswood							
Delivery Contact	**Name**	Simon Song	**Phone**	9910 6200	**Fax**		**Email**	samplereceipt@envirolabservices.com.au
Please Send Report By (X)	**Post**		**Fax**		**Email**	X	**Reporting Email Address**	**bmcgiffin@martens.com.au** mlaidlaw@martens.com.au

	Sample ID	Combo 5A (OPP not PCB)	Speciated Phenols	Hexavalent Chromium	Combo 3	MEK	8 Metals	BTEX	TRH	Hold
1	7944/BH101/0.0-0.1	X	X	X		X				
2	7944/BH101/1.0-1.1				X					
3	7944/BH101/1.8-2.0				X					
4	7944/BH101/2.7-2.8				X					
5	7944/BH102/0.0-0.1	X	X	X		X				
6	7944/BH103/0.0-0.1	X	X	X		X				
7	7944/BH104/0.5-0.6	X	X	X		X				

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

Job No: 25 3712
Date Received: 19/10/2020
Time Received: 15:12
Received By: RL
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None
Received by: R.Chazeen

Head Office
Suite 201, Level 2, 20 George Street
Hornsby NSW 2077, Australia
Ph 02 9476 9999 **Fax** 02 9476 8767

> mail@martens.com.au
> www.martens.com.au
MARTENS & ASSOCIATES P/L
ABN 85 070 240 890 ACN 070 240 890

SOIL ANALYSIS CHAIN OF CUSTODY

253712.
(RL)

	Sample ID	Combo 5A (OPP not PCB)	Speciated Phenols	Hexavalent Chromium	Combo 3	MEK	8 Metals	BTEX	TRH	Hold
8	7944/BH105/0.0-0.1	X	X	X		X				
9	7944/BH105/0.4-0.5									X
10	7944/Dup2						X			
11	7944/TS							X		
12.	7944/TB							X	X	

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 254008

Client Details

Client	Martens & Associates Pty Ltd
Attention	Ben McGiffin
Address	Suite 201, 20 George St, Hornsby, NSW, 2077

Sample Details

Your Reference	**P2007944 - 57 Station road, Seven Hills**
Number of Samples	5 Water
Date samples received	22/10/2020
Date completed instructions received	22/10/2020

Analysis Details

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

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

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

Report Details

Date results requested by	29/10/2020
Date of Issue	28/10/2020

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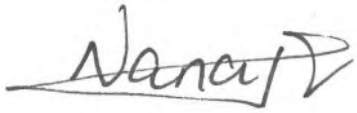
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Alexander Mitchell Maclean, Senior Chemist
Dragana Tomas, Senior Chemist
Jaimie Loa-Kum-Cheung, Metals Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

VHC's in water			
Our Reference	UNITS	254008-1	254008-2
Your Reference		7944/MW01	7944/MW02
Date Sampled		21/10/2020	21/10/2020
Type of sample		Water	Water
Date extracted	-	23/10/2020	23/10/2020
Date analysed	-	23/10/2020	23/10/2020
Dichlorodifluoromethane	µg/L	<10	<10
Chloromethane	µg/L	<10	<10
Vinyl Chloride	µg/L	<10	<10
Bromomethane	µg/L	<10	<10
Chloroethane	µg/L	<10	<10
Trichlorofluoromethane	µg/L	<10	<10
1,1-Dichloroethene	µg/L	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1
1,1-dichloroethane	µg/L	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1
Bromochloromethane	µg/L	<1	<1
Chloroform	µg/L	7	<1
2,2-dichloropropane	µg/L	<1	<1
1,2-dichloroethane	µg/L	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1
1,1-dichloropropene	µg/L	<1	<1
Carbon tetrachloride	µg/L	<1	<1
Dibromomethane	µg/L	<1	<1
1,2-dichloropropane	µg/L	<1	<1
Trichloroethene	µg/L	<1	<1
Bromodichloromethane	µg/L	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1
1,3-dichloropropane	µg/L	<1	<1
Dibromochloromethane	µg/L	<1	<1
1,2-dibromoethane	µg/L	<1	<1
Tetrachloroethene	µg/L	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1
Chlorobenzene	µg/L	<1	<1
Bromoform	µg/L	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1
Bromobenzene	µg/L	<1	<1

VHC's in water			
Our Reference		254008-1	254008-2
Your Reference	UNITS	7944/MW01	7944/MW02
Date Sampled		21/10/2020	21/10/2020
Type of sample		Water	Water
2-chlorotoluene	µg/L	<1	<1
4-chlorotoluene	µg/L	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1
Hexachlorobutadiene	µg/L	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1
MEK	µg/L	<10	<10
Surrogate Dibromofluoromethane	%	112	104
Surrogate toluene-d8	%	99	97
Surrogate 4-BFB	%	103	98

vTRH(C6-C10)/BTEXN in Water					
Our Reference	UNITS	254008-1	254008-2	254008-4	254008-5
Your Reference		7944/MW01	7944/MW02	7944/Spike	7944/Blank
Date Sampled		21/10/2020	21/10/2020	21/10/2020	21/10/2020
Type of sample		Water	Water	Water	Water
Date extracted	-	23/10/2020	23/10/2020	23/10/2020	23/10/2020
Date analysed	-	23/10/2020	23/10/2020	28/10/2020	28/10/2020
TRH C_6 - C_9	µg/L	<10	<10	[NA]	<10
TRH C_6 - C_{10}	µg/L	<10	<10	[NA]	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	[NA]	<10
Benzene	µg/L	<1	<1	107%	<1
Toluene	µg/L	<1	<1	113%	<1
Ethylbenzene	µg/L	<1	<1	113%	<1
m+p-xylene	µg/L	<2	<2	114%	<2
o-xylene	µg/L	<1	<1	118%	<1
Naphthalene	µg/L	<1	<1	[NA]	<1
Surrogate Dibromofluoromethane	%	112	104	92	105
Surrogate toluene-d8	%	99	97	88	110
Surrogate 4-BFB	%	103	98	97	96

svTRH (C10-C40) in Water			
Our Reference		254008-1	254008-2
Your Reference	UNITS	7944/MW01	7944/MW02
Date Sampled		21/10/2020	21/10/2020
Type of sample		Water	Water
Date extracted	-	23/10/2020	23/10/2020
Date analysed	-	24/10/2020	24/10/2020
TRH C_{10} - C_{14}	µg/L	160	<50
TRH C_{15} - C_{28}	µg/L	140	<100
TRH C_{29} - C_{36}	µg/L	<100	<100
TRH >C_{10} - C_{16}	µg/L	200	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	200	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100
Surrogate o-Terphenyl	%	111	97

PAHs in Water			
Our Reference	UNITS	254008-1	254008-2
Your Reference		7944/MW01	7944/MW02
Date Sampled		21/10/2020	21/10/2020
Type of sample		Water	Water
Date extracted	-	23/10/2020	23/10/2020
Date analysed	-	23/10/2020	23/10/2020
Naphthalene	µg/L	<1	<1
Acenaphthylene	µg/L	<1	<1
Acenaphthene	µg/L	<1	<1
Fluorene	µg/L	<1	<1
Phenanthrene	µg/L	<1	<1
Anthracene	µg/L	<1	<1
Fluoranthene	µg/L	<1	<1
Pyrene	µg/L	<1	<1
Benzo(a)anthracene	µg/L	<1	<1
Chrysene	µg/L	<1	<1
Benzo(b,j+k)fluoranthene	µg/L	<2	<2
Benzo(a)pyrene	µg/L	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1	<1
Dibenzo(a,h)anthracene	µg/L	<1	<1
Benzo(g,h,i)perylene	µg/L	<1	<1
Benzo(a)pyrene TEQ	µg/L	<5	<5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	87	97

Organochlorine Pesticides in Water			
Our Reference	UNITS	254008-1	254008-2
Your Reference		7944/MW01	7944/MW02
Date Sampled		21/10/2020	21/10/2020
Type of sample		Water	Water
Date extracted	-	23/10/2020	23/10/2020
Date analysed	-	23/10/2020	23/10/2020
alpha-BHC	µg/L	<0.2	<0.2
HCB	µg/L	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2
Surrogate TCMX	%	84	89

PCBs in Water			
Our Reference		254008-1	254008-2
Your Reference	UNITS	7944/MW01	7944/MW02
Date Sampled		21/10/2020	21/10/2020
Type of sample		Water	Water
Date extracted	-	23/10/2020	23/10/2020
Date analysed	-	23/10/2020	23/10/2020
Aroclor 1016	µg/L	<2	<2
Aroclor 1221	µg/L	<2	<2
Aroclor 1232	µg/L	<2	<2
Aroclor 1242	µg/L	<2	<2
Aroclor 1248	µg/L	<2	<2
Aroclor 1254	µg/L	<2	<2
Aroclor 1260	µg/L	<2	<2
Surrogate TCMX	%	84	89

Speciated Phenols in water			
Our Reference		254008-1	254008-2
Your Reference	UNITS	7944/MW01	7944/MW02
Date Sampled		21/10/2020	21/10/2020
Type of sample		Water	Water
Date extracted	-	23/10/2020	23/10/2020
Date analysed	-	24/10/2020	24/10/2020
Phenol	µg/L	<1	<1
2-Chlorophenol	µg/L	<1	<1
4-Chloro-3-Methylphenol	µg/L	<5	<5
2-Methylphenol (0-Cresol)	µg/L	<1	<1
3/4-Methylphenol (m/p-Cresol)	µg/L	<2	<2
2-Nitrophenol	µg/L	<1	<1
2,4-Dimethylphenol	µg/L	<1	<1
2,4-Dichlorophenol	µg/L	<1	<1
2,6-Dichlorophenol	µg/L	<1	<1
2,4,5-Trichlorophenol	µg/L	<1	<1
2,4,6-Trichlorophenol	µg/L	<1	<1
2,4-Dinitrophenol	µg/L	<20	<20
4-Nitrophenol	µg/L	<20	<20
2346-Tetrachlorophenol	µg/L	<1	<1
2-methyl-4,6-Dinitrophenol	µg/L	<10	<10
Pentachlorophenol	µg/L	<5	<5
Surrogate 2-fluorophenol	%	51	61
Surrogate Phenol-d_6	%	56	49
Surrogate 2,4,6-Tribromophenol	%	118	104
Surrogate *p*-Terphenyl-d_{14}	%	107	104

HM in water - dissolved				
Our Reference	UNITS	254008-1	254008-2	254008-3
Your Reference		7944/MW01	7944/MW02	7944/Dup01
Date Sampled		21/10/2020	21/10/2020	21/10/2020
Type of sample		Water	Water	Water
Date prepared	-	23/10/2020	23/10/2020	23/10/2020
Date analysed	-	23/10/2020	23/10/2020	23/10/2020
Arsenic-Dissolved	µg/L	<1	<1	<1
Cadmium-Dissolved	µg/L	0.2	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1
Copper-Dissolved	µg/L	3	<1	<1
Lead-Dissolved	µg/L	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	40	<1	<1
Zinc-Dissolved	µg/L	68	3	6

PFAS in Waters Extended			
Our Reference		254008-1	254008-2
Your Reference	UNITS	7944/MW01	7944/MW02
Date Sampled		21/10/2020	21/10/2020
Type of sample		Water	Water
Date prepared	-	23/10/2020	23/10/2020
Date analysed	-	23/10/2020	23/10/2020
Perfluorobutanesulfonic acid	µg/L	<0.01	<0.01
Perfluoropentanesulfonic acid	µg/L	<0.01	<0.01
Perfluorohexanesulfonic acid - PFHxS	µg/L	<0.01	<0.01
Perfluoroheptanesulfonic acid	µg/L	<0.01	<0.01
Perfluorooctanesulfonic acid PFOS	µg/L	<0.01	<0.01
Perfluorodecanesulfonic acid	µg/L	<0.02	<0.02
Perfluorobutanoic acid	µg/L	<0.02	<0.02
Perfluoropentanoic acid	µg/L	<0.02	<0.02
Perfluorohexanoic acid	µg/L	<0.01	<0.01
Perfluoroheptanoic acid	µg/L	<0.01	<0.01
Perfluorooctanoic acid PFOA	µg/L	<0.01	<0.01
Perfluorononanoic acid	µg/L	<0.01	<0.01
Perfluorodecanoic acid	µg/L	<0.02	<0.02
Perfluoroundecanoic acid	µg/L	<0.02	<0.02
Perfluorododecanoic acid	µg/L	<0.05	<0.05
Perfluorotridecanoic acid	µg/L	<0.1	<0.1
Perfluorotetradecanoic acid	µg/L	<0.5	<0.5
4:2 FTS	µg/L	<0.01	<0.01
6:2 FTS	µg/L	<0.01	<0.01
8:2 FTS	µg/L	<0.02	<0.02
10:2 FTS	µg/L	<0.02	<0.02
Perfluorooctane sulfonamide	µg/L	<0.1	<0.1
N-Methyl perfluorooctane sulfonamide	µg/L	<0.05	<0.05
N-Ethyl perfluorooctanesulfon amide	µg/L	<0.1	<0.1
N-Me perfluorooctanesulfonamid oethanol	µg/L	<0.05	<0.05
N-Et perfluorooctanesulfonamid oethanol	µg/L	<0.5	<0.5
MePerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
EtPerfluorooctanesulf- amid oacetic acid	µg/L	<0.02	<0.02
Surrogate $^{13}C_8$ *PFOS*	%	100	101
Surrogate $^{13}C_2$ *PFOA*	%	121	118
Extracted ISTD $^{13}C_3$ *PFBS*	%	116	109
Extracted ISTD $^{18}O_2$ *PFHxS*	%	107	104
Extracted ISTD $^{13}C_4$ *PFOS*	%	62	68
Extracted ISTD $^{13}C_4$ *PFBA*	%	78	79

PFAS in Waters Extended			
Our Reference	UNITS	254008-1	254008-2
Your Reference		7944/MW01	7944/MW02
Date Sampled		21/10/2020	21/10/2020
Type of sample		Water	Water
Extracted ISTD $^{13}C_3$ *PFPeA*	%	92	95
Extracted ISTD $^{13}C_2$ *PFHxA*	%	92	95
Extracted ISTD $^{13}C_4$ *PFHpA*	%	85	92
Extracted ISTD $^{13}C_4$ *PFOA*	%	81	87
Extracted ISTD $^{13}C_5$ *PFNA*	%	88	88
Extracted ISTD $^{13}C_2$ *PFDA*	%	92	95
Extracted ISTD $^{13}C_2$ *PFUnDA*	%	85	94
Extracted ISTD $^{13}C_2$ *PFDoDA*	%	62	77
Extracted ISTD $^{13}C_2$ *PFTeDA*	%	74	79
Extracted ISTD $^{13}C_2$ *4:2FTS*	%	72	94
Extracted ISTD $^{13}C_2$ *6:2FTS*	%	88	111
Extracted ISTD $^{13}C_2$ *8:2FTS*	%	79	96
Extracted ISTD $^{13}C_8$ *FOSA*	%	116	116
Extracted ISTD d_3 *N MeFOSA*	%	87	90
Extracted ISTD d_5 *N EtFOSA*	%	88	88
Extracted ISTD d_7 *N MeFOSE*	%	105	109
Extracted ISTD d_9 *N EtFOSE*	%	105	101
Extracted ISTD d_3 *N MeFOSAA*	%	64	75
Extracted ISTD d_5 *N EtFOSAA*	%	71	78
Total Positive PFHxS & PFOS	µg/L	<0.01	<0.01
Total Positive PFOA & PFOS	µg/L	<0.01	<0.01
Total Positive PFAS	µg/L	<0.01	<0.01

Method ID	Methodology Summary
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-029	Soil samples are extracted with basified Methanol. Waters and soil extracts are directly injected and/or concentrated/extracted using SPE. TCLPs/ASLP leachates are centrifuged, the supernatant is then analysed (including amendment with solvent) - as per the option in AS4439.3. Analysis is undertaken with LC-MS/MS. PFAS results include the sum of branched and linear isomers where applicable. Please note that PFAS results are corrected for Extracted Internal Standards (QSM 5.3 Table B-15 terminology), which are mass labelled analytes added prior to sample preparation to assess matrix effects and verify processing of the sample. PFAS analytes without a commercially available mass labelled analogue are corrected vs a closely eluting mass labelled PFAS compound. Surrogates are also reported, in this context they are mass labelled PFAS compounds added prior to extraction but are used as monitoring compounds only (not used for result correction). Envicarb (or similar) is used discretionally to remove interfering matrix components. Please contact the laboratory if estimates of Measurement Uncertainty are required as per WA DER.

QUALITY CONTROL: VHC's in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			23/10/2020	[NT]	[NT]	[NT]	[NT]	23/10/2020	[NT]
Date analysed	-			23/10/2020	[NT]	[NT]	[NT]	[NT]	23/10/2020	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	87	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	85	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	90	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	87	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	81	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: VHC's in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
MEK	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	104	[NT]	[NT]	[NT]	[NT]	105	[NT]
Surrogate toluene-d8	%		Org-023	97	[NT]	[NT]	[NT]	[NT]	98	[NT]
Surrogate 4-BFB	%		Org-023	101	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			23/10/2020	[NT]	[NT]	[NT]	[NT]	23/10/2020	[NT]
Date analysed	-			23/10/2020	[NT]	[NT]	[NT]	[NT]	23/10/2020	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	83	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	83	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	87	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	82	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	84	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	82	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	104	[NT]	[NT]	[NT]	[NT]	105	[NT]
Surrogate toluene-d8	%		Org-023	97	[NT]	[NT]	[NT]	[NT]	98	[NT]
Surrogate 4-BFB	%		Org-023	101	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			23/10/2020	1	23/10/2020	23/10/2020		23/10/2020	[NT]
Date analysed	-			24/10/2020	1	24/10/2020	24/10/2020		24/10/2020	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	160	130	21	105	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	140	<100	33	88	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	82	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	200	160	22	105	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	88	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	82	[NT]
Surrogate o-Terphenyl	%		Org-020	95	1	111	118	6	73	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	254008-2
Date extracted	-			23/10/2020	1	23/10/2020	23/10/2020		23/10/2020	23/10/2020
Date analysed	-			23/10/2020	1	23/10/2020	23/10/2020		23/10/2020	23/10/2020
Naphthalene	µg/L	1	Org-022/025	<1	1	<1	<1	0	81	117
Acenaphthylene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	1	<1	<1	0	82	85
Fluorene	µg/L	1	Org-022/025	<1	1	<1	<1	0	100	102
Phenanthrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	100	104
Anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	1	<1	<1	0	95	100
Pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	98	104
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	1	<1	<1	0	100	108
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	93	100
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	93	1	87	100	14	85	95

QUALITY CONTROL: Organochlorine Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	254008-2
Date extracted	-			23/10/2020	1	23/10/2020	23/10/2020		23/10/2020	23/10/2020
Date analysed	-			23/10/2020	1	23/10/2020	23/10/2020		23/10/2020	23/10/2020
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	93	91
HCB	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	85	85
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	90	100
delta-BHC	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	91	107
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	94	100
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	91	98
Dieldrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	86	88
Endrin	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	86	100
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	88	91
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	121	123
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	83	1	84	92	9	78	88

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	254008-2
Date extracted	-			23/10/2020	1	23/10/2020	23/10/2020		23/10/2020	23/10/2020
Date analysed	-			23/10/2020	1	23/10/2020	23/10/2020		23/10/2020	23/10/2020
Aroclor 1016	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021	<2	1	<2	<2	0	100	100
Aroclor 1260	µg/L	2	Org-021	<2	1	<2	<2	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	83	1	84	92	9	78	88

QUALITY CONTROL: Speciated Phenols in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	254008-2
Date extracted	-			23/10/2020	1	23/10/2020	23/10/2020		23/10/2020	23/10/2020
Date analysed	-			24/10/2020	1	24/10/2020	24/10/2020		24/10/2020	24/10/2020
Phenol	µg/L	1	Org-022/025	<1	1	<1	<1	0	64	66
2-Chlorophenol	µg/L	1	Org-022/025	<1	1	<1	<1	0	100	86
4-Chloro-3-Methylphenol	µg/L	5	Org-022/025	<5	1	<5	<5	0	[NT]	[NT]
2-Methylphenol (0-Cresol)	µg/L	1	Org-022/025	<1	1	<1	<1	0	66	60
3/4-Methylphenol (m/p-Cresol)	µg/L	2	Org-022/025	<2	1	<2	<2	0	[NT]	[NT]
2-Nitrophenol	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
2,4-Dimethylphenol	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
2,4-Dichlorophenol	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
2,6-Dichlorophenol	µg/L	1	Org-022/025	<1	1	<1	<1	0	112	104
2,4,5-Trichlorophenol	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
2,4,6-Trichlorophenol	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
2,4-Dinitrophenol	µg/L	20	Org-022/025	<20	1	<20	<20	0	[NT]	[NT]
4-Nitrophenol	µg/L	20	Org-022/025	<20	1	<20	<20	0	38	28
2346-Tetrachlorophenol	µg/L	1	Org-022/025	<1	1	<1	<1	0	[NT]	[NT]
2-methyl-4,6-Dinitrophenol	µg/L	10	Org-022/025	<10	1	<10	<10	0	[NT]	[NT]
Pentachlorophenol	µg/L	5	Org-022/025	<5	1	<5	<5	0	118	118
Surrogate 2-fluorophenol	%		Org-022/025	93	1	51	66	26	61	61
Surrogate Phenol-d_6	%		Org-022/025	106	1	56	61	9	48	55
Surrogate 2,4,6-Tribromophenol	%		Org-022/025	92	1	118	121	3	107	110
Surrogate p-Terphenyl-d_{14}	%		Org-022/025	107	1	107	114	6	109	108

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date prepared	-			23/10/2020	1	23/10/2020	23/10/2020		23/10/2020	[NT]
Date analysed	-			23/10/2020	1	23/10/2020	23/10/2020		23/10/2020	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	91	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	0.2	0.3	40	87	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	94	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	3	3	0	101	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	100	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	[NT]		103	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	40	42	5	93	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	68	69	1	94	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			23/10/2020	[NT]	[NT]	[NT]	[NT]	23/10/2020	[NT]
Date analysed	-			23/10/2020	[NT]	[NT]	[NT]	[NT]	23/10/2020	[NT]
Perfluorobutanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluoropentanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorohexanesulfonic acid - PFHxS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluoroheptanesulfonic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	113	[NT]
Perfluorooctanesulfonic acid PFOS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	105	[NT]
Perfluorodecanesulfonic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluorobutanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	108	[NT]
Perfluoropentanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	110	[NT]
Perfluorohexanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	107	[NT]
Perfluoroheptanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	110	[NT]
Perfluorooctanoic acid PFOA	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorononanoic acid	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	106	[NT]
Perfluorodecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	108	[NT]
Perfluoroundecanoic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	111	[NT]
Perfluorododecanoic acid	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	109	[NT]
Perfluorotridecanoic acid	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	112	[NT]
Perfluorotetradecanoic acid	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	117	[NT]
4:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	107	[NT]
6:2 FTS	µg/L	0.01	Org-029	<0.01	[NT]	[NT]	[NT]	[NT]	118	[NT]
8:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	101	[NT]
10:2 FTS	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	113	[NT]
Perfluorooctane sulfonamide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	112	[NT]
N-Ethyl perfluorooctanesulfon amide	µg/L	0.1	Org-029	<0.1	[NT]	[NT]	[NT]	[NT]	116	[NT]
N-Me perfluorooctanesulfonamid oethanol	µg/L	0.05	Org-029	<0.05	[NT]	[NT]	[NT]	[NT]	112	[NT]
N-Et perfluorooctanesulfonamid oethanol	µg/L	0.5	Org-029	<0.5	[NT]	[NT]	[NT]	[NT]	113	[NT]
MePerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	118	[NT]
EtPerfluorooctanesulf- amid oacetic acid	µg/L	0.02	Org-029	<0.02	[NT]	[NT]	[NT]	[NT]	114	[NT]
Surrogate $^{13}C_8$ *PFOS*	%		Org-029	92	[NT]	[NT]	[NT]	[NT]	94	[NT]
Surrogate $^{13}C_2$ *PFOA*	%		Org-029	112	[NT]	[NT]	[NT]	[NT]	105	[NT]

QUALITY CONTROL: PFAS in Waters Extended					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD $^{13}C_3$ *PFBS*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	106	[NT]
Extracted ISTD $^{18}O_2$ *PFHxS*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_4$ *PFOS*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	99	[NT]
Extracted ISTD $^{13}C_4$ *PFBA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD $^{13}C_3$ *PFPeA*	%		Org-029	101	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD $^{13}C_2$ *PFHxA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD $^{13}C_4$ *PFHpA*	%		Org-029	95	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD $^{13}C_4$ *PFOA*	%		Org-029	89	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD $^{13}C_5$ *PFNA*	%		Org-029	95	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD $^{13}C_2$ *PFDA*	%		Org-029	94	[NT]	[NT]	[NT]	[NT]	94	[NT]
Extracted ISTD $^{13}C_2$ *PFUnDA*	%		Org-029	102	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD $^{13}C_2$ *PFDoDA*	%		Org-029	90	[NT]	[NT]	[NT]	[NT]	97	[NT]
Extracted ISTD $^{13}C_2$ *PFTeDA*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	111	[NT]
Extracted ISTD $^{13}C_2$ *4:2FTS*	%		Org-029	88	[NT]	[NT]	[NT]	[NT]	96	[NT]
Extracted ISTD $^{13}C_2$ *6:2FTS*	%		Org-029	107	[NT]	[NT]	[NT]	[NT]	98	[NT]
Extracted ISTD $^{13}C_2$ *8:2FTS*	%		Org-029	94	[NT]	[NT]	[NT]	[NT]	112	[NT]
Extracted ISTD $^{13}C_8$ *FOSA*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	105	[NT]
Extracted ISTD d_3 *N MeFOSA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	103	[NT]
Extracted ISTD d_5 *N EtFOSA*	%		Org-029	97	[NT]	[NT]	[NT]	[NT]	101	[NT]
Extracted ISTD d_7 *N MeFOSE*	%		Org-029	104	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: PFAS in Waters Extended						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Extracted ISTD d_9 *N EtFOSE*	%		Org-029	103	[NT]	[NT]	[NT]	[NT]	107	[NT]
Extracted ISTD d_3 *N MeFOSAA*	%		Org-029	96	[NT]	[NT]	[NT]	[NT]	102	[NT]
Extracted ISTD d_5 *N EtFOSAA*	%		Org-029	108	[NT]	[NT]	[NT]	[NT]	104	[NT]

Result Definitions

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

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

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

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.

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

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

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SOIL ANALYSIS CHAIN OF CUSTODY FORM

Additional Testing												
Name	P2007944 – 57 Station Road, Seven Hills											
Martens Contact Officer	Ben McGiffin					**Contact Email**	bmcgiffin@martens.com.au					
Sampling and Shipping	**Sample Date**	21/10/2020		**Dispatch Date**	22.10.2020		**Turnaround Time**					
	Our Reference	P2007944COC04V01				**Shipping Method (X)**	**Hand**		**Post**		**Courier**	X
	On Ice (X)	X	**No Ice (X)**		**Other (X)**							

Laboratory									
Name	EnviroLab								
Sample Delivery Address	12 Ashley Street, Chatswood								
Delivery Contact	**Name**	Simon Song	**Phone**	9910 6200	**Fax**		**Email**	samplereceipt@envirolabservices.com.au	
Please Send Report By (X)	**Post**		**Fax**		**Email**	X	**Reporting Email Address**	**bmcgiffin@martens.com.au**	

Sample ID	Combo 5	Speciated Phenols	PFAS	VHC low level	MEK	B Metals	BTEX	TRH	Hold
7944/MW01 1 2	X	X	X	X	X				
7944/MW02 2	X	X	X	X	X				
3 7944/Dup01 NA						X			
4 7944/Spike 3							X		
5 7944/Blank 4							X	X	

Received: R Chazeen
ELS 5pd

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

Job No: 254008

Date Received: 22/10/2020
Time Received: 12.50
Received By: RL.
Temp: ~~Cool~~/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Head Office
Suite 201, Level 2, 20 George Street
Hornsby NSW 2077, Australia
Ph 02 9476 9999 **Fax** 02 9476 8767

> mail@martens.com.au
> www.martens.com.au
MARTENS & ASSOCIATES P/L
ABN 85 070 240 890 ACN 070 240 890

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 255697

Client Details

Client	Martens & Associates Pty Ltd
Attention	Ben McGiffin
Address	Suite 201, 20 George St, Hornsby, NSW, 2077

Sample Details

Your Reference	**P2007944 - 57 Station Road, Seven Hills**
Number of Samples	10 Soil, 1 Material
Date samples received	13/11/2020
Date completed instructions received	13/11/2020

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	20/11/2020
Date of Issue	20/11/2020

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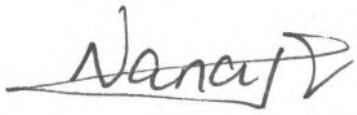
Asbestos Approved By
Analysed by Asbestos Approved Identifier: Wonnie Condos
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Dragana Tomas, Senior Chemist
Jaimie Loa-Kum-Cheung, Metals Supervisor
Josh Williams, Senior Chemist
Lucy Zhu, Asbestos Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		255697-1	255697-2	255697-4	255697-5	255697-6
Your Reference	UNITS	7944/BH201/0.0-0.1	7944/BH201/0.2-0.3	7944/BH202/0.0-0.1	7944/BH202/0.3-0.4	7944/BH203/0.0-0.1
Date Sampled		12/11/2020	12/11/2020	12/11/2020	12/11/2020	12/11/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	17/11/2020	17/11/2020	17/11/2020	17/11/2020	17/11/2020
Date analysed	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020	18/11/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	102	113	106	113	93

vTRH(C6-C10)/BTEXN in Soil					
Our Reference		255697-7	255697-8	255697-9	255697-11
Your Reference	UNITS	7944/BH203/0.3-0.4	7944/BH204/0.0-0.1	7944/SS01	7794/BH204/0.3-0.4
Date Sampled		12/11/2020	12/11/2020	12/11/2020	12/11/2020
Type of sample		Soil	Soil	Soil	Material
Date extracted	-	17/11/2020	17/11/2020	17/11/2020	17/11/2020
Date analysed	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	103	114	101	102

svTRH (C10-C40) in Soil						
Our Reference		255697-1	255697-2	255697-4	255697-5	255697-6
Your Reference	UNITS	7944/BH201/0.0-0.1	7944/BH201/0.2-0.3	7944/BH202/0.0-0.1	7944/BH202/0.3-0.4	7944/BH203/0.0-0.1
Date Sampled		12/11/2020	12/11/2020	12/11/2020	12/11/2020	12/11/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	17/11/2020	17/11/2020	17/11/2020	17/11/2020	17/11/2020
Date analysed	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020	18/11/2020
TRH C_{10} - C_{14}	mg/kg	84	<50	120	<50	200
TRH C_{15} - C_{28}	mg/kg	8,500	<100	17,000	<100	20,000
TRH C_{29} - C_{36}	mg/kg	5,600	<100	14,000	<100	11,000
TRH >C_{10} -C_{16}	mg/kg	200	<50	300	<50	380
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	200	<50	300	<50	380
TRH >C_{16} -C_{34}	mg/kg	14,000	<100	29,000	<100	30,000
TRH >C_{34} -C_{40}	mg/kg	1,800	<100	4,200	<100	3,200
Total +ve TRH (>C10-C40)	mg/kg	16,000	<50	33,000	<50	34,000
Surrogate o-Terphenyl	%	#	82	#	83	#

svTRH (C10-C40) in Soil					
Our Reference		255697-7	255697-8	255697-9	255697-11
Your Reference	UNITS	7944/BH203/0.3-0.4	7944/BH204/0.0-0.1	7944/SS01	7794/BH204/0.3-0.4
Date Sampled		12/11/2020	12/11/2020	12/11/2020	12/11/2020
Type of sample		Soil	Soil	Soil	Material
Date extracted	-	17/11/2020	17/11/2020	17/11/2020	17/11/2020
Date analysed	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020
TRH C_{10} - C_{14}	mg/kg	<50	110	750	<50
TRH C_{15} - C_{28}	mg/kg	<100	2,100	31,000	<100
TRH C_{29} - C_{36}	mg/kg	<100	6,500	26,000	<100
TRH >C_{10} -C_{16}	mg/kg	<50	190	1,900	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	190	1,900	<50
TRH >C_{16} -C_{34}	mg/kg	<100	27,000	51,000	<100
TRH >C_{34} -C_{40}	mg/kg	<100	1,600	12,000	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	29,000	66,000	<50
Surrogate o-Terphenyl	%	97	#	#	109

PAHs in Soil						
Our Reference		255697-1	255697-2	255697-4	255697-5	255697-6
Your Reference	UNITS	7944/BH201/0.0-0.1	7944/BH201/0.2-0.3	7944/BH202/0.0-0.1	7944/BH202/0.3-0.4	7944/BH203/0.0-0.1
Date Sampled		12/11/2020	12/11/2020	12/11/2020	12/11/2020	12/11/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	17/11/2020	17/11/2020	17/11/2020	17/11/2020	17/11/2020
Date analysed	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020	18/11/2020
Naphthalene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.5	<0.1	0.2
Anthracene	mg/kg	<0.1	<0.1	0.8	<0.1	0.2
Fluoranthene	mg/kg	0.2	<0.1	0.5	<0.1	0.2
Pyrene	mg/kg	0.5	<0.1	1.2	<0.1	0.5
Benzo(a)anthracene	mg/kg	0.1	<0.1	0.2	<0.1	<0.1
Chrysene	mg/kg	0.2	<0.1	0.3	<0.1	0.4
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	0.2
Benzo(a)pyrene	mg/kg	0.1	<0.05	0.2	<0.05	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.1	<0.1	0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1	<0.1	0.2	<0.1	0.3
Total +ve PAH's	mg/kg	1.3	<0.05	4.2	<0.05	2.4
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	99	66	76	74	81

PAHs in Soil					
Our Reference		255697-7	255697-8	255697-9	255697-11
Your Reference	UNITS	7944/BH203/0.3-0.4	7944/BH204/0.0-0.1	7944/SS01	7794/BH204/0.3-0.4
Date Sampled		12/11/2020	12/11/2020	12/11/2020	12/11/2020
Type of sample		Soil	Soil	Soil	Material
Date extracted	-	17/11/2020	17/11/2020	17/11/2020	17/11/2020
Date analysed	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020
Naphthalene	mg/kg	<0.1	<0.1	0.2	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	0.7	<0.1
Pyrene	mg/kg	<0.1	0.2	1.6	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	0.9	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	0.3	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.5	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.2	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	0.4	<0.1
Total +ve PAH's	mg/kg	<0.05	0.3	4.8	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	0.6	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	0.6	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	0.7	<0.5
Surrogate p-Terphenyl-d14	%	77	74	62	75

Organochlorine Pesticides in soil						
Our Reference		255697-1	255697-4	255697-6	255697-8	255697-9
Your Reference	UNITS	7944/BH201/0.0-0.1	7944/BH202/0.0-0.1	7944/BH203/0.0-0.1	7944/BH204/0.0-0.1	7944/SS01
Date Sampled		12/11/2020	12/11/2020	12/11/2020	12/11/2020	12/11/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	17/11/2020	17/11/2020	17/11/2020	17/11/2020	17/11/2020
Date analysed	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020	18/11/2020
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	88	90	102	97	91

Organophosphorus Pesticides in Soil						
Our Reference		255697-1	255697-4	255697-6	255697-8	255697-9
Your Reference	UNITS	7944/BH201/0.0-0.1	7944/BH202/0.0-0.1	7944/BH203/0.0-0.1	7944/BH204/0.0-0.1	7944/SS01
Date Sampled		12/11/2020	12/11/2020	12/11/2020	12/11/2020	12/11/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	17/11/2020	17/11/2020	17/11/2020	17/11/2020	17/11/2020
Date analysed	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020	18/11/2020
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	88	90	102	97	91

PCBs in Soil						
Our Reference		255697-1	255697-4	255697-6	255697-8	255697-9
Your Reference	UNITS	7944/BH201/0.0-0.1	7944/BH202/0.0-0.1	7944/BH203/0.0-0.1	7944/BH204/0.0-0.1	7944/SS01
Date Sampled		12/11/2020	12/11/2020	12/11/2020	12/11/2020	12/11/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	17/11/2020	17/11/2020	17/11/2020	17/11/2020	17/11/2020
Date analysed	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020	18/11/2020
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	88	90	102	97	91

Acid Extractable metals in soil						
Our Reference		255697-1	255697-2	255697-4	255697-5	255697-6
Your Reference	UNITS	7944/BH201/0.0-0.1	7944/BH201/0.2-0.3	7944/BH202/0.0-0.1	7944/BH202/0.3-0.4	7944/BH203/0.0-0.1
Date Sampled		12/11/2020	12/11/2020	12/11/2020	12/11/2020	12/11/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/11/2020	17/11/2020	17/11/2020	17/11/2020	17/11/2020
Date analysed	-	17/11/2020	17/11/2020	17/11/2020	17/11/2020	17/11/2020
Arsenic	mg/kg	21	6	7	5	15
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	25	21	21	16	27
Copper	mg/kg	42	6	33	5	260
Lead	mg/kg	60	18	36	12	40
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	18	3	19	3	16
Zinc	mg/kg	230	37	150	9	280

Acid Extractable metals in soil					
Our Reference		255697-7	255697-8	255697-9	255697-11
Your Reference	UNITS	7944/BH203/0.3-0.4	7944/BH204/0.0-0.1	7944/SS01	7794/BH204/0.3-0.4
Date Sampled		12/11/2020	12/11/2020	12/11/2020	12/11/2020
Type of sample		Soil	Soil	Soil	Material
Date prepared	-	17/11/2020	17/11/2020	17/11/2020	17/11/2020
Date analysed	-	17/11/2020	17/11/2020	17/11/2020	17/11/2020
Arsenic	mg/kg	7	5	8	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	15	42	22	23
Copper	mg/kg	8	31	75	5
Lead	mg/kg	11	16	62	9
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	36	16	3
Zinc	mg/kg	7	110	500	5

Moisture						
Our Reference		255697-1	255697-2	255697-4	255697-5	255697-6
Your Reference	UNITS	7944/BH201/0.0-0.1	7944/BH201/0.2-0.3	7944/BH202/0.0-0.1	7944/BH202/0.3-0.4	7944/BH203/0.0-0.1
Date Sampled		12/11/2020	12/11/2020	12/11/2020	12/11/2020	12/11/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/11/2020	17/11/2020	17/11/2020	17/11/2020	17/11/2020
Date analysed	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020	18/11/2020
Moisture	%	6.4	15	0.5	10	1

Moisture					
Our Reference		255697-7	255697-8	255697-9	255697-11
Your Reference	UNITS	7944/BH203/0.3-0.4	7944/BH204/0.0-0.1	7944/SS01	7794/BH204/0.3-0.4
Date Sampled		12/11/2020	12/11/2020	12/11/2020	12/11/2020
Type of sample		Soil	Soil	Soil	Material
Date prepared	-	17/11/2020	17/11/2020	17/11/2020	17/11/2020
Date analysed	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020
Moisture	%	18	12	0.9	14

Asbestos ID - soils						
Our Reference		255697-1	255697-4	255697-6	255697-8	255697-9
Your Reference	UNITS	7944/BH201/0.0-0.1	7944/BH202/0.0-0.1	7944/BH203/0.0-0.1	7944/BH204/0.0-0.1	7944/SS01
Date Sampled		12/11/2020	12/11/2020	12/11/2020	12/11/2020	12/11/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	18/11/2020	18/11/2020	18/11/2020	18/11/2020	18/11/2020
Sample mass tested	g	Approx. 15g	Approx. 15g	Approx. 15g	Approx. 15g	Approx. 15g
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Red coarse-grained soil & rocks
Asbestos ID in soil	-	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	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	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	No asbestos detected

Asbestos ID - materials		
Our Reference		255697-10
Your Reference	UNITS	7944/MS01
Date Sampled		12/11/2020
Type of sample		Soil
Date analysed	-	17/11/2020
Mass / Dimension of Sample	-	50x50x4mm
Sample Description	-	Grey fibre cement material
Asbestos ID in materials	-	Chrysotile asbestos detected Amosite asbestos detected
Trace Analysis	-	[NT]

Method ID	Methodology Summary
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.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.

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

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			17/11/2020	1	17/11/2020	17/11/2020		17/11/2020	[NT]
Date analysed	-			18/11/2020	1	18/11/2020	18/11/2020		18/11/2020	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	105	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	105	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	113	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	113	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	98	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	101	[NT]
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	97	[NT]
naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	116	1	102	98	4	114	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			17/11/2020	1	17/11/2020	17/11/2020		17/11/2020	[NT]
Date analysed	-			17/11/2020	1	18/11/2020	18/11/2020		17/11/2020	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	84	57	38	125	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	8500	6000	34	119	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	5600	3500	46	122	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	200	140	35	125	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	14000	9100	42	119	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	1800	1900	5	122	[NT]
Surrogate o-Terphenyl	%		Org-020	96	1	#	#		105	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			17/11/2020	1	17/11/2020	17/11/2020		17/11/2020	[NT]
Date analysed	-			18/11/2020	1	18/11/2020	18/11/2020		18/11/2020	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	101	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	97	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	112	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	101	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	0.2	0.2	0	102	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	0.5	0.3	50	89	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	0.2	0.1	67	112	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	0.1	0.08	22	110	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	0.1	0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	84	1	99	74	29	80	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			17/11/2020	1	17/11/2020	17/11/2020		17/11/2020	[NT]
Date analysed	-			18/11/2020	1	18/11/2020	18/11/2020		18/11/2020	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	99	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	100	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	81	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	97	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	114	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	82	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	117	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	86	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	88	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	78	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	96	1	88	95	8	92	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			17/11/2020	1	17/11/2020	17/11/2020		17/11/2020	[NT]
Date analysed	-			18/11/2020	1	18/11/2020	18/11/2020		18/11/2020	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	82	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	105	[NT]
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	118	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	82	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	71	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	89	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	96	1	88	95	8	92	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			17/11/2020	1	17/11/2020	17/11/2020		17/11/2020	[NT]
Date analysed	-			18/11/2020	1	18/11/2020	18/11/2020		18/11/2020	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	112	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	96	1	88	95	8	92	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			17/11/2020	1	17/11/2020	17/11/2020		17/11/2020	[NT]
Date analysed	-			17/11/2020	1	17/11/2020	17/11/2020		17/11/2020	[NT]
Arsenic	mg/kg	4	Metals-020	<4	1	21	19	10	110	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	110	[NT]
Chromium	mg/kg	1	Metals-020	<1	1	25	17	38	104	[NT]
Copper	mg/kg	1	Metals-020	<1	1	42	47	11	104	[NT]
Lead	mg/kg	1	Metals-020	<1	1	60	45	29	106	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	109	[NT]
Nickel	mg/kg	1	Metals-020	<1	1	18	15	18	105	[NT]
Zinc	mg/kg	1	Metals-020	<1	1	230	190	19	109	[NT]

Result Definitions

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

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

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

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.

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

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

Report Comments

TRH Soil C10-C40 NEPM - # Percent recovery for the surrogate is not possible to report as the high concentration of analytes in samples 255697-1,4,6,8,9 have caused interference.

Asbestos: Excessive sample volume was provided for asbestos analysis. A portion of the supplied sample was sub-sampled according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g (50mL) of sample in its own container as per AS4964-2004.
Note: Samples were sub-sampled from jars provided by the client.

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SOIL ANALYSIS CHAIN OF CUSTODY FORM

COC: 1519

Additional Testing												
Name	P2007944 – 57 Station Road, Seven Hills											
Martens Contact Officer	Ben McGiffin					**Contact Email**	bmcgiffin@martens.com.au					
Sampling and Shipping	**Sample Date**	12.11.2020		**Dispatch Date**	13.11.2020		**Turnaround Time**	Standard				
	Our Reference	P2007944COC05V01				**Shipping Method (X)**	**Hand**		**Post**		**Courier**	X
	On Ice (X)	X	**No Ice (X)**		**Other (X)**							

Laboratory									
Name	EnviroLab								
Sample Delivery Address	12 Ashley Street, Chatswood								
Delivery Contact	**Name**	Simon Song	**Phone**	9910 6200	**Fax**		**Email**	samplereceipt@envirolabservices.com.au	
Please Send Report By (X)	**Post**		**Fax**		**Email**	X	**Reporting Email Address**	**bmcgiffin@martens.com.au**	

	Sample ID	Combo 3	Combo 6a	Asbestos ID	
1	7944/BH201/0.0-0.1	X	X		
2	7944/BH201/0.2-0.3	X			
3	7944/BH201/0.6-0.7				
4	7944/BH202/0.0-0.1		X		
5	7944/BH202/0.3-0.4	X			
6	7944/BH203/0.0-0.1		X		
7	7944/BH203/~~0.3-0.4~~ 0.4-0.5 (KC)	X			
8	7944/BH204/0.0-0.1		X		
9	7944/SS01		X		
10	7944/MS01			X	
11	7794 /BH204/0.3-0.4 extra				

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

~~Job No:~~ 255697
~~Date Received:~~ 13/11/2020
~~Time Received:~~ 1340
~~Received By:~~ R
~~Temp: Cool/Ambient~~
~~Cooling: Ice/Icepack~~
~~Security: Intact/Broken/None~~

Head Office
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Hornsby NSW 2077, Australia
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MARTENS & ASSOCIATES P/L
ABN 85 070 240 890 ACN 070 240 890

Attachment D: Laboratory Analytical Summary Tables

Environmental Screening Assessment
57 Station Road, Seven Hills, NSW
Soil Laboratory Analytical Results

P2007944

	Phenols																TRH							BTEX				
	3/4-Methylphenol (m/p-cresol)	2,3,4,6-Tetrachlorophenol	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,4-Dimethylphenol	2,4-Dinitrophenol	2,6-Dichlorophenol	2-Chlorophenol	2-Methylphenol	2-Nitrophenol	4,6-Dinitro-2-methylphenol	4-chloro-3-methylphenol	4-Nitrophenol	Pentachlorophenol	Phenol	C6-C10	C6-C10 (F1 minus BTEX)	C10-C16	C10-C16 (F2 minus Naphthalene)	C16-C34	C34-C40	C10-C40 (Sum of total)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.4	0.2	0.2	0.2	0.2	0.2	4	0.2	0.2	0.2	0.2	2	1	4	1	0.2	25	25	50	50	100	100	50	0.2	0.5	1	2	1
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil															**660**	**240000**												
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																												
0-1m																		**310**		**NL**				**4**	**NL**	**NL**		
1-2m																		**480**		**NL**				**6**	**NL**	**NL**		
2-4m																		**NL**		**NL**				**9**	**NL**	**NL**		
>4m																		**NL**		**NL**				**20**	**NL**	**NL**		
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																	**800**		**1000**		**5000**	**10000**						
Field_ID																												
7944/BH101/0.0-0.1	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<4	<0.2	<0.2	<0.2	<0.2	<2	<1	<4	<1	<0.2	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.5	<1	<2	<1
7944/BH101/1.0-1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<25	<25	260	260	240	<100	500	<0.2	<0.5	<1	<2	<1
7944/BH101/1.8-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<25	<25	640	640	430	<100	1100	<0.2	<0.5	<1	<2	<1
7944/BH101/2.7-2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<25	<25	54	54	<100	<100	50	<0.2	<0.5	<1	<2	<1
7944/BH102/0.0-0.1	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<4	<0.2	<0.2	<0.2	<0.2	<2	<1	<4	<1	<0.2	<25	<25	<50	<50	240	210	450	<0.2	<0.5	<1	<2	<1
7944/BH103/0.0-0.1	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<4	<0.2	<0.2	<0.2	<0.2	<2	<1	<4	<1	<0.2	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.5	<1	<2	<1
7944/BH104/0.5-0.6	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<4	<0.2	<0.2	<0.2	<0.2	<2	<1	<4	<1	<0.2	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.5	<1	<2	<1
7944/BH105/0.0-0.1	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<4	<0.2	<0.2	<0.2	<0.2	<2	<1	<4	<1	<0.2	<25	<25	<50	<50	320	370	690	<0.2	<0.5	<1	<2	<1
7944/Dup2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7944/TB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<25	<25	-	-	-	-	-	<0.2	<0.5	<1	<2	<1
Statistical Summary																												
Number of Results	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	9	9	8	8	8	8	8	9	9	9	9	9
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	4	2	5	0	0	0	0	0
Minimum Concentration	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<4	<0.2	<0.2	<0.2	<0.2	<2	<1	<4	<1	<0.2	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.5	<1	<2	<1
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	54	54	240	210	50	ND	ND	ND	ND	ND
Maximum Concentration	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<4	<0.2	<0.2	<0.2	<0.2	<2	<1	<4	<1	<0.2	<25	<25	640	640	430	370	1100	<0.2	<0.5	<1	<2	<1
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	640	640	430	370	1100	ND	ND	ND	ND	ND
Average Concentration	0.2	0.1	0.1	0.1	0.1	0.1	2	0.1	0.1	0.1	0.1	1	0.5	2	0.5	0.1	13	13	135	135	179	110	358	0.1	0.25	0.5	1	0.5
Median Concentration	0.2	0.1	0.1	0.1	0.1	0.1	2	0.1	0.1	0.1	0.1	1	0.5	2	0.5	0.1	12.5	12.5	25	25	145	50	250	0.1	0.25	0.5	1	0.5
Standard Deviation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	220	220	150	119	399	0	0	0	0	0
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	9	9	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	9	9	0	0

Environmental Screening Assessment
57 Station Road, Seven Hills, NSW
Soil Laboratory Analytical Results

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		Halogenated Benzenes	Inorganics	Metals									Organochlorine Pesticides											
	Xylene Total	Hexachlorobenzene	Moisture	Arsenic	Cadmium	Chromium (hexavalent)	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	4,4-DDE	a-BHC	Aldrin	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan I
	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	3	0.1	0.1	4	0.4	1	1	1	1	0.1	1	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
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil		**80**		**3000**	**900**	**3600**		**240000**	**1500**	**730**	**6000**	**400000**										**3600**		
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																								
0-1m	**NL**																							
1-2m	**NL**																							
2-4m	**NL**																							
>4m	**NL**																							
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																								
Field_ID																								
7944/BH101/0.0-0.1	<3	<0.1	0.8	9	<0.4	<1	25	41	35	<0.1	30	82	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
7944/BH101/1.0-1.1	<3	-	19	9	<0.4	-	10	19	17	<0.1	5	17	-	-	-	-	-	-	-	-	-	-	-	-
7944/BH101/1.8-2	<3	-	15	<4	<0.4	-	2	7	28	<0.1	<1	2	-	-	-	-	-	-	-	-	-	-	-	-
7944/BH101/2.7-2.8	<3	-	12	<4	<0.4	-	6	29	11	<0.1	1	13	-	-	-	-	-	-	-	-	-	-	-	-
7944/BH102/0.0-0.1	<3	<0.1	1.3	9	<0.4	<1	19	25	30	<0.1	9	76	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
7944/BH103/0.0-0.1	<3	<0.1	5.4	5	<0.4	<1	13	35	15	<0.1	20	61	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
7944/BH104/0.5-0.6	<3	<0.1	15	5	<0.4	<2	10	35	41	<0.1	13	74	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
7944/BH105/0.0-0.1	<3	<0.1	4.1	19	<0.4	<1	27	56	17	<0.1	20	110	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
7944/Dup2	-	-	0.1	5	<0.4	-	16	26	16	<0.1	17	47	-	-	-	-	-	-	-	-	-	-	-	-
7944/TB	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Statistical Summary																								
Number of Results	9	5	9	9	9	5	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5
Number of Detects	0	0	9	7	0	0	9	9	9	0	8	9	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<3	<0.1	0.1	<4	<0.4	<1	2	7	11	<0.1	<1	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
Minimum Detect	ND	ND	0.1	5	ND	ND	2	7	11	ND	1	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<3	<0.1	19	19	<0.4	<2	27	56	41	<0.1	30	110	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Maximum Detect	ND	ND	19	19	ND	ND	27	56	41	ND	30	110	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration	1.5	0.05	8.1	7.2	0.2	0.6	14	30	23	0.05	13	54	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Median Concentration	1.5	0.05	5.4	5	0.2	0.5	13	29	17	0.05	13	61	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Standard Deviation	0	0	7.2	5.2	0	0.22	8.4	14	10	0	9.9	36	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

									Organophosphorous Pesticides																							
	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Ronnel	Benzo(b+j+k)fluoranthene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene		
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		
EQL	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	0.2	0.1	0.1	0.1	0.1	0.1	0.05	0.1	0.1	0.1	0.1		
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil			**100**			**50**		**2500**			**2000**																					
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																															
0-1m																															
1-2m																															
2-4m																															
>4m																															
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																															
Field_ID																															
7944/BH101/0.0-0.1	<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	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1		
7944/BH101/1.0-1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1		
7944/BH101/1.8-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	0.3	<0.1	0.4	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1		
7944/BH101/2.7-2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1		
7944/BH102/0.0-0.1	<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	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1		
7944/BH103/0.0-0.1	<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	<0.2	<0.1	<0.1	<0.1	<0.1	0.08	0.1	0.1	<0.1	0.2		
7944/BH104/0.5-0.6	<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	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	0.1		
7944/BH105/0.0-0.1	<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	0.8	<0.1	0.1	0.2	0.3	0.4	0.5	0.4	<0.1	0.8		
7944/Dup2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
7944/TB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Statistical Summary																															
Number of Results	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	8	8	8	8	8	8	8	8	8	8		
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	2	1	2	2	2	0	3		
Minimum Concentration	<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	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1		
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.8	0.3	0.1	0.2	0.3	0.08	0.1	0.1	ND	0.1		
Maximum Concentration	<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	0.8	0.3	0.1	0.4	0.3	0.4	0.5	0.4	<0.1	0.8		
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.8	0.3	0.1	0.4	0.3	0.4	0.5	0.4	ND	0.8		
Average Concentration	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	0.05	0.19	0.081	0.056	0.11	0.081	0.079	0.11	0.1	0.05	0.17		
Median Concentration	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	0.05	0.1	0.05	0.05	0.05	0.05	0.025	0.05	0.05	0.05	0.05		
Standard Deviation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.25	0.088	0.018	0.13	0.088	0.13	0.16	0.12	0	0.26		
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

	PAH										Pesticides	Solvents	TPH			
	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ calc (Half)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ calc (Zero)	Carcinogenic PAHs (as B(a)P TPE)	PAHs (Sum of positives)	Parathion	Methyl Ethyl Ketone	C6-C9	C10-C14	C15-C28	C29-C36
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.1	0.1	0.1	0.1	0.1	0.5	0.5	0.5		0.05	0.1	10	25	50	100	100
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil									**40**							
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																
0-1m			**NL**													
1-2m			**NL**													
2-4m			**NL**													
>4m			**NL**													
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																
Field_ID																
7944/BH101/0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.172	<0.05	<0.1	<10	<25	<50	<100	<100
7944/BH101/1.0-1.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.172	<0.05	-	-	<25	120	390	<100
7944/BH101/1.8-2	0.9	<0.1	<1 - 0.5	1.2	0.1	<0.5	<0.5	<0.5	<0.172	3.5	-	-	<25	340	730	<100
7944/BH101/2.7-2.8	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.172	<0.05	-	-	<25	<50	<100	<100
7944/BH102/0.0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.172	<0.05	<0.1	<10	<25	<50	110	170
7944/BH103/0.0-0.1	<0.1	<0.1	<0.1	0.1	0.2	<0.5	<0.5	<0.5	0.142	0.77	<0.1	<10	<25	<50	<100	<100
7944/BH104/0.5-0.6	<0.1	<0.1	<0.1	0.1	0.1	<0.5	<0.5	<0.5	<0.172	0.3	<0.1	<10	<25	<50	<100	<100
7944/BH105/0.0-0.1	<0.1	0.3	<0.1	0.6	0.7	0.7	0.7	0.6	0.519	5.1	<0.1	<10	<25	<50	130	240
7944/Dup2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7944/TB	-	-	<1	-	-	-	-	-	-	-	-	-	<25	-	-	-
Statistical Summary																
Number of Results	8	8	9	8	8	8	8	8	8	8	5	5	9	8	8	8
Number of Detects	1	1	1	4	4	1	1	1	2	4	0	0	0	2	4	2
Minimum Concentration	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	0.142	<0.05	<0.1	<10	<25	<50	<100	<100
Minimum Detect	0.9	0.3	ND	0.1	0.1	0.7	0.7	0.6	0.142	0.3	ND	ND	ND	120	110	170
Maximum Concentration	0.9	0.3	<1	1.2	0.7	0.7	0.7	0.6	0.519	5.1	<0.1	<10	<25	340	730	240
Maximum Detect	0.9	0.3	0.5	1.2	0.7	0.7	0.7	0.6	0.519	5.1	ND	ND	ND	340	730	240
Average Concentration	0.16	0.081	0.15	0.28	0.16	0.31	0.31	0.29	0.15	1.2	0.05	5	13	76	195	89
Median Concentration	0.05	0.05	0.05	0.075	0.075	0.25	0.25	0.25	0.086	0.1625	0.05	5	12.5	25	80	50
Standard Deviation	0.3	0.088	0.2	0.42	0.22	0.16	0.16	0.12	0.15	2	0	0	0	112	245	74
Number of Guideline Exceedances	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0

Environmental Screening Assessment
57 Station Road, Seven Hills, NSW
Soil RPD Calculations

P2007944

Field Duplicates (SOIL)
Filter: ALL

Lab Report Number	253712	253712	
Field ID	7944/BH101/0.0-0.1	7944/Dup2	**RPD**
Sampled Date/Time			

Chem_Gr	ChemNam	Units	EQL			
Metals	Arsenic	mg/kg	4	9.0	5.0	57
	Cadmium	mg/kg	0.4	<0.4	<0.4	0
	Chromium	mg/kg	1	25.0	16.0	44
	Copper	mg/kg	1	**41.0**	**26.0**	**45**
	Lead	mg/kg	1	**35.0**	**16.0**	**75**
	Mercury	mg/kg	0.1	<0.1	<0.1	0
	Nickel	mg/kg	1	**30.0**	**17.0**	**55**
	Zinc	mg/kg	1	**82.0**	**47.0**	**54**

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 80 (1-10 x EQL); 50 (10-30 x EQL); 30 (> 30 x EQL))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

	PFOS/PFOA																			
	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	N-ethyl-perfluorooctanesulfonamidoacetic acid	N-methylperfluorooctane sulfonamidoacetic acid	N-Methylperfluorooctanesulfonamidoethanol	Perfluorobutanoic acid (PFBA)	Perfluorodecanesulfonic acid (PFDS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Sum of PFAS	Sum of PFHxS and PFOS	Perfluorodecanoic acid (PFDA)	Perfluorohexanoic acid (PFHxA)	N-Ethyl perfluorooctane sulfonamide (NEtFOSA)	N-ethylperfluorooctanesulfonamidoeth anol (NEtFOSE)	N-Methyl perfluorooctane sulfonamide (NMeFOSA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorooctanesulfonic acid (PFOS)
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
EQL	0.02	0.01	0.02	0.02	0.05	0.02	0.02	0.01	0.01	0.02	0.01	0.01	0.02	0.01	0.1	0.5	0.05	0.01	0.00001
ANZG (2018) Freshwater 95% toxicant DGVs																			
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay																			
2-4m																			
4-8m																			
>8m																			
NEPM 2013 Table 1C GILs, Fresh Waters																			
Field_ID																			
7944/MW01	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.01	<0.1	<0.5	<0.05	<0.01	<0.00001
7944/MW02	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.01	<0.1	<0.5	<0.05	<0.01	<0.00001
Statistical Summary																			
Number of Results	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.01	<0.1	<0.5	<0.05	<0.01	<0.00001
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.02	<0.01	<0.02	<0.02	<0.05	<0.02	<0.02	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.01	<0.1	<0.5	<0.05	<0.01	<0.00001
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration																			
Median Concentration	0.01	0.005	0.01	0.01	0.025	0.01	0.01	0.005	0.005	0.01	0.005	0.005	0.01	0.005	0.05	0.25	0.025	0.005	0.000005
Standard Deviation																			
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Perfluorododecanoic acid (PFDoDA)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonamide (PFOSA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	Perfluorooctanoic acid (PFOA)
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L
EQL	0.05	0.01	0.01	0.01	0.1	0.5	0.1	0.02	0.00002	0.00001	0.00001
ANZG (2018) Freshwater 95% toxicant DGVs											
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay											
2-4m											
4-8m											
>8m											
NEPM 2013 Table 1C GILs, Fresh Waters											
Field_ID											
7944/MW01	<0.05	<0.01	<0.01	<0.01	<0.1	<0.5	<0.1	<0.02	<0.00002	<0.00001	<0.00001
7944/MW02	<0.05	<0.01	<0.01	<0.01	<0.1	<0.5	<0.1	<0.02	<0.00002	<0.00001	<0.00001
Statistical Summary											
Number of Results	2	2	2	2	2	2	2	2	2	2	2
Number of Detects	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.05	<0.01	<0.01	<0.01	<0.1	<0.5	<0.1	<0.02	<0.00002	<0.00001	<0.00001
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.05	<0.01	<0.01	<0.01	<0.1	<0.5	<0.1	<0.02	<0.00002	<0.00001	<0.00001
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration											
Median Concentration	0.025	0.005	0.005	0.005	0.05	0.25	0.05	0.01	0.00001	0.000005	0.000005
Standard Deviation											
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0

	Phenols															
	3/4-Methylphenol (m/p-cresol)	2,3,4,6-Tetrachlorophenol	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,4-Dimethylphenol	2,4-Dinitrophenol	2,6-Dichlorophenol	2-Chlorophenol	2-Methylphenol	2-Nitrophenol	4,6-Dinitro-2-methylphenol	4-chloro-3-methylphenol	4-Nitrophenol	Pentachlorophenol	Phenol
	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.002	1	1	1	1	1	0.02	1	1	1	1	10	5	20	5	1
ANZG (2018) Freshwater 95% toxicant DGVs		**20**		**20**			**0.045**								**10**	**320**
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay																
2-4m																
4-8m																
>8m																
NEPM 2013 Table 1C GILs, Fresh Waters		**10**		**3**	**120**		**0.045**		**340**						**3.6**	**320**
Field_ID																
7944/MW01	<0.002	<1	<1	<1	<1	<1	<0.02	<1	<1	<1	<1	<10	<5	<20		<1
7944/MW02	<0.002	<1	<1	<1	<1	<1	<0.02	<1	<1	<1	<1	<10	<5	<20		<1
Statistical Summary																
Number of Results	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.002	<1	<1	<1	<1	<1	<0.02	<1	<1	<1	<1	<10	<5	<20	<5	<1
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.002	<1	<1	<1	<1	<1	<0.02	<1	<1	<1	<1	<10	<5	<20	<5	<1
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration																
Median Concentration	0.001	0.5	0.5	0.5	0.5	0.5	0.01	0.5	0.5	0.5	0.5	5	2.5	10	2.5	0.5
Standard Deviation																
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	TRH						BTEX				
	C6-C10	C6-C10 (F1 minus BTEX)	C10-C16	C10-C16 (F2 minus Naphthalene)	C16-C34	C34-C40	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	10	10	50	50	100	100	1	1	1	2	1
ANZG (2018) Freshwater 95% toxicant DGVs							**950**				**350**
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay											
2-4m		**NL**		**NL**			**30000**	**NL**	**NL**		
4-8m		**NL**		**NL**			**30000**	**NL**	**NL**		
>8m		**NL**		**NL**			**35000**	**NL**	**NL**		
NEPM 2013 Table 1C GILs, Fresh Waters							**950**				**350**
Field_ID											
7944/MW01	<10	<10	200	200	<100	<100	<1	<1	<1	<2	<1
7944/MW02	<10	<10	<50	<50	<100	<100	<1	<1	<1	<2	<1
Statistical Summary											
Number of Results	2	2	2	2	2	2	2	2	2	2	2
Number of Detects	0	0	1	1	0	0	0	0	0	0	0
Minimum Concentration	<10	<10	<50	<50	<100	<100	<1	<1	<1	<2	<1
Minimum Detect	ND	ND	200	200	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<10	<10	200	200	<100	<100	<1	<1	<1	<2	<1
Maximum Detect	ND	ND	200	200	ND	ND	ND	ND	ND	ND	ND
Average Concentration											
Median Concentration	5	5	112.5	112.5	50	50	0.5	0.5	0.5	1	0.5
Standard Deviation											
Number of Guideline Exceedances	0	2	0	2	0	0	0	2	2	0	0
Number of Guideline Exceedances(Detects Only)	0	2	0	2	0	0	0	2	2	0	0

	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,3-trichloropropane	1,2-dibromo-3-chloropropane	1,2-dichloroethane	1,2-dichloropropane
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	1	1	1	1	1	1	1	1	1	1	1
ANZG (2018) Freshwater 95% toxicant DGVs				**6500**							
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay											
2-4m											
4-8m											
>8m											
NEPM 2013 Table 1C GILs, Fresh Waters				**6500**							
Field_ID											
7944/MW01	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
7944/MW02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Statistical Summary											
Number of Results	2	2	2	2	2	2	2	2	2	2	2
Number of Detects	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration											
Median Concentration	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Standard Deviation											
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0

	Chlorinated Hydrocarbons																			Halogenated Benzenes									Halogenated Hydrocarbons				Metals													
	1,3-dichloropropane	2,2-dichloropropane	Bromochloromethane	Bromodichloromethane	Bromoform	Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dibromomethane	Hexachlorobutadiene	Trichloroethene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Vinyl chloride	1,2,3-trichlorobenzene	1,2,4-trichlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	2-chlorotoluene	4-chlorotoluene	Bromobenzene	Chlorobenzene	Hexachlorobenzene	1,2-dibromoethane	Bromomethane	Dichlorodifluoromethane	Trichlorofluoromethane	Arsenic (Filtered)	Cadmium (Filtered)	Chromium (III+VI) (Filtered)	Copper (Filtered)	Lead (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Zinc (Filtered)	4,4-DDE	a-BHC	Aldrin	b-BHC	Chlordane (cis)	Chlordane (trans)
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	1	1	1	1	1	1	1	10	1	10	1	1	1	1	1	1	1	1	10	1	1	1	1	1	1	1	1	1	0.2	1	10	10	10	0.001	0.0001	0.001	0.001	0.001	0.00005	0.001	0.001	0.2	0.2	0.2	0.2	0.2	0.2
ANZG (2018) Freshwater 95% toxicant DGVs																				**10**		**160**	**260**	**60**											**0.0002**		**0.0014**	**0.0034**	**0.0006**	**0.011**	**0.008**						
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay																																														
2-4m																																														
4-8m																																														
>8m																																														
NEPM 2013 Table 1C GILs, Fresh Waters																				**3**	**85**	**160**	**260**	**60**											**0.0002**		**0.0014**	**0.0034**	**0.00006**	**0.011**	**0.008**						
Field_ID																																														
7944/MW01	<1	<1	<1	<1	<1	<1	<1	<10	7	<10	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.2	<1	<10	<10	<10	<0.001	**0.0002**	<0.001	**0.003**	<0.001	<0.00005	**0.04**	**0.068**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
7944/MW02	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.2	<1	<10	<10	<10	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.00005	<0.001	0.003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Statistical Summary																																														
Number of Results	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Number of Detects	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	2	0	0	0	0	0	0	0
Minimum Concentration	<1	<1	<1	<1	<1	<1	<1	<10	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.2	<1	<10	<10	<10	<0.001	<0.0001	<0.001	<0.001	<0.001	<0.00005	<0.001	0.003	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0002	ND	0.003	ND	ND	0.04	0.003	ND	ND	ND	ND	ND	ND
Maximum Concentration	<1	<1	<1	<1	<1	<1	<1	<10	7	<10	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.2	<1	<10	<10	<10	<0.001	0.0002	<0.001	0.003	<0.001	<0.00005	0.04	0.068	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0002	ND	0.003	ND	ND	0.04	0.068	ND	ND	ND	ND	ND	ND
Average Concentration																																															
Median Concentration	0.5	0.5	0.5	0.5	0.5	0.5	0.5	5	3.75	5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.5	5	5	5	0.0005	0.000125	0.0005	0.00175	0.0005	0.000025	0.02025	0.0355	0.1	0.1	0.1	0.1	0.1	0.1
Standard Deviation																																														
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	0	0	0	0	0	0	0

	Organochlorine Pesticides													PAH															PAH/Phenols	PCBs							Solvents	TPH			
	g-BHC	DDD	DDT	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Benzo(b+j+k)fluoranthene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ	PAHs (Sum of positives)	Carcinogenic PAHs as B(a)P TPE	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Methyl Ethyl Ketone	C6-C9	C10-C14	C15-C28	C29-C36
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	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	0.002	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.005	0.001		2	2	2	2	2	2	2	10	10	50	100	100
ANZG (2018) Freshwater 95% toxicant DGVs			**0.01**					**0.02**		**0.2**	**0.09**																**16**									**0.6**		**0.03**					
NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Clay																											**NL**																
2-4m																											**NL**																
4-8m																											**NL**																
>8m																											**NL**																
NEPM 2013 Table 1C GILs, Fresh Waters			**0.006**					**0.01**		**0.2**	**0.01**																**16**									**0.3**		**0.01**					
Field_ID																																											
7944/MW01	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2		<0.2	<0.2		<0.2	<0.2	<0.002	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.005	0	<2.22	<2	<2	<2		<2		<2	<10	<10	160	140	<100
7944/MW02	<0.2	<0.2		<0.2	<0.2	<0.2	<0.2		<0.2	<0.2		<0.2	<0.2	<0.002	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.005	0	<2.22	<2	<2	<2		<2		<2	<10	<10	<50	<100	<100
Statistical Summary																																											
Number of Results	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	1	1	0
Minimum Concentration	<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	<0.002	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.005	0	<2.22	<2	<2	<2	<2	<2	<2	<2	<10	<10	<50	<100	<100
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	160	140	ND
Maximum Concentration	<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	<0.002	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.005	0	<2.22	<2	<2	<2	<2	<2	<2	<2	<10	<10	160	140	<100
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	160	140	ND
Average Concentration																																											
Median Concentration	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	0.001	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0025	0	1.11	1	1	1	1	1	1	1	5	5	92.5	95	50
Standard Deviation																																											
Number of Guideline Exceedances	0	0	2	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

'Environmental Screening Assessment
57 Station Road, Seven Hills, NSW
Relative Percent Difference - Groundwater

P2007944JS04V01

Field Duplicates (WATER)
Filter: SDG in('ENVIROLAB 2020-10-22T

SDG	ENVIROLAB 2020-10-22T00:00:00	ENVIROLAB 2020-10-22T00:00:00	
Field ID	7944/Dup01	7944/Dup01	**RPD**
Sampled Date/Time	21/10/2020	21/10/2020	

Chem_Gr	ChemName	Units	EQL			
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	0.00005	<0.0001	<0.0001	0
	Nickel (Filtered)	mg/l	0.001	<0.001	<0.001	0
	Zinc (Filtered)	mg/l	0.001	0.006	0.006	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 80 (1-10 x EQL); 50 (10-30 x EQL); 30 (> 30 x EQL))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

	TRH							BTEX						Halogenated Benzenes	Inorganics			
	C6-C10	C6-C10 (F1 minus BTEX)	C10-C16	C10-C16 (F2 minus Naphthalene)	C16-C34	C34-C40	C10-C40 (Sum of total)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Hexachlorobenzene	Moisture	Arsenic	Cadmium	Chromium (III+VI)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg
EQL	25	25	50	50	100	100	50	0.2	0.5	1	2	1	3	0.1	0.1	4	0.4	1
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil														**80**		**3000**	**900**	
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Clay																		
0-1m		**310**		**NL**				**4**	**NL**	**NL**			**NL**					
1-2m		**480**		**NL**				**6**	**NL**	**NL**			**NL**					
2-4m		**NL**		**NL**				**9**	**NL**	**NL**			**NL**					
>4m		**NL**		**NL**				**20**	**NL**	**NL**			**NL**					
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil	**800**		**1000**		**5000**	**10000**												
Field_ID																		
7944/BH201/0.0-0.1	<25	<25	200	**200**	**14,000**	1800	16,000	<0.2	<0.5	<1	<2	<1	<3	<0.1	6.4	21	<0.4	25
7944/BH201/0.2-0.3	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.5	<1	<2	<1	<3	-	15	6	<0.4	21
7944/BH202/0.0-0.1	<25	<25	300	**300**	**29,000**	4200	33,000	<0.2	<0.5	<1	<2	<1	<3	<0.1	0.5	7	<0.4	21
7944/BH202/0.3-0.4	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.5	<1	<2	<1	<3	-	10	5	<0.4	16
7944/BH203/0.0-0.1	<25	<25	380	**380**	**30,000**	3200	34,000	<0.2	<0.5	<1	<2	<1	<3	<0.1	1	15	<0.4	27
7944/BH203/0.3-0.4	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.5	<1	<2	<1	<3	-	18	7	<0.4	15
7944/BH204/0.0-0.1	<25	<25	190	**190**	**27,000**	1600	29,000	<0.2	<0.5	<1	<2	<1	<3	<0.1	12	5	<0.4	42
7794/BH204/0.3-0.4	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.5	<1	<2	<1	<3	-	14	6	<0.4	23
7944/SS01	<25	<25	**1900**	**1900**	**51,000**	**12,000**	66,000	<0.2	<0.5	<1	<2	<1	<3	<0.1	0.9	8	<0.4	22
Statistical Summary																		
Number of Results	9	9	9	9	9	9	9	9	9	9	9	9	9	5	9	9	9	9
Number of Detects	0	0	5	5	5	5	5	0	0	0	0	0	0	0	9	9	0	9
Minimum Concentration	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.5	<1	<2	<1	<3	<0.1	0.5	5	<0.4	15
Minimum Detect	ND	ND	190	190	14000	1600	16000	ND	ND	ND	ND	ND	ND	ND	0.5	5	ND	15
Maximum Concentration	<25	<25	1900	1900	51000	12000	66000	<0.2	<0.5	<1	<2	<1	<3	<0.1	18	21	<0.4	42
Maximum Detect	ND	ND	1900	1900	51000	12000	66000	ND	ND	ND	ND	ND	ND	ND	18	21	ND	42
Average Concentration	13	13	341	341	16800	2556	19789	0.1	0.25	0.5	1	0.5	1.5	0.05	8.6	8.9	0.2	24
Median Concentration	12.5	12.5	190	190	14000	1600	16000	0.1	0.25	0.5	1	0.5	1.5	0.05	10	7	0.2	22
Standard Deviation	0	0	600	600	18462	3855	22841	0	0	0	0	0	0	0	6.7	5.5	0	7.9
Number of Guideline Exceedances	0	0	1	9	5	1	0	0	9	9	0	0	9	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	1	9	5	1	0	0	9	9	0	0	9	0	0	0	0	0

	Metals					Organochlorine Pesticides																					
	Copper	Lead	Mercury	Nickel	Zinc	4,4-DDE	a-BHC	Aldrin	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Azinophos methyl
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	1	1	0.1	1	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
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil	**240000**	**1500**	**730**	**6000**	**400000**										**3600**					**100**			**50**		**2500**	
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion,																											
0-1m																											
1-2m																											
2-4m																											
>4m																											
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																											
Field_ID																											
7944/BH201/0.0-0.1	42	60	<0.1	18	230	<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
7944/BH201/0.2-0.3	6	18	<0.1	3	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7944/BH202/0.0-0.1	33	36	<0.1	19	150	<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
7944/BH202/0.3-0.4	5	12	<0.1	3	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7944/BH203/0.0-0.1	260	40	<0.1	16	280	<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
7944/BH203/0.3-0.4	8	11	<0.1	2	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7944/BH204/0.0-0.1	31	16	<0.1	36	110	<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
7794/BH204/0.3-0.4	5	9	<0.1	3	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7944/SS01	75	62	<0.1	16	500	<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
Statistical Summary																											
Number of Results	9	9	9	9	9	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Number of Detects	9	9	0	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	5	9	<0.1	2	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	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Minimum Detect	5	9	ND	2	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	260	62	<0.1	36	500	<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
Maximum Detect	260	62	ND	36	500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration	52	29	0.05	13	148	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	0.05	0.05	0.05	0.05
Median Concentration	31	18	0.05	16	110	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	0.05	0.05	0.05	0.05
Standard Deviation	82	21	0	11	166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Organophosphorous Pesticides																			
	Bromophos-ethyl	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Ronnel	Benzo(b+j+k)fluoranthene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	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	0.05	0.1	0.1	0.1
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil		**2000**																	
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion,																			
0-1m																			
1-2m																			
2-4m																			
>4m																			
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																			
Field_ID																			
7944/BH201/0.0-0.1	<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	0.1	0.2	<0.1
7944/BH201/0.2-0.3	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1
7944/BH202/0.0-0.1	<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	0.8	0.2	0.2	0.2	0.3	<0.1
7944/BH202/0.3-0.4	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1
7944/BH203/0.0-0.1	<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	0.2	<0.1	0.2	0.3	0.4	<0.1
7944/BH203/0.3-0.4	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1
7944/BH204/0.0-0.1	<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	<0.05	<0.1	<0.1	<0.1
7794/BH204/0.3-0.4	-	-	-	-	-	-	-	-	-	-	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1
7944/SS01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	0.5	0.4	0.9	<0.1
Statistical Summary																			
Number of Results	5	5	5	5	5	5	5	5	5	5	9	9	9	9	9	9	9	9	9
Number of Detects	0	0	0	0	0	0	0	0	0	0	2	0	1	2	2	4	4	4	0
Minimum Concentration	<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	<0.05	<0.1	<0.1	<0.1
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2	ND	0.1	0.2	0.1	0.1	0.1	0.2	ND
Maximum Concentration	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	0.1	0.8	0.2	0.5	0.4	0.9	<0.1
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.3	ND	0.1	0.8	0.2	0.5	0.4	0.9	ND
Average Concentration	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.13	0.05	0.056	0.15	0.072	0.13	0.14	0.23	0.05
Median Concentration	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.025	0.05	0.05	0.05
Standard Deviation	0	0	0	0	0	0	0	0	0	0	0.071	0	0.017	0.25	0.051	0.16	0.13	0.28	0
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	PAH										PAH/Phenols	PCBs								Pesticides	TPH			
	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ calc (Half)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ calc (Zero)	PAHs (Sum of positives)	Carcinogenic PAHs as B(a)P TPE	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)	Parathion	C6-C9	C10-C14	C15-C28	C29-C36
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.5	0.5	0.05		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	25	50	100	100
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil											**40**								**7**					
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion,																								
0-1m				**NL**																				
1-2m				**NL**																				
2-4m				**NL**																				
>4m				**NL**																				
NEPM 2013 Table 1B(7) Management Limits Comm / Ind, Fine Soil																								
Field_ID																								
7944/BH201/0.0-0.1	0.2	<0.1	<0.1	<0.1	<0.1	0.5	<0.5	<0.5	<0.5	1.3	0.168	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	84	8500	5600
7944/BH201/0.2-0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<0.172	-	-	-	-	-	-	-	-	-	<25	<50	<100	<100
7944/BH202/0.0-0.1	0.5	<0.1	0.1	<1 - 0.1	0.5	1.2	<0.5	<0.5	<0.5	4.2	0.285	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	120	17,000	14,000
7944/BH202/0.3-0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<0.172	-	-	-	-	-	-	-	-	-	<25	<50	<100	<100
7944/BH203/0.0-0.1	0.2	<0.1	0.1	<0.1	0.2	0.5	<0.5	<0.5	<0.5	2.4	0.272	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	200	20,000	11,000
7944/BH203/0.3-0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<0.172	-	-	-	-	-	-	-	-	-	<25	<50	<100	<100
7944/BH204/0.0-0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.2	<0.5	<0.5	<0.5	0.3	<0.172	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	110	2100	6500
7794/BH204/0.3-0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	<0.172	-	-	-	-	-	-	-	-	-	<25	<50	<100	<100
7944/SS01	0.7	<0.1	0.2	<1 - 0.2	<0.1	1.6	0.6	0.7	0.6	4.8	0.588	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	750	31,000	26,000
Statistical Summary																								
Number of Results	9	9	9	9	9	9	9	9	9	9	9	5	5	5	5	5	5	5	5	5	9	9	9	9
Number of Detects	4	0	3	2	3	5	1	1	1	5	4	0	0	0	0	0	0	0	0	0	0	5	5	5
Minimum Concentration	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05	0.168	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100
Minimum Detect	0.2	ND	0.1	ND	0.1	0.2	0.6	0.7	0.6	0.3	0.168	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	84	2100	5600
Maximum Concentration	0.7	<0.1	0.2	0.2	0.5	1.6	0.6	0.7	0.6	4.8	0.588	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	750	31000	26000
Maximum Detect	0.7	ND	0.2	0.2	0.5	1.6	0.6	0.7	0.6	4.8	0.588	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	750	31000	26000
Average Concentration	0.21	0.05	0.078	0.11	0.12	0.47	0.29	0.3	0.29	1.5	0.19	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	13	152	8756	7033
Median Concentration	0.05	0.05	0.05	0.05	0.05	0.2	0.25	0.25	0.25	0.3	0.086	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	12.5	84	2100	5600
Standard Deviation	0.24	0	0.051	0.12	0.15	0.57	0.12	0.15	0.12	1.9	0.17	0	0	0	0	0	0	0	0	0	0	232	11384	8813
Number of Guideline Exceedances	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Attachment E: Data Validation Report

Sample Handling

Lab Report	Sample Chain of Custody (COC) Procedures	Sample Preservation	Sample Receipt Notification Matches COC	Samples Analysed Within Holding Time
253712 - S	Pass	Pass	Pass	Pass
254008 - W	Pass	Pass	Pass	Pass

Precision / Accuracy

Lab Report	Analysed by NATA Laboratory	Trip Spike and Blank Used	Adequate Duplicates Analysed	Field Rinsate Analysed
99991 - S	Pass	NA	Pass	NA
99991 - W	Pass	NA	Pass	NA

Duplicates/ laboratory QA / QC

Lab Report	Field RPD	Laboratory Surrogate Recovery	Laboratory Duplicate RPD	Lab Blank and Matrix Spike Recovery	Laboratory Control Sample
253712 - S	**Fail**	Pass	Pass	Pass	Pass
254008 - W	Pass	Pass	Pass	Pass	Pass

RPD control limits were exceeded for copper, lead nickel and zinc in BH101/0.0-0.1 and Dup2. As this was in heterogeneous fill and both values were significantly less than the SAC, the data is usable for this report.

RCA Australia (2021a) Update of Phase 2 Environmental Site (Contamination Assessment): 57 Station Road, Toongabbie, NSW ref:14817 – 401/10.

UPDATE OF PHASE 2 ENVIRONMENTAL SITE (CONTAMINATON) ASSESSMENT

57 STATION STREET, TOONGABBIE

Prepared for John M Fraser Pty Ltd

Prepared by RCA Australia

RCA ref 14817-401/1

FEBRUARY 2021

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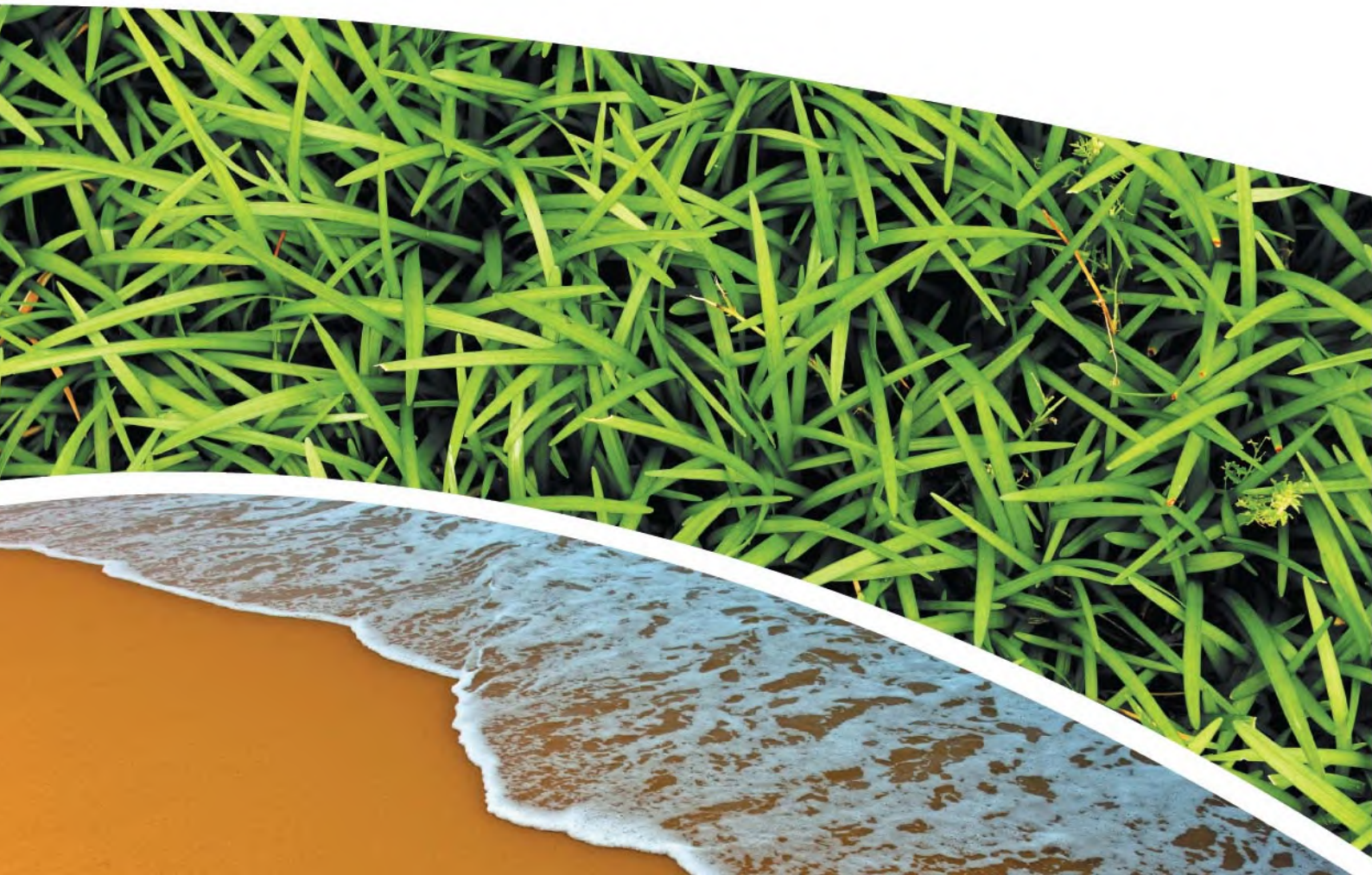

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RCA ref 14817-401/1

26 February 2021

John M Fraser Pty Ltd
57 Station Road
TOONGABBIE NSW 2146

Attention: Mr John Fraser

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Geotechnical Engineering
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Environmental Engineering
Hydrogeology
Construction Materials Testing
Environmental Monitoring
Sound & Vibration
Occupational Hygiene

UPDATE OF PHASE 2 ENVIRONMENTAL SITE (CONTAMINATION) ASSESSMENT 57 STATION ROAD, TOONGABBIE NSW

EXECUTIVE SUMMARY

This report presents the findings of an update of Phase 2 environmental site assessment undertaken at 57 Station Road, Toongabbie in 2007 (Ref [1]).

In October 2007 a Phase 1 and Phase 2 environmental site assessment was undertaken by RCA (Ref [1]). The 2007 assessment concluded that the site was suitable for ongoing use however as the site is currently being processed for sale an update in the assessment was required due to the significant lapse in time and to account for the changes in operation at the site. This report has been revised to take into account additional investigation requests by the intended purchaser of the site with relation to surface soils and the possible presence of anthropogenic waste in the northern portion of the site.

The site is currently occupied for commercial / industrial purpose by a non-operational timber mill and by waste management solution storage facility for vehicles and bins. An auto parts/car wrecker was in the process of vacating the site during the initial (November 2020) fieldworks after having been present at the site for approximately 5-6 years and had vacated the site by February 2021.

The potential for contamination, based on review of site history was identified to be limited to fill importation (for driveway /hardstand maintenance), the presence of underground petroleum storage tanks (UPST), the use of a portion of the site by the auto wreckers and fire damage to a building with unknown potential to include asbestos. No potential for contamination was identified via the site history review apart from one (1) site approximately 800m south of the site which was not considered to be a potential source of contamination due to the distance from the site.

Contamination was identified in isolated surface soil locations in various areas of the site: with the exception of one location in which hydrocarbon concentrations were in excess of the management limit (Ref [4]), all concentrations (hydrocarbons and zinc) were in excess of ecological criteria (Ref [4] only. It is noted that remediation works has been undertaken concurrently with this investigation and the hydrocarbon impacted material at two (2) locations (S11 and S15) have been removed and are no longer relevant to the site. Remedial details are included in a separate report (Ref [9]).

Contamination was identified in the vicinity of the UPST which were situated at the site: concurrently with these assessment works the UPST has been removed (Ref [4]). While the location of BH4 remains at the site, the detected contamination was in excess of the ecological criterion (Ref [4]) only.

Anthropogenic waste was identified in the north eastern portion of site comprising timber and metal at depth approximately 1mbgs to approximately 1.5mbgs. No indications of potential asbestos materials were identified and contamination was not identified with the exception of one sample within the matrix associated with the waste with concentrations of zinc in excess of the ecological criterion (Ref [4])

The site is currently a commercial / industrial site without capacity to support an ecological population considered to be at risk from the contamination and as such RCA does not consider that any remediation or management is required to address the identified contamination remaining following completion of remedial works (Ref [9]).

Groundwater exhibits concentrations of hydrocarbons and some metals, in excess of ecological criteria (Ref [6]) either considered to be related to regional conditions or within a localised area around the UPST area. No concentrations are in excess of relevant human health criteria. The UPST area is situated in an area where there is no occupied buildings or structures in which vapours could accumulate and as such RCA does not consider the identified soil and groundwater contamination poses a risk to human health in the current site conditions unless site excavations are undertaken or groundwater is extracted. The groundwater contamination is not considered to pose a risk to the environment based on the concentrations identified in MMW2 which is situated between the UPST area and the likely environmental receptor, Blacktown Creek. As such RCA does not consider that any remediation or management is required to address the identified contamination remaining following completion of remedial works (Ref [9]).

RCA considers based on the current assessment that the baseline conditions at the site are suitable for the continued commercial/industrial use without formal management or remediation.

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SUMMARY OF RESULTS

1 INTRODUCTION

This report presents the findings of an update of a previous Phase 2 environmental site assessment undertaken at 57 Station Road, Toongabbie.

In October 2007 a Phase 1 and Phase 2 environmental site assessment was undertaken by RCA (Ref [1]) which identified limited contamination and concluded that the site was suitable for ongoing use. The site is currently in the process of being sold and an updated assessment was considered necessary due to the significant lapse in time since the assessment was undertaken. Further, an auto parts business which has operated at the site for approximately 5-6 years was not included in the 2007 assessment and assessment of this area was required.

The assessment was undertaken at the request of John M Fraser to provide a current contamination status assessment of the site taking into account new guidelines and current conditions to facilitate the sale of the site.

This revision of the report takes into account additional sampling as requested by the intended purchaser of the site.

2 SITE IDENTIFICATION AND DESCRIPTION

The site is described as 57 Station Road, Toongabbie, NSW and Lot B, DP404669.

The site is currently occupied in the northern portion of the site by a timber mill and in the south western portion of the site by a waste management solution storage facility for vehicles and bins at time of this assessment, was in the process of vacating the site.

Additional site details are shown in **Table 1**.

Table 1 *Site Details*

Current zoning (Ref [2])	IN1- General Industrial
Current use(s)	Timber mill in the northern portion of the site. Bulk garbage bin storage in the south western portion of the site. Car wrecker in the south eastern portion of the site during the first portion (November 2020) of this assessment however was in the process of vacating the site. The car wreckers had vacated the site by the second portion of this assessment (February 2021), with the bulk garbage bin storage company now occupying the area of the site.
Size of site	Approximately 2.6ha
Land use to the:	
North	Blacktown Creek, then general industrial/commercial properties.
South	Station Road, then railway line and then residential properties.
East	McCoy Park (recreational area) and residential properties.
West	General industrial/commercial properties.
Nearest sensitive receptor (human health)	Residential properties <100m to the east and <100m to the south (on other side of railway line).
Nearest sensitive receptor (environmental)	Blacktown Creek approximately 40m north of the site. Blacktown Creek flows into Toongabbie Creek approximately 225m west of the site.

Drawing 1, **Appendix A** shows the locality and the layout of the site.

3 SITE HISTORY AND BACKGROUND INFORMATION

3.1 SITE NOTIFICATIONS

RCA undertook a search of the Heritage NSW register (http://www.environment.nsw.gov.au/heritageapp/heritagesearch.aspx) for Toongabbie and Seven Hills and identified that there are no Aboriginal Places or items on the State Heritage Register within vicinity of the site.

RCA undertook a search of the Department of Agriculture, Water and the Environment heritage register (http://www.environment.gov.au/heritage/publications/australian-heritage-database) for Toongabbie and Seven Hills, and identified that there are no Aboriginal Places or items on the State Heritage Register within vicinity of the site.

3.2 PREVIOUS INVESTIGATIONS

An environmental site assessment (Ref [1]) was undertaken of the site, which at the time comprised a timber yard, with the aim of the assessment to characterise the potential for contamination of the site prior to sale.

The works involved assessment of site history and background information as well as the drilling of thirty (36) boreholes across the site, and collection of forty (40) samples. Three (3) of the boreholes were converted to groundwater monitoring wells and groundwater samples collected. The location of the samples in shown on **Drawing 1**, **Appendix A**.

Two (2) underground petroleum storage tanks (UPST) were located near the office buildings. One (1) UST was 16,000L and used for diesel. The other UST was a 13,500L and was used for the unleaded fuel. Two (2) bowsers were located above the tanks. The locations of these facilities is shown on **Drawing 1**, **Appendix A**.

The site history identified prior to the site being a timber yard it was rural land i.e market garden from at least 1938 to 1962, with John M Fraser taking ownership, with the site zoned at the time of the report 4(a) Industrial – General.

Contaminants in soil were below the relevant guidelines at the time for residential land use, with concentrations of benzene, toluene, ethyl benzene, xylene (BTEX), organochlorine pesticides (OCP) and polychlorinated biphenyls (PCB) below the laboratory detection limits, and concentrations of total recoverable hydrocarbons[1] (TRH), polycyclic aromatic hydrocarbons (PAH) and metals (arsenic, cadmium, chromium, copper, nickel, lead, zinc, mercury) either not detected or detected at low levels.

Groundwater wells were sampled twice as part of the assessment (Ref [1]), with the initial samples exhibiting TRH concentrations exceeding the relevant ecological guidelines, and the subsequent samples (approximately five (5) weeks later) exhibiting lower concentrations of TRH below the ecological guidelines relevant at the time however with concentrations of copper and zinc in excess of the ecological guidelines relevant at the time.

The detected TRH, copper and zinc values were not considered to warrant further investigation nor any actions and it was considered that the concentrations may be potentially attributed to local conditions rather than activities undertaken at the site.

The site was considered suitable for activities as permitted under HIL 'A' criteria, residential properties with access to soil.

3.3 HISTORICAL PHOTOGRAPHS

RCA reviewed historical aerial photographs since the time of the previous assessment (Ref [1]) and **Table 2** summarises the observations at the site and the surrounding environment.

[1] Laboratory analysis of hydrocarbons is now (since 2013) being reported as TRH instead of what was previously reported as total petroleum hydrocarbons (TPH). The change in terminology does not reflect a change in testing method, rather recognises that the testing includes all forms of hydrocarbons, not just petroleum hydrocarbons. Further laboratory analysis using a silica gel clean up (TRH_{sg}) is considered to enable a better identification of the extent of petroleum based contamination. The previous report (Ref [1]) uses the TPH terminology.

Table 2 *Aerial Photograph Review*

2009	The site appears to be a functioning timber mill consistent with the 2007 assessment, with large buildings in the middle of the site, one rectangle and one L shaped, along with several smaller buildings located in the southern portion of the site. It appears cut timber is stacked in in the northern portion of the site. It appears the remnants of a building located on the southern boundary, potential fire damage, observed during the 2007 investigation (Ref [1]). Several stacks of cut timber are placed in the south central portion of the site. There appears to be trucks along with containers in the south western portion of the site. The area around the site is generally consistent with the 2007 assessment comprising by McCoy Park and residential properties to the east, Blacktown Creek riparian zone, then commercial/industrial properties to the north, commercial/industrial, with the Station and Road and the railway running northwest/southeast on the western and southern sides of the site. The area to the south past the railway is residential properties.
2013	The northern portion of the site appears to have changed little since the previous aerial. There appears to be a building located on the western central boundary, the current timber yard site office. The south eastern portion of the site appears to be car wreckers, with the majority of the site occupied by vehicles. The remnants of the building previously observed appears to have been demolished and removed. The south western portion of the site appears to have a number of containers or trucks, with the majority of that portion of the site not utilised by the timber mill. The area surrounding the site appears to have changed little since the previous aerial.
2015	The northern portion of the site appears to have changed little since the previous aerial. The south eastern portion of the site (car wreckers) appears to have changed little, though there appears to be a significant increase in vehicles within the site. The south western portion of the site has changed little, with an increase of containers placed within the area. The area surrounding the site appears to have changed little since the previous aerial.
2017	The northern portion of the site appears to have changed little, with the exception of an addition to the L shaped building, on the north eastern portion of the building. The south eastern (car wreckers) and the south western portions of the site appears to have changed little since the previous aerial. The area surrounding the site appears to have changed little since the previous aerial.
2018	The northern portion of the site appears to have changed little since the previous aerial. The south eastern portion of the site (car wreckers) appears to have changed little since the previous aerial. The south western portion of the site has changed little, though there appears to be less containers present in the site. The area surrounding the site appears to have changed little since the previous aerial.

Reviewed documentation is included in **Appendix B**.

3.4 CONTAMINATED LAND PUBLIC RECORD

RCA undertook a search of the NSW EPA public lands register (http://www.epa.nsw.gov.au/publicregister/) and did not find any record of Environment Protection licences, applications, notices, audits or pollution studies and reduction programmes applicable to the site. Licenses were identified for thirty two (32) sites within Toongabbie and Seven Hills:

- Strasburger Enterprises (Properties) Pty Ltd, corner Metella and Cornelia Roads, Toongabbie formerly had a POEO licence for miscellaneous discharge to waters at any time, which was surrendered in September 2000 and February 2003, with a variation to the licence in January 2002. The site is approximately 1km south of the site and is not considered to pose a risk of contamination to the site.
- Allen Reid of 8 Anka Avenue, Toongabbie was issued two (2) penalty notices on 16 September 2015 for transport of waste to an unlawful facility and individual non compliance. The site is approximately 2km south east of the site and is not considered to pose a risk of contamination to the site.
- A.C.N 143 958 570 Pty Limit, 18-24 Abbott, Seven Hills – licence variation.
- Abioka Pty Ltd, 30-32 Powers Road, Seven Hills – various licence variations.
- Allnex Resins Australia Pty Ltd, 8 Abbott Road, Seven Hills – licence surrendered, then licence variation and then surrendered in 2010.
- Asia Pacific Specialty Chemicals Limited, 8 Abbott Road, Seven Hills – licence variation.
- Bitupave Ltd – 25 Powers Road, Seven Hills – various licence variations.
- Boral Cement Limited – Lots 1-7 Powers Road, Seven Hills – Surrendered licence and variation to licence.
- Bret J Overton – Units 23/24/20 Tucks Road, Seven Hills – licence variation.
- Chassis Brakes International Casting Pty Ltd, 18-24 Abbott Road, Seven Hills – surrendered and variation of licence.
- Coats Australian Pty Limited – 125-129 Station Road, Seven Hills – licence variation.
- CSR Limited – 38 Powers Road, Seven Hills – surrendered licence.
- DGL Manufacturing Pty Ltd – 11 Boden Road, Seven Hills – POEO licence issued and variation.
- Drum Reconditioners (NSW) Pty Lttd – 30-32 Powers Road, Seven Hills – licence variations.
- Intercast & Forge Pty Limited – 18-24 Abbott Road, Seven Hills – licence variations.
- Intervet Australia Pty Limited – 26 Artisan Road, Seven Hills – surrender of licence.
- J.J. Richards & Sons Pty Ltd - Units 23/24/20 Tucks Road, Seven Hills – licence variation.
- Metromix Pty Ltd – Powers Road, Seven Hills – POEO licence no longer in force.
- Michael James Nicholson - Units 23/24/20 Tucks Road, Seven Hills – licence variations.
- National Starch & Chemical Pty Ltd, 7 Stanton Road, Seven Hills – Licence variations.
- Saft Batteries Pty Limited – unit 18, 167 Prospect Highway, Seven Hills – POEO licence surrendered.
- Schering-Plough Pty Limited – licence variations.

- SUEZ Recycling & Recovery Pty Ltd – 29 Powers Road, Seven Hills – POEO licence surrendered several times along with variations to the licence.
- Transfield Construction Pty Ltd – 25 Powers Road, Seven Hills – POEO licence surrendered.
- VIP Drum Reconditioners Pty Ltd, 30-32 Powers Road, Seven Hills – POEO licence issued, licence variation. Penalty notice issued 7 July 2017 under the Protection of the Environment Operations Act 1997 for Pollute Waters. The site is approximately 600m to the north east of the site and is not considered to pose a risk of contamination to the site.
- Wastefree (Aust) Pty Ltd, 10 Artisan Road, Seven Hills – POEO licence issued.
- WSN Environmental Solutions Pty Limited – 27 Powers Road, Seven Hills – licence variations. Clean Up notice issued 12 February, 2003, with UPST inspected, with recommendation to remove two (2) tanks, along with the construction of a temporary hardstand, along with the development of a remedial action plan (RAP). The site is approximately 300m to the north of the site and not considered to pose a risk of contamination to the site.

RCA undertook a search of sites notified to the NSW EPA as potentially requiring regulation (http://www.epa.nsw.gov.au/clm/publiclist.htm as updated 13 November 2020) and confirmed that the site is not notified, however that there are eight (8) notified sites within Toongabbie and Seven Hills:

- 7-Eleven (former Mobil) service station, 3 Metella Road, Toongabbie – regulation under the CLM Act not required. The site is approximately 800m to the south of the site and is not considered to pose a risk of contamination to the site.
- 7-Eleven (former Mobil) service station, 151 Prospect Highway, Seven Hills – regulation under the CLM Act not required. The site is approximately 1.2km to the north west of the site and is not considered to pose a risk of contamination to the site.
- Australia Post, 3 Powers Road, Seven Hills – regulation under the CLM Act not required. The site is approximately 1km north west of the site and is not considered to pose a risk of contamination to the site.
- Car Park (former brickworks/warehouse), 1 Powers Road, Seven Hills – regulation under the CLM Act not required. The site is approximately 1km north west of the site and is not considered to pose a risk of contamination to the site.
- BP-branded Jasbe Petroleum Service Station, 156 Prospect Highway, Seven Hills - regulation under the CLM Act not required. The site is approximately 1.2km to the north west of the site and is not considered to pose a risk of contamination to the site.
- Caltex Service Station, 38 Abbott Road, Seven Hill – regulation under the CLM Act not required. The site is approximately 1.5km to the north of the site and is not considered to pose a risk of contamination to the site.
- Caltex Service Station Seven Hills, 105 Station Road, Seven Hills - regulation under the CLM Act not required. The site is approximately 600m to the north west of the site and is not considered to pose a risk of contamination to the site.

- Former Australian Waste Oil Refineries Site, 27 Powers Road, Seven Hills – contamination formerly regulated under CLM Act. The site is approximately 300m to the north of the site and not considered to pose a risk of contamination to the site.

RCA undertook a search of the NSW EPA gasworks database (http://www.epa.nsw.gov.au/clm/gasworkslocation.htm) and determined that there are no known gasworks within vicinity of the site.

3.5 GEOLOGY AND HYDROGEOLOGY

RCA reviewed published geological and hydrogeological maps and summarised the findings in **Table 3**.

Table 3 *Geology and Hydrogeology*

Soil type	Blacktown - residual
Acid sulfate soil	There is no known occurrence of acid sulfate soils.
Groundwater use	No groundwater use is currently known to be undertaken at the site. A review of available information (Ref [3]) for bores with 500m of the site indicates usage being monitoring bores. Standing water level was only provided on one (1) of the works summaries which indicated a SWL of 11.7m in a bore drilled to a final depth of 13m.
Number of monitoring wells on site	Two (2) observed during the site inspection, with three (3) presumed to be within the site from the previous RCA investigation (Ref [1], refer **Drawing 1**, **Appendix A**) that could not be found.
Depth to groundwater	Depths vary from approximately 0.3m to 3.5m
Estimated Groundwater flow direction	Unknown, thought to be to the north, towards Blacktown Creek.
Background water quality	Unknown

The groundwater information is attached in **Appendix C**.

3.6 ANECDOTAL INFORMATION

RCA discussed the potential presence of anthropogenic material being situated beneath the surface in the northern portion of the site with Mr John Fraser, the owner of the site, along with the current manager of the timber yard. Based on his information it is understood that dunnage timbers and metal strapping from timber deliveries were placed in the low-lying area of the site a number of decades ago. This material was then overlaid with imported soil material to form the current surface.

3.7 INTEGRITY ASSESSMENT

Information obtained from the previous report (Ref [1]) is presumed to be accurate, however limited to the areas of the site sampled and the information obtained from the relevant documentation.

Information obtained from the EPA is presumed to be accurate, however is limited to information the EPA has obtained and documented.

Information obtained from aerial photography is limited in that it only provides a snapshot of the site in time. RCA considers that adequate coverage was achieved for this investigation with aerials available from the 2009 onwards.

Information provided by Mr Fraser is considered to be accurate however may not be complete.

Overall RCA considers that the site history review is adequate to provide a general understanding of the past nature of land use at the site.

4 PRELIMINARY CONCEPTUAL SITE MODEL

Based on RCA's understanding of activities which have occurred at the site since the 2007 assessment, potential contamination arises from:

- Storage of cars and auto parts at the leased car wrecking facility:
  - This may have resulted in surface contamination by hydrocarbons likely from oil leaks and spills. It is understood that these have been observed however the extent and significance is not yet known.
  - Risks associated with this material are considered to be limited to direct exposure by ingestion or dermal contact.
  - Off site impacts are considered minimal, although there may have been some transportation/migration of dust and fines in stormwater.
- Ongoing storage and use of petroleum in underground facilities:
  - This may have resulted in subsurface soil contamination from the base of the tank and may have caused groundwater contamination directly or due to infiltration. Use of the dispensing facilities may also have resulted in surface soil contamination in immediate vicinity of the facilities.
  - The risks associated with this material are considered to be from inhalation, especially in the case of vapours beneath buildings, underground structures and service pits, as well as ingestion and dermal contact.
  - Off site impacts are possible, depending on the extent of the contamination and the location of the facilities or otherwise discuss potential. Some transportation/migration of contamination may have occurred in stormwater in the event of surface contamination from the dispensing facilities.
- Presence of anthropogenic waste below the surface of the northern portion of the site:
  - If the waste comprised dunnage timbers and metal strapping it is not considered that there is a potential risk. There may be geotechnical constraints to certain building techniques.
  - If the waste comprises other types of material there may be potential contamination which may comprise hydrocarbons, metals and asbestos. Risks associated with contamination are considered to only be present during excavation beneath the overlying soil and would be limited to direct exposure by ingestion or dermal contact. The presence of asbestos would give rise to an inhalation risk.

  - Off site impacts are not considered likely although it is noted that other sites nearby may have undertaken similar filling activities along the same alignment and on the other side of the creek.
- Use of asbestos containing building materials at the site:
  - If asbestos containing materials were used in construction of the former residential building, the fire may have caused the generation of asbestos fibres resulting in surface soil contamination.
  - The risks associated with this contamination are considered to be due to inhalation directly or secondarily from adhered fibres on equipment and clothing.
  - Off site impacts are possible, depending on the extent of the degradation of building materials and whether asbestos fibres were generated during the fire.

5 SAMPLING AND ANALYTICAL QUALITY PLAN

No formal sampling and analytical quality plan (SAQP) was developed for the project. The scope of work was provided in RCA's proposal dated the 3 April 2020 for the works and the following sections detail the basis for the scope. The scope was expanded in February 2021 at the request of the intended purchaser.

5.1 STEP 1 – STATE THE PROBLEM

Based on the preliminary conceptual site model, there is potential for hydrocarbon, metals and asbestos contamination arising from storage of damaged vehicles and previous on-site fire. If present, contamination may pose constraints to proposed works and future use of the site may require specific management.

The initial scope of work, as reported in the initial issue of this report, did not include the number of sampling locations in accordance with the NSW EPA guidelines and there was some concern about the identification of anthropogenic material by an environmental representative acting on behalf of the intended purchaser in the north of the site.

5.2 STEP 2 – IDENTIFY THE GOALS AND DECISIONS

The key uncertainties that the investigation has attempted to address were:

- Has there been a change in activities undertaken at the site that might give rise to contamination since the previous assessment (Ref [1])?
- Do the concentrations of contaminants (hydrocarbons, metals and asbestos) exceed acceptable levels to preclude the site from being used for commercial/industrial uses under the current land zone?
- What is the character of the anthropogenic waste material in the north of the site?

In order to resolve this uncertainty, decisions were to be made as to the presence and significance of potential contamination such that management measures can be designed to reduce risk. The specific decisions to be made were to:

- Investigate past and present potential contamination sources.
- Determine the nature of contamination.

- Determine the geology and hydrogeology.
- Determine the potential and actual contaminant migration routes.
- Determine whether contaminants exceed acceptable levels.
- Determine whether further investigation or management is required.

5.3 STEP 3 – IDENTIFY INPUTS TO THE DECISIONS

The specific types of information needed to resolve the decision statements in Step 2 were noted as follows:

- Adequate conceptual site model.
- Soil material type.
- Analytical data for the collected samples.
- Appropriate assessment criteria for the media being investigated and the approved use of the land.
- Appropriate field methods.
- Appropriate laboratory analysis methods.

The ASC NEPM (Ref [4]) document has been approved by the NSW EPA for use on potentially contaminated sites and supersedes most of the preceding reference documents. The criteria from the ASC NEPM (Ref [4]) was to be used to determine the significance of any contamination found for both soil and groundwater concentrations.

Best practice in alignment with Council's requirements under SEPP 55 (Ref [5]) prescribes assessment on the basis of the most sensitive allowable site use. The current land zone is IN1- General Industrial, though due to the current land use as commercial and likely to remain RCA considers the criteria (Ref [4]) as defined for commercial / industrial land use to be appropriate for assessment of human health risk from the soil at site. The ecological risk was to be also assessed under the criteria defined for commercial / industrial land use.

The potential ecological impact from groundwater contamination was assessed by the use of ANZG (Ref [6]) and the comparison of drinking water (Ref [7]), with drinking water not relevant due to no extraction of groundwater within the site.

Full details of the relevant guidelines are included in **Appendix E**.

5.4 STEP 4 – DEFINE THE BOUNDARIES OF THE INVESTIGATION

The horizontal extent of the assessment has been defined by the cadastral lot as shown in the site plan (**Drawing 1**, **Appendix A**) and was interpreted in the field based on site features including fencing.

The vertical extent has been determined by consideration of the conceptual site model and the objectives of the assessment and was to comprise:

- Up to ten (10) metres below ground level for the purposes of soil assessment.
- Up to two (2) metres below the depth of groundwater for the purpose of groundwater assessment.

Practical constraints that could have interfered with sampling include:

- Fences.
- Infrastructure.
- Property access.

5.5 STEP 5 – DEVELOP THE DECISION RULES

The Data Quality Indicators (DQI) that were implemented for the project are detailed in **Table 4**.

Table 4 *Data Quality Indicators Implemented for the Assessment*

DQI	Determined by	Criteria
Accuracy	Internal – surrogates, laboratory control samples, matrix spikes, method blanks. External – trip spikes and interlaboratory duplicates.	Surrogate, LCS, spike - recovery data to be 70-130%. Blanks and equipment washes – results to be < PQL.
Precision	Internal – laboratory duplicates External – intralaboratory duplicates.	RPD of duplicates: • 50% RPD at concentration levels greater than ten times the PQL. • 75% RPD at concentrations between five to ten times the PQL. • 100% RPD at concentration levels between two and five times the PQL. Where concentration levels are less than two times the PQL, the Absolute Difference (AD) shall be calculated. Data will be considered acceptable if the AD <2.5 times the PQL.
Completeness	The percentage of completed data points, taking in account consideration of other DQI.	95%
Representativeness	Whether there has been sufficient sampling by appropriate methodology with relevant analysis to determine that the assessment is representative of the site conditions.	
Comparability	• All samples collected during this sampling programme will be obtained by adequately trained RCA personnel using consistent sampling methodologies throughout the project. • All samples must be received by the laboratory cool and appropriately preserved for the requested analysis with sufficient time within the specified holding time. • All laboratory analyses will be conducted by NATA accredited methodologies that comply with the international standard methods. • Comparable analytes such as TRH C_6-C_{10} and BTEX, PAH and TRH >C_{10}-C_{40}, and metals should show some concurrence between analytical results and to identified field observations.	

5.6 STEP 6 – ACCEPTABLE LIMITS ON DECISION ERRORS

If the data received was not in accordance with the defined acceptable limits outlined in Step 5, it may have been considered to be an estimate or be rejected. Determination of whether this data may be used or, if re-sampling was required, would have been based on the following considerations:

- Closeness of the result to the guideline concentrations.
- Data analysis and the acceptance of 95% UCL as the true mean value of the data set and understanding that a conclusive statement made on these grounds has a 5% chance of being inaccurate.
- Specific contaminant of concern (eg, response to carcinogens may be more conservative).
- The area of site in question and the potential lateral and vertical extent of questionable information.
- Whether the uncertainty can be effectively managed by site management controls.

If any of the data validation procedures or criteria identified were not followed or met, this will have constituted a non-conformance. The significance of the non-conformance will have determined if rectification was required, as presented in **Appendix F**.

5.7 STEP 7 – OPTIMISATION OF THE DESIGN OF THE COLLECTION OF DATA

The initial scope of work comprised collection of soil samples from twenty-three (23) soil sampling locations up to 0.01m based on a judgemental sampling pattern to provide characterisation of potential contamination within soils throughout the site, and samples from a further four (4) soil locations around UPST from 2.0m depth from surface and every metre thereafter until limit of assessment (5m). Additional samples were to be collected at changes in lithology or if contamination is suspected. In the event that contamination was suspected at 5m and/or groundwater was present the holes were to be advanced up to a further 5m or until auger refusal (whichever was shallower).

The additional scope of works as requested by the intended purchaser comprised collection of eight (8) surface soil samples from specified sampling locations to provide further characterisation of potential contamination within surface soils as well as the excavation of four (4) test pits in the northern portion of the site to assess the potential for anthropogenic waste. Soil samples were to be collected ay every half a metre until limit of assessment (2m) with additional samples at changes in lithology or if contamination was suspected.

Samples were to be collected using hand tools for the surface samples, from boreholes collected with the use of the standard penetration test (SPT) tube and from the centre of the excavator bucket during test pitting. The SPT method of sampling was chosen due to the potential presence of volatile compounds and the requirement for limited disturbance at the site, with sampling from the excavator bucket utilised to aid in identifying any visual contamination (i.e., hydrocarbon impacted soils, timber, other building waste and asbestos containing materials).

Groundwater samples were to be collected with a low flow pump and designated tubing. This method was chosen to minimise the potential of loss of volatile contaminants during sampling.

Decontamination of soil sampling equipment was to have been undertaken by brushing of excess soil from the auger between locations. Decontamination of groundwater sampling equipment was to be undertaken by rinsing through with potable water between locations. New, disposable nitrile gloves were to be employed at each sampling location.

Soil and groundwater samples were to have been laboratory analysed for BTEX, TRH (C_6-C_{40}), PAH and metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc).

Samples were to have been stored in the field in a chilled container on ice and sent to the laboratory under Chain of Custody (COC) documentation.

ALS was to have been used as the primary analysing laboratory for all analyses as well as quality assurance samples due to its NATA accreditation and experience with potentially contaminated soil.

Table 5 *Sampling Strategy*

Contaminating activity	Potential Contaminants of Concern	Sampling Strategy	Rationale for Sampling Strategy and Sampling Locations
Importation of fill for driveway / hardstand maintenance.	TRH, BTEX, PAH, metals.	Collection of soil samples at the surface by hand tools.	The eighteen (18) locations were chosen to provide characterisation of potential contamination within the fill at the site and from on-site and off-site sources. A judgmental sampling pattern was employed based on available site history information regarding potential contaminants of concern and site walkover however provided coverage of the entire site.
Potential leakage of vehicles and/or petroleum storage	TRH, BTEX, PAH, metals.	A drill rig will be utilised to obtain undisturbed samples with the SPT tube where possible to preserve potential volatile compounds. Collection of soil samples at 0.01, 2.0, 3.0, 4.0, 5.0m below the surface. Additional samples will be collected based on field observations of contamination or to characterise strata. Collection of groundwater samples from existing and any installed monitoring wells by low flow pump.	Four (4) locations were chosen in proximity of the UPST and bowsers to characterise the potential extent of contamination in the vicinity of the infrastructure. It was not intended to characterise the backfill sands. Existing wells and installed wells were considered likely to be suitable for characterisation of the groundwater contamination.
Previous on-site fire.	Asbestos.	Collection of soil samples at the surface by hand tools.	Three (3) locations were chosen in proximity of the former building footprint to characterise the potential for asbestos contamination to be present in the vicinity of the footprint.
Use of a portion of the site as a car wreckers	TRH, BTEX, PAH, metals.	Collection of soil samples at the surface by hand tools.	Ten (10) locations were chosen to provide characterisation of potential contamination arising from spills and leaks associated with the site use. A judgmental sampling pattern was employed based on site observations.

Contaminating activity	Potential Contaminants of Concern	Sampling Strategy	Rationale for Sampling Strategy and Sampling Locations
Disposal of anthropogenic waste in the northern portion of the site.	TRH, BTEX, PAH, metals, pesticides, asbestos.	An excavator will be utilised to obtain disturbed samples. Collection of soil samples at 0.5m, 1.0m, 1.5m, 2.0m below the surface. Additional samples were to be collected based on field observations of contamination or to characterise strata	Four (4) locations were chosen in the proximity of the northern boundary of the site to characterise the potential extent of anthropogenic waste.

6 FIELDWORK

RCA undertook a site inspection on 9 November 2020 and recorded the following observations in **Table 6**: additional information from February 2021 works are also included. Photographs referred to are included in **Appendix D** and the location of the photographs are included on **Drawing 1**, **Appendix A**.

Table 6 *General Site Conditions and Observations*

Topography	The southern portion of the site is general flat, with a drop to the north approximately within the middle of the site, becoming relatively flat in the northern portion of the site.
Site condition	The northern portion of the site was (in November 2020) a functioning timber mill/yard, with an L shaped open building along with another open building in the north centre portion of the site (Photograph 1 and 2). Timber was in neat bundles in the northern portion of the site (Photograph 3). The south western portion of the site was occupied with vehicles (trucks and cars) along with large skip bins, with the majority empty, with several having soil within. The south eastern portion of the site was occupied by a car wrecker that was in the process of vacating the site. The timber yard was not actively operating during RCA's February 2021 site attendance, with personnel in the process of cleaning up the northern portion of the site. The south western portion of the site was still occupied by vehicles and skip bins. The south eastern portion of the site was vacated by the previous tenant (car wreckers) with the tenants of the south western portion of the site also occupying the south eastern portion of the site.
Condition of Building and roads	The roads were unpaved apart from on small section in the northern portion of the site, presumably to aid in traction and reduce erosion, with the buildings being dated, though appeared to be in relatively good condition.
Visual Signs of contamination	There were minimal signs of contamination observed in November 2020, with the exception of some minor staining in the north eastern corner of the site next to a drum (Photograph 4) and in the car wrecker portion of the site (Photograph 5), considered likely from minor engine leaks. There was no apparent staining during the February 2021 site attendance.
Signs of erosion	There were no signs of erosion.
Presence of drums or waste	There were eight (8) drums present during the November 2020 site attendance in the north eastern corner of site, with one (1) small hydrocarbon stain (Photograph 4). There was timber and other general waste within a gully along the northern boundary. There were no observed drums during the February 2021 site attendance.
Identification of potential asbestos bearing materials	There were no visual signs of asbestos containing materials within the site.

Visible signs of plant stress	The majority of the site was cleared of trees, with trees in the centre and southern portions of the site, with no signs of plant stress.
Odours noticeable on site	There were no noticeable odours within the site.
Evidence of current or former petroleum facilities	There were two (2) bowsers and two (2) UPST in the south central portion of the site, within the area occupied by the skip bins (Photograph 6). The UPST and bowser were not in use at the time of the inspection, with one (1) of the UPST confirmed empty and the other presumed to be empty, which could not be confirmed due to the dip stick unable to be removed from the tank. Concurrently with this assessment, works were being undertaken in February 2021 to decommission the UPST and associated infrastructure.
Chemicals stored on site	There appeared to be minimal chemicals stored within the site with the exception of the observed drums in the north eastern portion of the site.
Evidence of waste burial: (anecdotal or otherwise)	There was no evidence of any waste burial at the site, noting that one of the objectives of the assessment was to assess the potential for waste in the northern portion of the site.

6.1 NOVEMBER 2020

An environmental scientist experienced in the handling of potentially contaminated soil/groundwater undertook initial fieldwork on 9, 10 and 11 November 2020. The scope of work included:

- A site inspection.
- Location of services within the vicinity of the UPST.
- The collection of five (5) surface soil samples from around the northern portion of the site.
- The collection of five (5) surface soil samples from around the south western portion of the site.
- The collection of ten (10) surface soil samples from around the south eastern portion of the site.
- The collection of three (3) surface soils samples in the vicinity of the former building destroyed by fire.
- The drilling at four (4) locations in proximity to the UPST:
    - Samples were collected from fill and natural materials from between depths of approximately 0.01m and 6.00 metres below the existing ground surface (mbgs) using the SPT tube where possible. Shallow samples were collected directly from the auger due to safety concerns with the shallow use of the SPT hammer. Sampling depths were determined in the field based on material types encountered and evidence of visual and olfactory contamination.
- Screening of samples with photionisation detector (PID) for volatiles.
- The installation of two (2) groundwater monitoring wells:
    - Groundwater monitoring wells were installed by a licensed driller.

  - Wells were developed to remove all fines disturbed (and water used) during the drilling. Field sheets are attached in **Appendix F**.
- Logging of boreholes including description of samples for texture, colour, odour, moisture content (and well construction). Logs are attached in **Appendix F**.
- Re-instatement of all excavations.
- Sampling of two (2) existing monitoring wells within the site by designated low flow pump. These wells were not those installed previously (Ref [1]) and it is understood, based on information supplied by personnel at the site, that these wells were installed by another contamination consultant.
- Analysis of nineteen (19) soil samples.
  - Sixteen (16) selected soil samples were laboratory analysed for total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene, xylene (BTEX), polycyclic aromatic hydrocarbons (PAH) and metals (arsenic, cadmium, chromium, copper, nickel, lead, zinc, mercury):
  - Three (3) samples were laboratory analysed for asbestos.
- Analysis of groundwater samples for TRH, BTEX, low level PAH and metals.

An environmental scientist returned to the site on 19 November 2020 to collect groundwater samples from the newly installed wells:

- Bores were dipped to determine depth of groundwater and presence of any phase separated hydrocarbons. Bores were then purged of at least one bore volume and until pH and EC readings stabilised.
- Samples were collected by designated low flow pump and were analysed for TRH, BTEX, low level PAH and metals. Field sheets are attached in **Appendix F**.

No gross soil contamination issues were identified on the site during fieldwork: minor hydrocarbon stains were observed on the ground surface as detailed in **Table 6** and hydrocarbon odours were identified in BH1, BH2 and BH4 during the drilling.

Groundwater was present during drilling of BH2 at 3.3mbgs, and between approximately 0.3m and 3.5m at the time of groundwater sampling. A slight hydrocarbon sheen was present during the groundwater sampling of BH2/MW2.

Surface water flow is thought to be south to north based on site gradient and Blacktown Creek flowing along the northern boundary of the site.

6.2 FEBRUARY 2021

An environmental scientist and environmental engineer experienced in the handling of potentially contaminated soil/groundwater undertook additional fieldwork on 9 February 2021. The scope of work included:

- A site inspection.
- Location of services in the northern portion of the site.
- The collection of four (4) surface soil samples from locations specified by the intended purchaser in the northern portion of the site.

- The collection of four (4) surface soil samples from at locations specified by the intended purchaser in the south western portion of the site.
- Excavation of four (4) test pits along the north western boundary at locations specified by the intended purchaser:
    - Samples were collected from fill and natural materials up to depths of approximately 2mbgs, with samples taken from the centre of the excavator bucket. Sampling depths were determined in the field based on material types encountered and evidence of visual and olfactory contamination.
- Screening of samples with photionisation detector (PID) for volatiles.
- Logging of boreholes including description of samples for texture, colour, odour, moisture content. Logs are attached in **Appendix F**.
- Re-instatement of all excavations by replacement of the excavated material and compacting with the weight of the excavator.
- Analysis of eighteen (18) soil samples.
    - Eighteen (18) selected soil samples were laboratory analysed for TRH, BTEX, PAH and metals.
    - Ten (10) of the samples were analysed for asbestos.
    - Four (4) samples analysed for pesticides.

No gross soil contamination issues were identified on the site during fieldwork, with the exception of building waste, brick, timber and metal, observed in the test pits.

Groundwater was not observed during the excavations of the test pits.

It is noted that concurrently with this investigation work, UPST removal, validation and additional remediation works were being undertaken. The findings of the validation has been reported separately (Ref [8]).

7 QUALITY ASSURANCE/QUALITY CONTROL

RCA has assessed the quality assurance and control in **Appendix G** and in summary:

- Accuracy
    - The accuracy of the data has been assessed by internal and external means as being acceptable.
- Precision
    - The precision of the data has been assessed by internal and external means as being acceptable.
- Completeness
    - All data that was sought during the investigation was able to be retrieved. Chain of custody were completed for all samples. As such, completeness is considered 100%.
- Representativeness

  - This assessment has considered potential contamination arising from filling for driveway / hardstand, the presence of UPST, the site use and potential contamination from a historical fire based on the site history and sampling undertaken in the previous assessment (Ref [1]), consideration of changes to the site since 2007 along with anecdotal information provided by employees and site owner of historical filling along the northern boundary of the site. The method of sampling is appropriate for the assessment of the different forms of contamination and was undertaken by experienced personnel. As such the data is considered representative of the potential risk

- Comparability
  - Works were undertaken by personnel experienced in the sampling of potentially contaminated soil and groundwater. The methodology of sub-surface soil and groundwater sampling is appropriate for volatile contaminants, samples were preserved appropriately and analysis was undertaken by NATA accredited laboratories. As such it is considered that the comparability of the data is appropriate.

It is therefore considered that the data obtained from this testing is accurate and reliable in as far as it can be ascertained and is acceptable for the purpose of site assessment.

8 RESULTS

All soil and groundwater results are compared to the relevant criteria in **Appendix H**. The following sections present a summary.

8.1 SOIL

- BTEX concentrations were not detected and are considered below the relevant criteria (Ref [4]).
- TRH concentrations were not detected or were detected at low concentrations below the relevant criteria in all but four (4) samples in which concentrations were in excess of ecological and (1 sample) management criteria (Ref [4]).
- PAH concentrations were not detected or were detected at low concentrations below the relevant criteria in all but one sample in which benzo(a)pyrene concentrations were in excess of ecological criterion (Ref [4]).
- Metal concentrations were not detected or were detected at low concentrations below the relevant criteria in all but two (2) samples in which zinc concentrations were in excess of ecological criteria (Ref [4]).
- Pesticide concentrations were not detected and are considered below the relevant criteria (Ref [4]).
- Asbestos was not identified in any of the soil samples.

Soil results from the first round (November 2020) in excess of the relevant criteria are presented in **Table 7**. No concentrations were in excess of human health criteria.

Table 7 *Soil Results above Relevant Criteria*

Sample Identification (depth)	Analyte	Criteria	Concentration
S11 (0.01m)	TRH >C_{16}-C_{34}	1700[a]	3360
	Zinc	360[a]	447
S15 (0.01m)	TRH >$C1_6$-C_{34}	1700[a] 3500[b]	7760
	Zinc	360[a]	606
S17 (0.01m)	Benzo(a)pyrene	1.4[a]	1.9
S21 (0.01m)	Zinc	360[a]	454
S25 (0.01m)	TRH >$C1_6$-C_{34}	1700[a]	2100
BH4/A	TRH >C_{10}-C_{16}	170[a]	180
TP3B	Zinc	360[a]	904

All concentrations in mg/kg.

[a] Ecological Criteria for Commercial and Industrial land use (Ref [4]).

[b] Management Limits for Non-Sensitive Sites (Commercial and Industrial) land use (Ref [4]).

8.2 GROUNDWATER

- BTEX concentrations were not detected or were detected at low concentrations below the relevant criteria (Ref [4], [6]).
- TRH concentrations were not detected or were detected at low concentrations below the relevant criteria (Ref [4] and [6]) in all but two (2) samples in proximity to the UPST in which concentrations were in excess of ecological criterion (Ref [6]).
- PAH concentrations were not detected or were detected at low concentrations below the relevant criteria in all but one sample in proximity to the UPST in which phenanthrene concentrations were in excess of ecological criterion (Ref [6]).
    - It is noted that the detection limit for anthracene is higher than the ecological criterion (Ref [6]): in the absence of detected PAH concentrations, RCA does not consider that there is potential for anthracene contamination except potentially in one sample.
    - The detection limit for benzo(a)pyrene is higher than the drinking water criterion (Ref [7]) and cannot be directly considered.
- Metal concentrations were not detected or were detected at low concentrations below the relevant ecological criteria (Ref [6]), with the exception of copper, nickel and zinc concentrations.

Groundwater results in excess of the relevant ecological and drinking water criteria are presented in **Table 8**.

Table 8 *Groundwater Results above Relevant Criteria*

Sample Identification (depth of aquifer)	Analyte	Criteria	Concentration
MMW1 (4m)	TRH C_6-C_{40}	0.007[a]	0.21
	Copper	0.0014[a]	0.002
	Nickel	0.011[a]	0.117
	Zinc	0.008[a]	0.212
MMW2 (4m)	Zinc	0.008[a]	0.015
MW1 (4m)	Copper	0.0014[a]	0.003
	Nickel	0.011[a]	0.071
	Zinc	0.008[a]	0.164
MW2 (2m)	TRH C_6-C_{40}	0.007[a]	4
	Phenanthrene	0.0006[a]	0.0034
	Nickel	0.011[a]	0.012
	Zinc	0.008[a]	0.014

All concentrations in mg/L.

[a] Ecological Protection Level for Receiving Water Type (Ref [6]).

9 SITE CONTAMINATION CHARACTERISATION

The collection of soil samples from thirty-nine (39) locations is in accordance with the minimum thirty-five (35) sampling locations as recommended by the NSW EPA guidelines (Ref [9]) for a site approximately 2.6ha. Thirty-one (31) locations were sampled to a maximum depth of 0.01m, four (4) locations sampled to a maximum depth of 2m, with four (4) locations sampled to a maximum depth of 6m.

The installation and sampling of two (2) monitoring wells around the UPST along with the sampling of two (2) previously installed monitoring wells, one (1) located near the UPST, with the other located in the northern portion of the site is considered appropriate to aid in providing information of potential contamination that may be present.

The update of site history information identified that the changes to site comprised the use of the south eastern portion of the site by the auto wreckers. No potential contamination sources in the vicinity of the site were identified.

Contamination in soil was not identified at the site with the exception of seven (7) locations:

- Three (3) locations were from within the vehicle wreckers' portion of the site, and were from areas of visual impacts likely from minor spill/leaks from vehicle engines. The vertical extent of these locations is unknown, though is considered likely limited to the surface and just below within the fill material (<0.3m). Due to the limited extent of the contamination, and the absence of any ecological receptors that may be at risk from the contamination within the site area, it is not considered that any specific remediation or management is necessary.

  - It is noted that remediation works were undertaken concurrently with February assessment works, relating to two (2) of the locations (S11 and S15): refer to that report (Ref [8]).

- One (1) location in immediate proximity to the UPST area and is considered to be associated with the groundwater with a vertical extent of <1m. No contamination was identified in the groundwater samples above the human health guidelines (Ref [4]), noting that the use of groundwater as drinking water is not considered viable. The UPST location is situated in an area where there is no occupied buildings or structures in which vapours could accumulate and as such RCA does not consider the identified groundwater contamination poses a risk to human health in the current site conditions unless site excavations are undertaken or groundwater is extracted. Specific assessment of risk will be required for excavation and/or groundwater extraction.
- One (1) location in the southern portion of the site. The vertical extent of these locations is unknown, though is considered likely limited to the surface and just below within the fill material (<0.3m). Due to the limited extent of the contamination, and the absence of any ecological receptors that may be at risk from the contamination within the site area, it is not considered that any specific remediation or management is necessary.
- Two (2) locations in the northern portion of the site: one of those associated with the surface soil and one in the subsurface in the area of anthropogenic waste placement. The surface soil contamination is in the driveway area and likely from minor leaks of vehicles travelling around the site. Due to the limited extent of the contamination, and the absence of any ecological receptors that may be at risk from the contamination within the site area, it is not considered that any specific remediation or management is necessary. The extent of the subsurface contamination is defined vertically as greater than 0.5mbgs and less than 2mbgs: the horizontal extent is considered to be less than 10m in diameter however this is based on samples to the north east only. The contamination is considered likely to have come from particles associated with the metal strapping encountered in the matrix. In the absence of ecological receptors, and the understood intention to pave / build over the area, it is not considered that any specific remediation or management is necessary.

Concentrations of TRH, PAH and metals were identified in groundwater in excess of the ecological guidelines (Ref [6]). Metal concentrations are considered likely representative of strata (residual shale) and natural background levels with the possible exception of nickel and zinc in MM1 and MW1, in which concentrations are more significant that the other wells. TRH and PAH exceedance are within two (2), MMW1 and MW2, of the three (3) monitoring wells located within the vicinity of UPST which are considered the likely source of the contamination. The concentrations are highest in MW2 which is at the closest proximity to the two (2) known UPST and bowsers within the site; it is also noted that the groundwater depth is significantly shallower in MW2 than the other wells and in combination with the identified contamination is considered to potentially be indicative of groundwater mounding within the UPST pit. It is therefore considered that the contamination is localised in the immediate area of the UPST pit and is unlikely to have caused widespread groundwater contamination. Given the location of MMW2 between the UPST and Blacktown Creek, and the absence of detectable hydrocarbons in MMW2 it is not considered that remediation of groundwater is required. Monitoring of groundwater must be undertaken in accordance with the Regulations (Ref [10]) and further assessment may be required in the event that concentrations increase. Further assessment of groundwater in the vicinity of the UPST area will be needed in the event of excavations at depths of two (2) metres or more below the surface and prior to any groundwater extraction.

RCA considers that the site is suitable for continued commercial / industrial use noting that the decommissioning and remediation works have been undertaken at the site, refer separate report (Ref [8]). Some minor contamination in excess of ecological criteria (Ref [8]) does remain however it is not considered that any specific remediation or management is necessary due to these isolated concentrations.

10 CONCLUSIONS

This report has presented the findings of an assessment undertaken at 57 Station Road, Toongabbie. The purpose of the assessment was to characterise the potential contamination of the site prior to sale taking into account potential changes to the site since a previous assessment (Ref [1]).

This assessment consisted of consideration of site history, a site inspection and onsite sampling and analysis of thirty seven (37) soil samples from thirty-nine (39) locations across the site, the installation of two (2) groundwater monitoring wells and sampling of those and two (2) previously installed groundwater monitoring wells. Contaminants of concern comprised TRH, BTEX, PAH and metals in both soil and groundwater, and a limited area of potential pesticides and asbestos contamination in the soil.

The assessment of site history indicated that there was limited potential for contamination to have arisen at the site since the previous, 2007, assessment (Ref [1]) and comprised:

- Importation of fill for driveway / hardstand maintenance.
- The presence and continued operation of underground petroleum storage tanks.
- The use of a portion of the site by auto wreckers.
- The destruction of a building with unknown presence of asbestos containing materials by fire.

The November 2020 inspection identified only limited and surficial hydrocarbon staining in the portion of the site used for the auto wreckers, and at one location in the northern portion of the site used as a timber mill. No indications of asbestos containing materials were identified during the inspection. The auto wreckers portion of the site was vacated at the time of the February 2021 inspection and the surface scraped to remove such that there is no remaining staining in that area.

All concentrations of contaminants in soil were below the relevant ecological, human health and direct contact criteria (Ref [4]) as well as the management limits (Ref [4]) with the exception of seven (7) samples. The detected concentrations were in excess of the ecological criterion (Ref [4]) in all cases and the management limit in one. The site is currently a commercial / industrial site without capacity to support an ecological population considered to be at risk from the contamination and as such RCA does not consider that any remediation or management is required to address these concentrations. The management limit should be taken into consideration if handling this material however is not considered relevant for the contamination remaining in-situ and as such is not considered to require remediation.

Groundwater contamination is present in wells in the vicinity of the UPST, which are considered the likely source of the identified concentrations. The extent of the contamination is unknown: only minor hydrocarbon contamination was identified in the soil at the same location. The identified concentrations are not considered to pose a risk to human health in the current site condition, as there is no occupied building on site within 15m, and the concentrations are not considered to pose a risk to the environment based on the apparent decrease in concentrations within the site prior to potential discharge at Blacktown Creek.

RCA considers, based on the current and previous (Ref [1]) assessments that the site is suitable for the continued commercial/industrial use without formal management or remediation noting that, concurrently with this assessment that decommissioning (by removal) of the UPST has been undertaken along with removal of some of the identified surface soil contamination. The results of the validation are reported separately (Ref [8]).

11 LIMITATIONS

This report has been prepared for John M Fraser Pty Ltd in accordance with an agreement with RCA Australia (RCA) dated 21 October 2020. The services performed by RCA have been conducted in a manner consistent with that generally exercised by members of its profession and consulting practice.

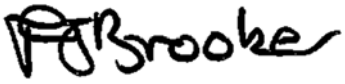
This report has been prepared for the sole use of John M Fraser Pty Ltd. The report may not contain sufficient information for purposes of other uses or for parties other than John M Fraser Pty Ltd. This report shall only be presented in full and may not be used to support objectives other than those stated in the report without written permission from RCA Australia.

The information in this report is considered accurate at the date of issue with regard to the current conditions of the site. Conditions can vary across any site that cannot be explicitly defined by investigation.

Environmental conditions including contaminant concentrations can change in a limited period of time. This should be considered if the report is used following a significant period of time after the date of issue.

Yours faithfully

RCA AUSTRALIA



Richie Lamont
Environmental Scientist

Fiona Brooker
Environmental Services Manager

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[11] CRC Care, *Technical Report 10, Health screening levels for petroleum in soil and groundwater*, September 2011

[12] ANZECC, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, October 2000

[13] NHMRC, *Guidelines for Managing Risks in Recreational Water*, 2008.

[14] DECC, *Contaminated Sites – Guidelines for the Assessment and Management of Contaminated Groundwater*, March 2007.

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GLOSSARY

95%UCL_{ave}	A statistical calculation – 95% Upper Confidence Limit of the arithmetic mean of the data set.
ANZECC	Australian and New Zealand Environmental Conservation Council.
Aromatic	Ring formation of carbon atoms.
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure.
DECC	NSW Department of Environment and Climate Change
EIL	Ecological investigation level. Relates to soil concentrations which may pose a risk to ecological health.
ESL	Ecological screening level. Relates to vapour risk from petroleum hydrocarbons which may pose a risk to ecological health.
GIL	Groundwater investigation levels.
HIL	Health investigation level. Relates to soil concentrations which may pose a risk to human health in soil.
HSL	Health screening level. Relates to the vapour risk from petroleum hydrocarbons which may pose a risk to human health in soil. Also relates to exposure to asbestos fibres.
In-Situ	In place, without excavation.
Interlaboratory	A sample sent to two different laboratories for comparative analysis.
Intralaboratory	A sample split into two and sent blind to the sample laboratory for comparative analysis.
ISL	Investigation screening levels for soil. Comprised of HIL/EIL and HSL/ESL
kg	kilogram, 1000 gram.
LEP	Local environment plan. A planning tool for the Local Government.
µg	microgram, 1/1000 milligram.
mg	milligram, 1/1000 gram.
NAPL	Non-aqueous phase liquid. This can be lighter than water (LNAPL), or more dense than water (DNAPL).
NEPC	National Environment Protection Council.
NHMRC	National Health and Medical Research Council.
NOW	NSW Office of Water.

NSW EPA	NSW Environment Protection Authority – made a separate entity in 2011 to regulates the contaminated land industry.
PID	Photoionisation detector. Measures volatile gases in air or emanating from soil or water.
PQL	Practical Quantitation Limit.
QA	Quality Assurance.
QC	Quality Control.
RPD	Relative Percentage Difference.
SPT	Standard Penetration Test.
UPST	Underground petroleum storage tank.
Chemical Compounds	
BTEX	Benzene, toluene, ethylbenzene, xylene.
PAH	Polycyclic aromatic hydrocarbons. Multi-ring compounds found in fuels, oils and creosote. These are also common combustion products.
TPH	Total petroleum hydrocarbons.
TRH	Total recoverable hydrocarbons

Appendix A

Drawings

Appendix B

Historical Photographs


N
2009


N
2013

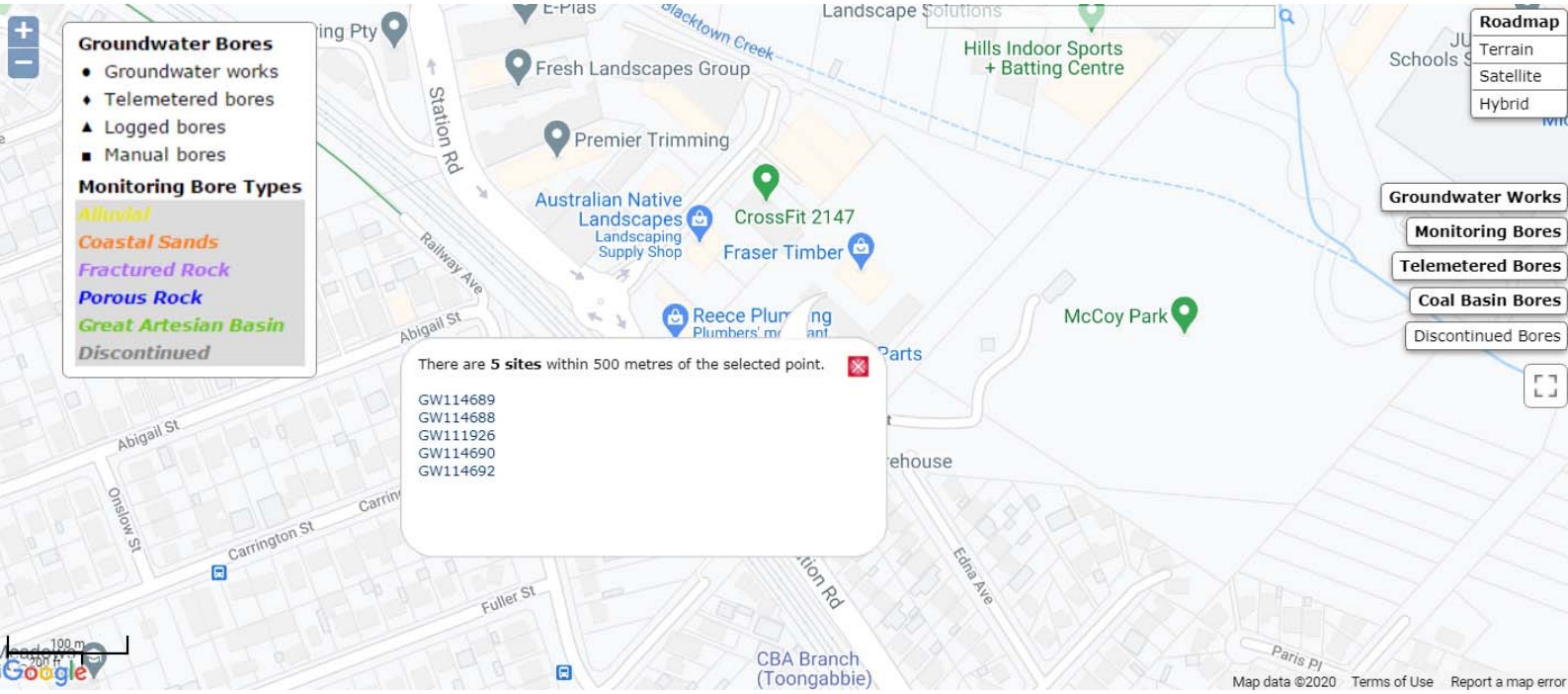

N
2015


N
2017


N
2018

Appendix C

Registered Groundwater Well Information


Groundwater Bores
Groundwater works
Telemetered bores
Logged bores
Manual bores
Monitoring Bore Types
Alluvial
Coastal Sands
Fractured Rock
Porous Rock
Great Artesian Basin
Discontinued
There are 5 sites within 500 metres of the selected point.
GW114689
GW114688
GW111926
GW114690
GW114692
Roadmap
Terrain
Satellite
Hybrid
Groundwater Works
Monitoring Bores
Telemetered Bores
Coal Basin Bores
Discontinued Bores
Fresh Landscapes Group
Premier Trimming
Australian Native Landscapes
Landscaping Supply Shop
CrossFit 2147
Fraser Timber
Hills Indoor Sports + Batting Centre
McCoy Park
Station Rd
Railway Ave
Abigail St
Carrington St
Onslow St
Fuller St
Edna Ave
CBA Branch (Toongabbie)
Paris Pl
Map data ©2020
Terms of Use
Report a map error

WaterNSW
Work Summary

GW114692

Licence: | **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid
Owner Type: Private

Commenced Date: | **Final Depth:** 13.10 m
Completion Date: 24/09/2012 | **Drilled Depth:** 13.10 m

Contractor Name: PARSONS BRINCKERHOFF
Driller: Geoff Trippett
Assistant Driller:

Property: | **Standing Water Level (m):**
GWMA: | **Salinity Description:**
GW Zone: | **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	PROSPECT	22//829160
Licensed:			

Region: 10 - Sydney South Coast | **CMA Map:**
River Basin: - Unknown | **Grid Zone:** | **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) | **Northing:** 6260874.000 | **Latitude:** 33°46'31.0"S
Elevation Source: Unknown | **Easting:** 310298.000 | **Longitude:** 150°57'04.8"E

GS Map: - | **MGA Zone:** 56 | **Coordinate Source:** GPS - Global

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	13.10	120			Auger - Solid Flight
1		Annulus	Bentonite/Grout	0.00	10.60				
1		Annulus	Waterworn/Rounded	10.60	13.10				Graded
1	1	Casing	Pvc Class 18	0.00	11.10	60	50		Seated on Bottom, Screwed
1	1	Opening	Slots - Horizontal	11.10	13.10	60		0	Casing - Machine Slotted, PVC Class 18, Screwed, SL: 30.0mm, A: 5.00mm

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.50	1.50	FILL,GRAVELLY SILT, PALE GREY BROWN	Fill	
1.50	2.50	1.00	FILL,SILTY CLAY PALE GREY-BROWN FINE GRAINED SHALE GRAVEL	Fill	
2.50	3.50	1.00	FILL,SILTY CLAY,MED.PLASTICITY,BROWN TRACE OF SAND	Fill	
3.50	4.50	1.00	FILL, CLAYEY SAND,MED.GRAINED BROWN GREY	Fill	
4.50	5.50	1.00	CLAYEY SAND SANDY CLAY	Clayey Sand	
5.50	7.50	2.00	CLAYEY SAND MED.GRAINED DARK GREY	Clayey Sand	

7.50	8.70	1.20	SILTSTONE GREY,EXTREMELY WATEREAD	Siltstone	
8.70	9.20	0.50	SILTSTONE GREY WEATHERED VERY LOW STRENGTH	Siltstone	
9.20	9.64	0.44	SILTSTONE DARK GREY	Siltstone	
9.64	9.86	0.22	SANDSTONE PALE GREY	Sandstone	
9.86	11.14	1.28	SILTSTONE 80% DARK GREY	Siltstone	
11.14	11.77	0.63	SANDSTONE MED. GRAINED	Sandstone	
11.77	12.07	0.30	SILTSTONE,SANDSTONE FINE GRAINED	Siltstone	
12.07	12.33	0.26	SANDSTONE FINE TO MED. GRAINED PALE GREY	Sandstone	
12.33	13.10	0.77	SANDSTONE COARSE GRAINED PALE GREY	Sandstone	

Remarks

17/11/2014: L.Franchi.
Coordinates provided on Form A.
23/02/2015: Nat Carling, 23-Feb-2015; Coordinate source added (based on above comment), status added.

***** End of GW114692 *****

WaterNSW
Work Summary

GW114690

Licence: | **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid
Owner Type: Private

Commenced Date: | **Final Depth:** 14.00 m
Completion Date: 09/10/2012 | **Drilled Depth:** 14.00 m

Contractor Name: PARSONS BRINCKERHOFF
Driller: Geoff Trippett
Assistant Driller:

Property: | **Standing Water Level (m):**
GWMA: | **Salinity Description:**
GW Zone: | **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	PROSPECT	22//829160
Licensed:			

Region: 10 - Sydney South Coast | **CMA Map:**
River Basin: - Unknown | **Grid Zone:** | **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) | **Northing:** 6260863.000 | **Latitude:** 33°46'31.4"S
Elevation Source: Unknown | **Easting:** 310275.000 | **Longitude:** 150°57'03.9"E

GS Map: - | **MGA Zone:** 56 | **Coordinate Source:** GPS - Global

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	14.00	120			Auger - Solid Flight
1		Annulus	Bentonite/Grout	0.00	11.50				
1		Annulus	Waterworn/Rounded	11.50	14.00				Graded
1	1	Casing	Pvc Class 18	0.00	12.00	60	50		Seated on Bottom, Screwed
1	1	Opening	Slots - Horizontal	12.00	14.00	60		0	Casing - Machine Slotted, PVC Class 18, Screwed, SL: 30.0mm, A: 5.00mm

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.00	1.00	FILL SILTY CLAY	Fill	
1.00	2.50	1.50	FILL,SILTY CLAY LOW TO MED.PLASTICITY	Fill	
2.50	3.50	1.00	FILL GRAVELLY CLAY LOW TO MED.PLASTICITY DARK GREY	Fill	
3.50	5.50	2.00	SANDY CLAY DARK BROWN GREY	Sandy Clay	
5.50	6.50	1.00	SANDY CLAY,FINE TO COARSE GRAINED SAND	Sandy Clay	
6.50	7.50	1.00	SILTY CLAY BROWN RED	Silty Clay	

7.50	8.50	1.00	SILTY CLAY MED. PLASTICITY DARK GREY MOTTLED	Silty Clay	
8.50	9.60	1.10	SILTSTONE PALE GREY BROWN	Siltstone	
9.60	9.80	0.20	SILTSTONE GREY HIGHLY WEATHERED	Siltstone	
9.80	11.60	1.80	SILTSTONE DARK GREY WITH SANDSTONE	Siltstone	
11.60	12.27	0.67	SANDSTONE FINE TO MED.GRAINED PALE GREY BROWN	Sandstone	
12.27	12.52	0.25	SILTSTONE DARK GREY	Siltstone	
12.52	12.84	0.32	SANDSTONE FINE TO MED.GRAINED	Sandstone	
12.84	14.00	1.16	SANDSTONE COARSE GRAINED PALE GREY	Sandstone	

Remarks

17/11/2014: L.Franchi.
Coordinates provided on Form A.

23/02/2015: Nat Carling, 23-Feb-2015; Coordinate source added (based on above comment), status added.

***** End of GW114690 *****

WaterNSW
Work Summary

GW114689

Licence: | **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid
Owner Type: Private

Commenced Date:
Completion Date: 21/09/2012
Final Depth: 14.00 m
Drilled Depth: 14.00 m

Contractor Name: PARSONS BRINCKERHOFF
Driller: Geoff Trippett
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	PROSPECT	4//858489
Licensed:			

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6260781.000
Easting: 310246.000
Latitude: 33°46'34.0"S
Longitude: 150°57'02.7"E

GS Map: -
MGA Zone: 56
Coordinate Source: GPS - Global

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	14.00	120			Auger - Solid Flight
1		Annulus	Bentonite/Grout	0.00	11.50				
1		Annulus	Waterworn/Rounded	11.50	14.00				Graded
1	1	Casing	Pvc Class 18	0.00	12.00	60	50		Seated on Bottom, Screwed
1	1	Opening	Slots - Horizontal	12.00	14.00	60		0	Casing - Machine Slotted, PVC Class 18, Screwed, SL: 30.0mm, A: 5.00mm

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.30	0.30	TOPSOIL, CLAYEY SAND	Topsoil	
0.30	0.80	0.50	FILL SILTY CLAY	Fill	
0.80	2.50	1.70	FILL SILTY CLAY FINE TO MED.GRAINED SAND	Fill	
2.50	3.50	1.00	FILL SANDY CLAY,LOW PLASTICITY GREY	Fill	
3.50	4.50	1.00	CLAYEY SAND FINE TO COARSE GRAINED BROWN GREY	Clayey Sand	
4.50	6.50	2.00	SANDY CLAY FINE TO MED.GRAINED	Sandy Clay	

			SAND		
6.50	9.00	2.50	SILTSTONE DARK GREY WEATHERED	Siltstone	
9.00	9.34	0.34	SANDSTONE FINE TO MED. GRAINED	Sandstone	
9.34	10.46	1.12	SILTSTONE DARK GREY	Siltstone	
10.46	12.07	1.61	SANDSTONE FINE TO M. GRAINED	Sandstone	
12.07	12.64	0.57	SILTSTONE DARK GREY	Siltstone	
12.64	14.00	1.36	SANDSTONE MED. TO COARSE GRAINED PALE GREY	Sandstone	

Remarks

17/11/2014: L.Franchi.
Coordinates provided on Form A.
23/02/2015: Nat Carling, 23-Feb-2015; Coordinate source added (based on above comment), status added.

***** End of GW114689 *****

WaterNSW
Work Summary

GW114688

Licence: 10BL605251
Licence Status: ACTIVE

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid
Owner Type: Private

Commenced Date:
Completion Date: 27/09/2012
Final Depth: 13.80 m
Drilled Depth: 13.80 m

Contractor Name: PARSONS BRINCKERHOFF
Driller: Geoff Trippett
Assistant Driller:

Property: SITA 25-27 Powers Rd SEVEN HILLS 2174 NSW
GWMA: -
GW Zone: -
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	PROSPECT	4//858489
Licensed:	CUMBERLAND	PROSPECT	Whole Lot 22//829160

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6260821.000
Easting: 310220.000
Latitude: 33°46'32.7"S
Longitude: 150°57'01.7"E

GS Map: -
MGA Zone: 56
Coordinate Source: GPS - Global

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	13.80	120			Auger - Solid Flight
1		Annulus	Bentonite/Grout	0.00	11.40				
1		Annulus	Waterworn/Rounded	11.40	13.80				Graded
1	1	Casing	Pvc Class 18	0.00	11.80	60	50		Seated on Bottom, Screwed
1	1	Opening	Slots - Horizontal	11.80	13.80	60		0	Casing - Machine Slotted, PVC Class 18, Screwed, SL: 30.0mm, A: 5.00mm

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.30	0.30	TOPSOIL, CLAYEY SAND	Topsoil	
0.30	1.50	1.20	FILL GRAVELLY SAND M/GRAINED	Fill	
1.50	2.00	0.50	FILL CLAYEY SAND FINE TO COARSE GRAINED	Fill	
2.00	3.50	1.50	FILL SANDY CLAY M/PLASTICITY BROWN RED	Fill	
3.50	7.00	3.50	SANDY CLAY,L/PLASTICITY PALE GREY	Sandy Clay	
7.00	9.00	2.00	SILTSTONE DARK GREY BROWN	Siltstone	
9.00	9.50	0.50	SILTSTONE DARK GREY WEATHERED	Siltstone	

9.50	9.71	0.21	SILTSTONE GARK GREY INTERLAMINATED WITH SANDSTONE	Siltstone	
9.71	10.00	0.29	SANDSTONE PALE GREY,MINOR SHALE	Sandstone	
10.00	10.38	0.38	SILTSTONE DARK GREY ,FINE GRAINED SANDSTONE	Siltstone	
10.38	11.60	1.22	SILTSTONE DARK GREY/ SANDSTONE	Siltstone	
11.60	12.30	0.70	SANDSTONE FINETO MEDIUM GRAINED PALE GREY	Sandstone	
12.30	12.46	0.16	SILTSTONE/SANDSTONE PALE GREY	Siltstone	
12.46	13.15	0.69	SANDSTONE FINE GRAINED	Sandstone	
13.15	13.80	0.65	SANDSTONE MED TO COARSE GRAINED,GREY	Sandstone	

Remarks

17/11/2014: L.Franchi.
Coordinates provided on Form A.
23/02/2015: Nat Carling, 23-Feb-2015; Coordinate source added (based on above comment), status added.

***** End of GW114688 *****

WaterNSW
Work Summary

GW111926

Licence:
Licence Status:

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid
Owner Type: Private

Commenced Date:
Completion Date: 30/11/2012
Final Depth: 13.00 m
Drilled Depth: 13.00 m

Contractor Name: ABILITY PLUS ENVIRONMENTAL AND GEOTECHNICAL DRILLI
Driller: Geoff Trippett
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m): 11.700
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	PROSPECT	4//858489
Licensed:			

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6260798.000
Easting: 310268.000
Latitude: 33°46'33.5"S
Longitude: 150°57'03.6"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	13.00	100			Auger - Solid Flight
1		Annulus	Bentonite/Grout	0.10	10.00				
1		Annulus	Waterworn/Rounded	10.00	13.00				Graded
1	1	Casing	Pvc Class 18	0.10	11.00	60	50		Seated on Bottom, Screwed
1	1	Opening	Slots - Horizontal	11.00	13.00	60		0	Casing - Machine Slotted, PVC Class 18, Screwed, SL: 20.0mm, A: 0.50mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
11.70	13.00	1.30	Unknown	11.70					580.00

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.50	0.50	FILL BROWN	Fill	
0.50	0.80	0.30	FILL ORANGE/BROWN	Fill	

0.80	2.00	1.20	SANDY CLAY L/PLASTICITY	Sandy Clay	
2.00	3.00	1.00	SANDY CLAY,STIFF	Sandy Clay	
3.00	5.00	2.00	SANDY CLAY MOIST	Sandy Clay	
5.00	5.50	0.50	SILTY CLAY	Silty Clay	
5.50	6.00	0.50	SILTY CLAY MED. PLASTICITY	Silty Clay	
6.00	8.05	2.05	SILTY CLAY HIGH PLASTICITY	Silty Clay	
8.05	11.70	3.65	SILTSTONE,GREY	Siltstone	
11.70	11.90	0.20	SANDSTONE,COARSE	Sandstone	
11.90	13.00	1.10	SILTSTONE,GREY,FINE GRAINED	Siltstone	

***** End of GW111926 *****

Appendix D

Site Photographs

PHOTOGRAPH 1 *Northern portion of the site view north through open building.*

PHOTOGRAPH 2 *View east of L shaped open building.*

PHOTOGRAPH 3 *North portion of site, neatly stacked timber, view north east.*

PHOTOGRAPH 4 *Drums with staining at the base of the most western drum, view north west.*

PHOTOGRAPH 5 *Car wreckers portion, view north east from near S15.*

PHOTOGRAPH 6 *Dip stick of 13,000L UPST, with vent in background.*

PHOTOGRAPH 7 *Car wreckers portion, north west corner, view south east.*

Appendix E

Screening Levels and Guidelines

NATIONAL ENVIRONMENT PROTECTION (ASSESSMENT OF SITE CONTAMINATION) MEASURE 1999 AS AMENDED 2013

Soil

The investigation and screening levels (ISL) utilised for the assessment of the soil on site were sourced from the National Environment Protection Measure for the Assessment of Site Contamination (ASC NEPM, Ref [4]). These ISL are not derived as acceptance criteria for contamination at a site, but as levels above which specific consideration of risk, based on the site use and potential exposure, is required. If a risk is determined as present, then remediation and/or management must be undertaken.

Assessment ISL are based on:

- Human Health.

  Intentionally conservative health investigation levels (HIL) have been derived for four (4) generic land use settings.

  - HIL 'A' - Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry). This category includes children's day care centres, preschools and primary schools.
  - HIL 'B' - Residential with minimal opportunities for soil access includes dwellings with fully and permanently paved yard space such as high rise buildings and flats.
  - HIL 'C' - Public open space such as parks, playgrounds, playing fields (e.g. ovals) secondary schools and footpaths. It does not include undeveloped public open space (such as urban bushland and reserves).
  - HIL 'D' - Commercial/industrial such as shops, offices, factories and industrial sites.

  The exposure scenario(s) for the derivation of the relevant land use setting is set out in the table(s) below.

  Health screening levels (HSL) have been determined for risks associated from vapour intrusion from petroleum[2] compound contamination for the same land use settings. These HSL are additionally based on the fraction of compound, the soil texture and the depth of the encountered soil.

  Direct hydrocarbon contact criteria are not provided in the ASC NEPM (Ref [4]), however these are provided in CRC Care Technical Report 10 (Ref [11]) which is the source document for the HSL.

- Ecological Health

  These levels are considered to apply to soil within two (2) metres of the surface, the root zone and habitation zone of many species.

[2] Laboratory analysis of hydrocarbons is being reported as total recoverable hydrocarbons (TRH). This testing method includes all forms of hydrocarbons, not just petroleum hydrocarbons and therefore can be considered a conservative measure against the chosen TPH criteria. Further laboratory analysis using a silica gel clean up (TRH_{sg}) is considered to enable a better identification of the extent of petroleum based contamination.

Ecological investigation levels (EIL) have been determined for arsenic, copper, chromium III, DDT, naphthalene, nickel, lead and zinc in soil based on species sensitivity model and for three (3) generic land use settings:

- Areas of ecological significance – for areas where the primary intention is for the conservation and protection of the natural environment. Protection level of 99%.
- Urban residential areas and public open space – broadly equivalent to the HIL A, HIL B and HIL C land use settings. Protection level of 80%.
- Commercial and industrial land uses – considered to be broadly equivalent to HIL D land use setting. Protection level of 60%.

Methodology for the derivation of EIL for other contaminants is available in the ASC NEPM (Ref [4]) and requires additional soil character data.

Ecological screening levels (ESL) have been determined for petroleum compound contamination. Due to limitations in the data only moderate reliability ESL have been determined for fractions $<C_{16}$, applied generically in fine and coarse grained soils. ESL for petroleum fractions $> C_{16}$, BTEX and naphthalene are consider low reliability.

- Aesthetics

  Aesthetic considerations operate separately to the HIL/HSL and EIL/ESL assessment. Issues to be considered include:

  - Highly malodorous soils or extracted groundwater (e.g. strong residual petroleum hydrocarbon odours, hydrogen sulphide in soil or extracted groundwater, organosulfur compounds).
  - Hydrocarbon sheen on surface water.
  - Discoloured chemical deposits or soil staining with chemical waste other than of a very minor nature.
  - Large monolithic deposits of otherwise low-risk material, e.g. gypsum as powder or plasterboard, cement kiln dust.
  - Presence of putrescible refuse including material that may generate hazardous levels of methane such as a deep-fill profile of green waste or large quantities of timber waste.
  - Soils containing residue from animal burial (e.g. former abattoir sites).

  Site assessment requires consideration of the quantity, type and distribution of foreign material or odours in relation to the specific land use and its sensitivity. For example, higher expectations for soil quality would apply to residential properties with gardens compared with industrial settings.

Tier 1 assessment comprises the comparison of the soil data with the HIL/HSL and EIL/ESL. In the event that some concentrations are in excess of the relevant criteria, the summary statistics of the data set may be utilised for assessment purpose. Consideration of a range of statistics is recommended; at a minimum the $95\%UCL_{ave}$ should be compared to the relevant criteria as long as:

- No single value exceeds 250% of the relevant criterion.

- The standard deviation of the results for each analyte is less than 50% of the relevant criterion.

In addition to appropriate consideration and application of the HSL and ESL, there are a number of policy considerations which reflect the nature and properties of petroleum hydrocarbons:

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

The ASC NEPM (Ref [4]) has therefore provided management limits, the application of which will require consideration of site-specific factors such as the depth of building basements and services and depth to groundwater, to determine the maximum depth to which the limits should apply. The management limits may have less relevance at operating industrial sites (including mine sites) which have no or limited sensitive receptors in the area of potential impact. When the management limits are exceeded, further site-specific assessment and management may enable any identified risk to be addressed.

The presence of site hydrocarbon 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.

The following figure has been taken from the ASC NEPM (Ref [4]) to illustrate the assessment methodology in regards to petroleum contamination.

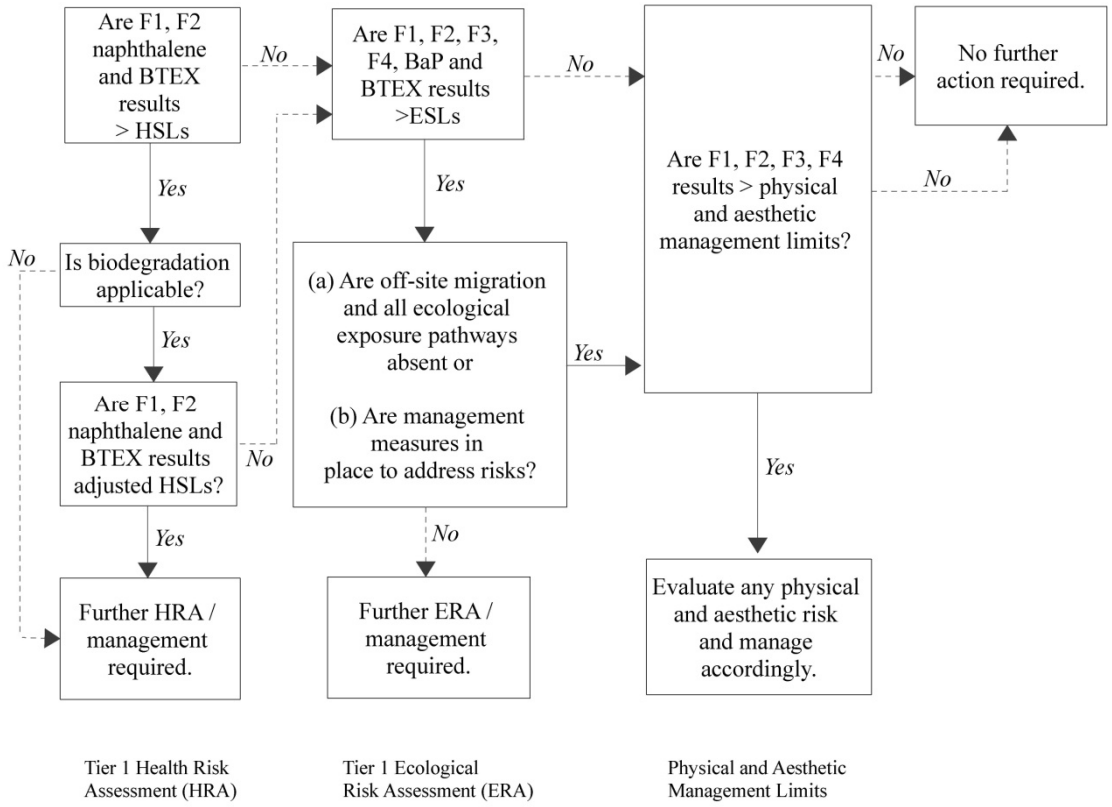


Figure 1 *Flowchart for the Tier 1 human and ecological risk assessment of petroleum hydrocarbon contamination – application of HSL and ESL and consideration of management limits*

Water

Schedule B6 of the ASC NEPM (Ref [4]) provides generic groundwater investigation levels (GIL) which are defined as 'the concentration of a contaminant in groundwater above which further investigation is required'. Selected GIL are tabulated in Table 1C of Schedule B1 and are sourced from the:

- Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 1, (AWQ, Ref [12])). It is noted that these guidelines have since been replaced by ANZG (Ref [6]) and as such RCA have used the most recent guidelines.
- Australian Drinking Water Guidelines (ADWG, Ref [7]).
- Guidelines for Managing Risk in Recreational Water (Ref [13]).

The GIL are designed to avoid unacceptable impact to exposed populations or ecosystems under a range of circumstances. The aquatic ecosystem protection GIL presented in Table 1C of Schedule B1 (Ref [4]) are applicable to 'slightly - moderately disturbed' ecosystems. The ANZG (Ref [6]) should be consulted, refer further in this appendix, for additional values for protection of disturbed ecosystems and pristine ecosystems.

Schedule B1 of the ASC NEPM (Ref [4]) provides generic health screening levels (HSL) for groundwater, for protection of human health from petroleum hydrocarbon[3] vapours, based on the following land use scenarios as detailed earlier in this **Appendix**:

[3] Laboratory analysis of hydrocarbons is reported as total recoverable hydrocarbons (TRH). This testing method includes all forms of hydrocarbons, not just petroleum hydrocarbons and therefore can be considered a conservative measure against the chosen TPH criteria. Further laboratory analysis using a silica gel clean up (TRH_{sg}) is considered to enable a better identification of the extent of petroleum based contamination

Commercial/Industrial Premises

Summary of Exposure Pathways	Abbreviations	Units	Parameters
			Adult
Body weight	BW_A or BW_C	kg	70
Exposure duration	ED_A or ED_C	years	30
Exposure frequency	EF	days	240
Soil/dust ingestion rate[1]	IR_{SA} or IR_{SC}	mg/day	25 [5]
Soil/dust to skin adherence factor	AF	$mg/cm^2/day$	0.5
Skin surface area	SA_A or SA_C	cm^2	20 000
Fraction of skin exposed	F_s	%	19
Dermal absorption factor	DAF	%	Chemical specific values applied
Time spent indoors on site each day	ET_i	hours	8
Time spent outdoors on site each day	ET_o	hours	1
Home-grown fraction of vegetables consumed	F_{HG}	%	0
Vegetable & fruit consumption rate	C_y (veg and fruit)	g/day	-
Averaging time for carcinogens ('lifetime')	AT_{NT}	years	70
Dust lung retention factor	RF	%	37.5

Soil ingestion rates for the HIL D scenario are based on the default soil/dust ingestion rates, corrected for an 8 hr/day daily exposure duration (50% of total waking hours)

DECC 2007, GUIDELINES FOR THE ASSESSMENT AND MANAGEMENT OF GROUNDWATER CONTAMINATION

These groundwater quality guidelines have been introduced by the NSW DECC (Ref [14]) and recommend that AWQ Guidelines (Ref [12]) investigation levels be adopted as groundwater investigation levels (GIL) for aquatic ecosystems and ADWG (Ref [7]) for drinking water GIL. It is noted that the AWQ Guidelines (Ref [12]) have since been replaced by ANZG (Ref [6]) and as such RCA have used the most recent guidelines in accordance with the following information.

The ANZG (Ref [6]) are complex guidelines that consider not only the level of protection (e.g. 99% or 95%) but also the state of the receiving water (e.g. moderately disturbed). For the protection of aquatic ecosystems the DECC recommend the use of 95% protection for all analytes with the exception of carcinogenic analytes for which the 99% protection value should be used. The following comments are additionally made:

- Where the existing generic GIL is below the naturally occurring background concentration of a particular contaminant, the background concentration becomes the default GIL.
- Where PQL are greater than the recommended GIL the PQL is adopted as the GIL. Where background concentrations are proven to be greater than the GIL, the background concentration is adopted as the GIL.
- Where there is insufficient data for the derivation of marine water criteria it is allowable to use fresh water criteria as low reliability criteria.

The ADWG (Ref [7]) document provides a framework for drinking water quality management and assessment. The framework provided in this document has been adopted for the evaluation of contaminants in groundwater where groundwater can be, or is being, extracted and used for drinking water purpose.

RCA note that the ASC NEPM (Ref [4]) endorses the guidelines for use as GIL.

Appendix F

Field Sheets and Bore Logs

ENVIRONMENTAL BOREHOLE LOG

BH1

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

PROJECT No: 14817
CLIENT: John M Fraser Pty Ltd
PROJECT: Phase 2 Environmental Site (Contamination) Assessment
LOCATION: 57 Station Road, Toongabbie

DATE COMMENCED: 10/11/2020
DATE COMPLETED: 10/11/2020
SURFACE RL:
COORDS:
DRILL MODEL: Landcruiser
DRILLER NAME: Fico

Borehole Information					Field Material Information						
METHOD	WATER	FIELD TEST	SAMPLE	DEPTH (m)	GRAPHIC LOG	DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents) (ROCK NAME; grain size, colour, minor constituents)	PID (ppm)	MOISTURE/ WEATHERING	CONSISTENCY/ RELATIVE DENSITY/ STRENGTH	BORE CONSTRUCTION

FILL, Silty CLAY, brown, trace of sub-rounded gravel

0.5

0.60 NATURAL, Silty Shaley CLAY, pale grey mottled orange — M

1.0

1.5

1.70m
BH1a
QA2
2.00m

very slight hydrocarbon odour — 0.7

2.0

2.20 becoming orange mottled grey at 2.2m

2.5

2.70m
BH1b
3.00m

5.1

3.0

3.50 becoming pale brown mottled orange at 3.5m
slight hydrocarbon odour

3.70m
BH1c
4.00m

4.3

4.0

4.5

4.70m
BH1d
5.00m

2.9

Not Encountered

Gatic
Backfill
Bentonite
Gravel
Screen

LOGGED: RJL | CHECKED: FJB | DATE: 03/12/2020

ENVIRONMENTAL BOREHOLE LOG

BH1

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

PROJECT No: 14817
CLIENT: John M Fraser Pty Ltd
PROJECT: Phase 2 Environmental Site (Contamination) Assessment
LOCATION: 57 Station Road, Toongabbie

DATE COMMENCED: 10/11/2020
DATE COMPLETED: 10/11/2020
SURFACE RL:
COORDS:
DRILL MODEL: Landcruiser
DRILLER NAME: Fico

Borehole Information					Field Material Information						
METHOD	WATER	FIELD TEST	SAMPLE	DEPTH (m)	GRAPHIC LOG	DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents) (ROCK NAME; grain size, colour, minor constituents)	PID (ppm)	MOISTURE/ WEATHERING	CONSISTENCY/ RELATIVE DENSITY/ STRENGTH	BORE CONSTRUCTION
	Not Encountered		5.70m BH1e 6.00m	5.5 6.0 6.20		NATURAL, Silty Shaley CLAY, pale grey mottled orange	2.8	D		
				6.5 7.0 7.5 8.0 8.5 9.0 9.5		BOREHOLE BH1 TERMINATED AT 6.20 m Refusal on rock				

LOGGED: RJL | CHECKED: FJB | DATE: 03/12/2020

ENVIRONMENTAL BOREHOLE LOG

BH2

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

PROJECT No: 14817
CLIENT: John M Fraser Pty Ltd
PROJECT: Phase 2 Environmental Site (Contamination) Assessment
LOCATION: 57 Station Road, Toongabbie

DATE COMMENCED: 10/11/2020
DATE COMPLETED: 10/11/2020
SURFACE RL:
COORDS:
DRILL MODEL: Landcruiser
DRILLER NAME: Fico

Borehole Information					Field Material Information						
METHOD	WATER	FIELD TEST	SAMPLE	DEPTH (m)	GRAPHIC LOG	DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents) (ROCK NAME; grain size, colour, minor constituents)	PID (ppm)	MOISTURE/ WEATHERING	CONSISTENCY/ RELATIVE DENSITY/ STRENGTH	BORE CONSTRUCTION

FILL, Sandy CLAY, grey, with trace of gravel
hydrocarbon odour

0.50

NATURAL, Silty Sandy CLAY, pale grey mottled orange

1.0

1.5

1.70m
BH2a
2.00m

2.0

becoming orange mottled grey at 2.2m

2.5

2.70m
BH2b
3.00m

3.00

NATURAL, Sandy CLAY, orange/brown
hydrocarbon odour

10/11/20

3.5

3.70m
BH2c
4.00m

4.0

4.40m
BH2d
4.70m

4.5

BOREHOLE BH2 TERMINATED AT 4.70 m
Refusal on rock

PID (ppm): 0.5, 5.2, 13.2, 15.1

MOISTURE/ WEATHERING: M, W

BORE CONSTRUCTION: Gatic, Backfill, Bentonite, Gravel, Screen

LOGGED: RJL | CHECKED: FJB | DATE: 03/12/2020

ENVIRONMENTAL BOREHOLE LOG

BH3

SHEET 1 OF 1

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

PROJECT No: 14817
CLIENT: John M Fraser Pty Ltd
PROJECT: Phase 2 Environmental Site (Contamination) Assessment
LOCATION: 57 Station Road, Toongabbie

DATE COMMENCED: 10/11/2020
DATE COMPLETED: 10/11/2020
SURFACE RL:
COORDS:
DRILL MODEL: Landcruiser

Borehole Information					Field Material Information						
METHOD	WATER	FIELD TEST	SAMPLE	DEPTH (m)	GRAPHIC LOG	DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents) (ROCK NAME; grain size, colour, minor constituents)	PID (ppm)	MOISTURE/ WEATHERING	CONSISTENCY/ RELATIVE DENSITY/ STRENGTH	STRUCTURE/AESTHETICS AND ADDITIONAL OBSERVATIONS
	Not Encountered			0.50		FILL, Sandy CLAY, brown, with trace of gravel				
				1.0		NATURAL, Silty Sandy CLAY, pale grey and orange				
				1.5		becoming pale grey at 1.5m				
			1.70m BH3a 2.00m	2.0			0.4	M		
				2.10		NATURAL, Silty Shaley CLAY, pale grey mottled orange				
				2.5						
			2.70m BH3b 3.00m	3.0			0.3			
				3.5		becoming grey at 3.3m				
			3.70m BH3c 4.00m	4.0			0.2	D		
				4.5						
			4.70m BH3d 5.00m				1			

BOREHOLE BH3 TERMINATED AT 5.00 m

LOGGED: RJL | CHECKED: FJB | DATE: 03/12/2020

ENVIRONMENTAL BOREHOLE LOG
BH4

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

PROJECT No: 14817
CLIENT: John M Fraser Pty Ltd
PROJECT: Phase 2 Environmental Site (Contamination) Assessment
LOCATION: 57 Station Road, Toongabbie

DATE COMMENCED: 10/11/2020
DATE COMPLETED: 10/11/2020
SURFACE RL:
COORDS:
DRILL MODEL: Landcruiser

Borehole Information					Field Material Information						
METHOD	WATER	FIELD TEST	SAMPLE	DEPTH (m)	GRAPHIC LOG	DESCRIPTION (SOIL NAME; plasticity/grain size, colour, particle shape, secondary components, minor constituents) (ROCK NAME; grain size, colour, minor constituents)	PID (ppm)	MOISTURE/ WEATHERING	CONSISTENCY/ RELATIVE DENSITY/ STRENGTH	STRUCTURE/AESTHETICS AND ADDITIONAL OBSERVATIONS
	Not Encountered			0.50		FILL, Sandy CLAY, brown, with trace of gravel				
				1.00		NATURAL, Sandy CLAY, orange mottled pale grey				
				1.5		NATURAL, Silty shaley CLAY, pale grey mottled orange very slight hydrocarbon odour				
			1.70m BH4a 2.00m	2.0			11.1	M		
				2.5		becoming orange and pale grey at 2.4m no hydrocarbon odour				
			2.70m BH4b QA3 3.00m	3.0			0.6			
				3.40		becoming grey at 3.4m				
			3.70m BH4c 4.00m	3.5 4.0			1.9			
			4.70m BH4d 5.00m	4.5			1			

BOREHOLE BH4 TERMINATED AT 5.00 m

LOGGED: RJL | CHECKED: FJB | DATE: 03/12/2020

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

ENGINEERING FIELD SHEET

WATER SAMPLING RECORD

CLIENT: J Fraser
DATE:
PROJECT: BSI
PROJECT No: 14517
LOCATION: 57 station Rd, Toongabbie
CLIENT REF:

WATER METER USED: Horiba.
DATE & TYPE OF LAST CALIBRATION (1PT OR FULL):
METHOD OF SAMPLING: low flow
PRESERVATION & STORAGE (TICK): Field Temp ☐ Chilled (<4°C) ☑ Frozen ☐
Un-preserved ☐ Preserved: ☐ Acid (H_2SO_4) ☐ Acid (HNO_3) ☐ Alkaline (NaOH) ☐ Filtered ☐
TESTS REQUIRED:
OTHER DETAILS:

BORE OR LOCATION ID: MW1
TIME: 7.30 TO Date 11/11/20
BORE DEPTH: 6.50 HEIGHT ABOVE GROUND LEVEL: TOC
DEPTH TO AQUIFER: 3.5 VOLUME PURGED: 4
RESULTS OF WATER QUALITY CHECK:

Check No.	pH	Conductivity (mS/cm)	Turbidity	Dissolved O_2 (mg/L)	Temperature (°C)	Salinity (%)
1/	6.32	10.1	457	3.95	22.2	0.573
2/	6.03	10.2	612	3.95	21.43	0.575
3/	5.94	10.3	632	3.94	21.6	0.582
4/	6.00	10.3	643	3.80	21.56	0.580
5/	6.00	10.3	631	3.78	21.57	0.578
6/						

Sample Appearance: clear becoming turbid & brown
Duplicate/Equipment Wash Identification and Other Remarks:

BORE OR LOCATION ID: MW2
TIME: TO Date 9/11/20
BORE DEPTH: 8.64 HEIGHT ABOVE GROUND LEVEL: TOC
DEPTH TO AQUIFER: 1.48 VOLUME PURGED: 4
RESULTS OF WATER QUALITY CHECK:

Check No.	pH	Conductivity (mS/cm)	Turbidity	Dissolved O_2 (mg/L)	Temperature (°C)	Salinity (%)
1/	7.15	2.73	18.4	4.50	22.27	0.14
2/	7.12	2.71	18.4	4.25	22.1	0.14
3/	7.12	2.7	17.6	4.00	22.18	0.14
4/	7.12	2.7	17.4	3.97	22.21	0.14
5/						
6/						

Sample Appearance: clear
Duplicate/Equipment Wash Identification and Other Remarks:

RCA Australia	Sampled by:	Date:
Office:		

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

BORE OR LOCATION ID: MW11/BH1
TIME: Date 19/11/20 TO
BORE DEPTH: 6.2 HEIGHT ABOVE GROUND LEVEL: TOC
DEPTH TO AQUIFER: ~~3.62~~ 3.57 VOLUME PURGED: 4
RESULTS OF WATER QUALITY CHECK:

Check No.	pH	Conductivity (mS/cm)	Turbidity	Dissolved O_2 (mg/L)	Temperature (°C)	Salinity (%)
1/	5.44	11.9	123	5.89	19.60	0.675
2/	6.04	13.4	66	6.54	19.81	0.757
3/	6.19	13.9	56.4	6.13	19.54	0.508
4/	6.23	14	62.8	5.81	19.81	0.811
5/	6.24	14.1	64.5	5.72	19.74	0.814
6/	6.25	14.1	63.1	5.74	19.75	0.816

Sample Appearance: clear,
Duplicate/Equipment Wash Identification and Other Remarks:

BORE OR LOCATION ID: MW2/BH2
TIME: 19/11/20 TO
BORE DEPTH: ~~0.28~~ HEIGHT ABOVE GROUND LEVEL: TOC
DEPTH TO AQUIFER: 0.28 VOLUME PURGED: 4
RESULTS OF WATER QUALITY CHECK:

Check No.	pH	Conductivity (mS/cm)	Turbidity	Dissolved O_2 (mg/L)	Temperature (°C)	Salinity (%)
1/	~~7.16~~	1.6	71000	6.401	22.44	0.075
2/	6.44	1.4	71000	4.05	22.63	0.069
3/	6.46	1.35	71000	4.53	21.21	0.067
4/	6.46	1.33	71000	4.62	20.99	0.066
5/	6.47	1.31	71000	4.71	20.93	0.065
6/						

Sample Appearance: brown, turb.d., HC odour, slight HC sheen
Duplicate/Equipment Wash Identification and Other Remarks: QA1

BORE OR LOCATION ID:
TIME: TO
BORE DEPTH: HEIGHT ABOVE GROUND LEVEL:
DEPTH TO AQUIFER: VOLUME PURGED:
RESULTS OF WATER QUALITY CHECK:

Check No.	pH	Conductivity (mS/cm)	Turbidity	Dissolved O_2 (mg/L)	Temperature (°C)	Salinity (%)
1/						
2/						
3/						
4/						
5/						
6/						

Sample Appearance:
Duplicate/Equipment Wash Identification and Other Remarks:

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

ENVIRONMENTAL SAMPLE COLLECTION RECORD

CLIENT: John M Fraser Pty Ltd
PROJECT: DSI
LOCATION: 57 Station Rd, Toongabbie

DATE: 9/11/20
PROJECT No: 14817
CLIENT REF:

PROJECT MANAGER: EB

Sample ID	Location	Depth (m)	PID (ppm)	Sample Type	Sample Description	Comments	Lab (y / n)
S1	SW corner driveway	0-0.1			Pale brown sandy clay with gravel		
S2	NE corner driveway				" " " "		
S3	W of centre building				" " " "		
S4	NW corner site.				" " " "		
S5	N central portion of site				" " " "	QA1	
S6	NE portion of site near barrells				" " " "		
S7	SE of central building				" " " "		
S8	SE portion of rubbish lot				" " " "		
S9	W portion of rubbish lot				" " " "		
S10	NE corner of rubbish lot				" " " "		
S11	SE corner wreck				dark brown sandy clay with some gravel		
S12	SW corner wreck				pale brown sandy clay with some gravel		

RCA Australia	Sampled by:	Date:
Office:	Checked by:	Date:

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

ENVIRONMENTAL SAMPLE COLLECTION RECORD

CLIENT: John M Fraser Pty Ltd
PROJECT: DSI
LOCATION: 57 Station Rd, Toongabbie

DATE: 9/11/20
PROJECT No: 14817
CLIENT REF:

PROJECT MANAGER: EB

Sample ID	Location	Depth (m)	PID (ppm)	Sample Type	Sample Description	Comments	Lab (y / n)
S13	E central boundary wreck	0.01			brown sandy clay with some gravel, trace asphalt		
S14	S central wreck	0.01			" " " " " "		
S15	W boundary near building wreck	0.01			grey sandy clay with some gravel, potential HC odour (0,1)		
S16	central portion wreck	0.01			brown " " " " "		
S17	NE boundary wreck	0.01			" " " " " "		
S18	NE corner wreck	0.01			" " " " " "		
S19	N central boundary wreck	0.01			" " " " " "		
S20	NW corner wreck	0.01			" " " " " "		

RCA Australia	Sampled by: RR	Date:
Office:	Checked by:	Date:

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

ENVIRONMENTAL SAMPLE COLLECTION RECORD

CLIENT: John Fraser Pty Ltd
PROJECT: Validation & Waste Classification
LOCATION: 57 Station Rd, Toongabbie

DATE: 9/2/21
PROJECT No: 14817
CLIENT REF:

PROJECT MANAGER: EB

Sample ID	Location	Depth (m)	PID (ppm)	Sample Type	Sample Description	Comments	Lab (y / n)
S21			0.0		brown sandy clay	QAS	
S22			0		pale brown sandy clay		
S23			0		" " " "		
S24			0		" " " "		
S25			0		" " " "		
S26			0		pale grey gravelly sand		
S27			0		" " " "		
S28			0		" " " "		

RCA Australia	Sampled by:	Date:
Office:	Checked by:	Date:

Appendix G

Quality Assurance Review and Laboratory Report Sheets

A total of four (4) soil duplicate samples were submitted blind to the laboratory for analysis with the batch of samples. This represents a percentage of 10%, in accordance with the frequency recommended by the Australian Standard AS 4482.1 (Ref [15]) and RCA protocol.

A total of one (1) water duplicate sample was submitted blind to the laboratory for analysis. This represents a percentage of 10%, in accordance with the frequency recommended for soil samples by the Australian Standard AS 4482.1 (Ref [15]) and RCA protocol.

One (1) soil trip blank and one (1) soil trip spike were submitted with the concurrent sampling as part of validation works. The samples were collected on the same day however were dispatched in separate batches for logistical purpose to do with the validation works. Results of the spike and blank are reported separately (Ref [8]).

One (1) water trip blank and one (1) water trip spike were submitted. This submission is slightly less the frequency recommended by the Australian Standard AS 4482.1 (Ref [14]) and RCA protocol as RCA omitted a blank and a spike when two (2) groundwater samples were collected on the 11 November 2020. This is not considered to indicate significant uncertainty

RCA omitted field blanks due to the low potential for cross contamination during the sampling process, trip blank for soil due to the low potential for cross contamination during the transport process, trip spike for soil due to low potential for volatile loss during the transport process and the equipment wash due to the low potential for cross contamination from the sampling equipment (designated equipment was used for groundwater).

Results, as shown further in this **Appendix**, indicate no soil or water analyses which report RPD in excess of the acceptance criteria.

Results show all trip blanks with non-detectable concentrations of analytes.

Results show all trip spikes with recoveries of between the 70%-130% acceptance criteria.

ALS was chosen as the primary laboratory with Envirolab chosen as the secondary laboratory. Both laboratories used for analysis are National Association of Testing Authorities (NATA) accredited and are experienced in the analytical requirements for potentially contaminated soil and groundwater.

This laboratory used for analysis is NATA accredited and are experienced in the analytical requirements for potentially contaminated soil and groundwater.

ALS undertook internal quality assurance testing. Results are contained within the laboratory report sheets, included in this **Appendix**. **Table 9** presents a summary of their review.

Table 9 *Internal Quality Assurance Review*

	Number Samples (including QA)	Laboratory Duplicates	Spikes	Laboratory Control Samples	Laboratory Blanks
Requirement		**10%**	**5%**	**One every batch**	**One every batch**
Soil					
Metals (As, Cd, Cr, Cu, Ni, Pb, Zn)	37	4 (2)	2 (1)	3	3
Mercury	37	4 (1)	3 (1)	4	4
TRH C_6-C_{10}	37	4 (0)	2 (0)	2	2
TRH >C_{10}-C_{40}	37	4 (0)	2 (0)	2	2
BTEX	37	4 (0)	2 (0)	2	2
PAH	37	2 (0)	2 (0)	2	2
Pesticides	4	1	1	1	1
Water					
Metals (As, Cd, Cr, Cu, Ni, Pb, Zn)	4	2 (2)	2 (0)	2	2
Mercury	4	2 (2)	2 (0)	2	2
TRH C_6-C_{10}	4	**0 (0)**	**0 (0)**	2	2
TRH >C_{10}-C_{40}	4	**0 (0)**	**0 (0)**	2	2
BTEX	4	2 (2)	2 (0)	2	2
PAH	4	**0 (0)**	**0 (0)**	2	2

Numbers in brackets refer the tests undertaken on samples not from this project but within the same laboratory batch.

Examination of the above table reveals that ALS have undertaken laboratory quality assurance testing in accordance with the ASC NEPM (Ref [4]) with the exception of laboratory duplicates and spikes for TRH and PAH in groundwater. This slight shortfall is not considered due to the small number of samples.

- Recoveries of Surrogates were within acceptance criteria of 70-130%.
- Holding Times were within laboratory specified time frames.
- Recoveries of laboratory control samples were within the acceptance criteria of 70-130%.
- Recoveries of Spikes were within acceptance criteria of 70-130% with the exception of:
  - ES2039875 Mercury and zinc in sample S3 which could not report a recovery due to background level greater than or equal to 4x spike level as stated in the laboratory report. This sample is described as sandy clay with some gravel and it is therefore considered that sample heterogeneity is the likely cause of the high spike level. This is considered a minor non-compliance and therefore the uncertainty is not considered significant.

- Relative Percentage Differences for duplicates were within acceptance criteria as defined for intralaboratory duplicates further in this **Appendix.**
- No Laboratory Blank result was detected above the practical quantification limit (PQL).

RCA have assessed the data in accordance with the DQI as specified in the **Section 5.5** as follows:

- Accuracy
    - The accuracy of the data has been assessed by internal means (surrogates, laboratory control samples, matrix spikes and method blanks) as being acceptable. All results were within the acceptance criteria as detailed earlier in this **Appendix**.
    - The external assessment of the accuracy of the data has been assessed by external means (duplicates) as being acceptable. All results were within the acceptance criteria as detailed earlier in this **Appendix**.
- Precision
    - The precision of the data has been assessed by internal means (duplicates) as being acceptable.
    - The prevision of the data has been assessed by external means (intralaboratory duplicates) as being acceptable.
- Completeness
    - All data that was sought during the investigation was able to be retrieved. Chain of custody were completed for all samples. As such, completeness is considered 100%.
- Representativeness
    - This assessment has considered vapour concentrations within close proximity to the nearest receptor closest to the area of potential contamination. The method of sampling was in accordance with the **Section 5.7** and is appropriate for the assessment of vapour concentrations migrating to the surface from underground sources. As such the vapour data is considered representative of the potential risk at off site receptors from the potential contamination at the site.
    - This assessment has considered groundwater contaminant concentrations on-site as well as downgradient and cross gradient adjacent sites. The method of sampling was in accordance with the **Section 5.7** and is appropriate for the sampling of volatile compounds within water. As such the groundwater data is considered representative of the concentrations at the site.
    - This assessment has considered soil contaminant concentrations on-site. The method of sampling was in accordance with the **Section 5.7** and is appropriate for the sampling of volatile compounds within soil. As such the soil data is considered representative of the concentrations at the site.
- Comparability

- Works were undertaken by personnel experienced in the sampling of vapour, potentially contaminated soil and groundwater. The methodology of groundwater sampling is consistent with the majority, and the most recent, groundwater sampling techniques.
- All samples were appropriately preserved for the requested analysis and all soil and groundwater samples were kept on ice or in the refrigerator between sampling and analysis.
- All laboratory analyses have been conducted by NATA accredited methodologies that comply with the international standard methods.
- Comparable analytes such as TRH C_6-C_{10} and BTEX shown some concurrence between analytical results. The detected concentrations show some concurrence with field observations of the presence of contamination.

As such it is considered that the comparability of the data is appropriate.

It is therefore considered that the data obtained from this testing is accurate and reliable in as far as it can be ascertained.

Quality Assurance Type	Primary PQL	Secondary PQL	Intralaboratory Duplicate		RPD %	Intralaboratory Duplicate		RPD %
Sample Identification			S5	QA1		BH1/A	QA2	
Sample Depth (m)			0.01			1.7		
Date			9/11/20			10/11/20		
Sample Profile			Fill - Sandy Clay			Silty Shaley Clay		
Laboratory Reference Number			ES2039875			ES2039875		
Sample Purpose			Assessment			Assessment		
Sample collected by			RCA - RJL			RCA - RJL		
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)								
Benzene	0.2	0.2	0.1	0.1	*0.0*	0.1	0.1	*0.0*
Toluene	0.5	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*
Ethylbenzene	0.5	1	0.25	0.25	*0.0*	0.25	0.25	*0.0*
meta- and para-Xylene	0.5	2	0.25	0.25	*0.0*	0.25	0.25	*0.0*
ortho-Xylene	0.5	1	0.25	0.25	*0.0*	0.25	0.25	*0.0*
Total Xylenes	1	3	0.5	0.5	*0.0*	0.5	0.5	*0.0*
Polycyclic Aromatic Hydrocarbons (PAH)								
Naphthalene	1	1	0.5	0.5	*0.0*	0.5	0.5	*0.0*
Total Recoverable Hydrocarbons (TRH)								
TRH C_6-C_{10}	10	25	5	5	*0.0*	5	5	*0.0*
TRH >C_{10}-C_{16}	50	50	25	25	*0.0*	25	25	*0.0*
TRH >C_{16}-C_{34}	100	100	140	290	*69.8*	50	50	*0.0*
TRH >C_{34}-C_{40}	100	100	130	310	*81.8*	50	50	*0.0*
F1	10	25	5	5	*0.0*	5	5	*0.0*
F2	50	50	25	25	*0.0*	25	25	*0.0*
Polycyclic Aromatic Hydrocarbons (PAH)								
Naphthalene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.25	*0.0*
Acenaphthylene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.25	*0.0*
Acenaphthene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.25	*0.0*
Fluorene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.25	*0.0*
Phenanthrene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.25	*0.0*
Anthracene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.25	*0.0*
Fluoranthene	0.5	0.1	0.8	0.9	*11.8*	0.25	0.25	*0.0*
Pyrene	0.5	0.1	0.8	0.9	*11.8*	0.25	0.25	*0.0*
Benz(a)anthracene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.25	*0.0*
Chrysene	0.5	0.1	0.25	0.6	*82.4*	0.25	0.25	*0.0*
Benzo(b)&(j)fluoranthene	0.5	0.1	0.7	0.9	*25.0*	0.25	0.25	*0.0*
Benzo(k)fluoranthene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.25	*0.0*
Benzo(a) pyrene	0.5	0.1	0.6	0.7	*15.4*	0.25	0.25	*0.0*
Indeno(1,2,3-c,d)pyrene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.25	*0.0*
Dibenz(a,h)anthracene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.25	*0.0*
Benzo(g,h,i)perylene	0.5	0.1	0.6	0.25	*82.4*	0.25	0.25	*0.0*
Carcinogenic PAH (B(a)P equivalent)	1.21	0.242	1.0035	1.1235	*11.3*	0.605	0.605	*0.0*
Sum of reported PAH	8	1.6	6.25	6.75	*7.7*	4	4	*0.0*
Metals								
Arsenic	5	4	11	13	*16.7*	2.5	2.5	*0.0*
Cadmium	1	0.4	0.5	0.5	*0.0*	0.5	0.5	*0.0*
Chromium	2	1	17	20	*16.2*	1	1	*0.0*
Copper	5	1	44	53	*18.6*	8	6	*28.6*
Mercury	0.1	0.1	0.05	0.05	*0.0*	0.05	0.05	*0.0*
Lead	5	1	20	22	*9.5*	14	12	*15.4*
Nickel	2	1	27	31	*13.8*	1	1	*0.0*
Zinc	5	1	101	111	*9.4*	2.5	2.5	*0.0*
Asbestos								
Asbestos			--	--	--	--	--	--

All units in mg/kg

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

Results underlined were not detected and are reported as half the detection limit for statistical purpose.

BOLD identifies where RPD results

intralaboratory	*interlaboratory*	
>50	*>60*	*where sample results are >10 x PQL*
>75	*>85*	*where sample results are > 5 to ≤10 x PQL*
>100	*>100*	*where sample results are >2 to ≤5 x PQL*
*AD>2.5 * PQL*		*where sample results are ≤2 x PQL*

Where results are within two of the above ranges the most conservative criteria have been used to assess duplicate performance

Quality Assurance Type	Primary PQL	Secondary PQL	Intralaboratory Duplicate		RPD %	Interlaboratory Duplicate		RPD %
Sample Identification			S21	QA5		TP2A	QA6	
Sample Depth (m)			0.01			0.5		
Date			9/2/21			9/2/21		
Sample Profile			Fill - Sandy Clay			Fill - Sandy Clay		
Laboratory Reference Number			ES2104605			ES2104605	261466	
Sample Purpose			Assessment			Assessment		
Sample collected by			RCA - RJL			RCA - ZL		
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)								
Benzene	0.2	0.2	0.1	0.1	*0.0*	0.1	0.1	*0.0*
Toluene	0.5	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*
Ethylbenzene	0.5	1	0.25	0.25	*0.0*	0.25	0.5	*66.7*
meta- and para-Xylene	0.5	2	0.25	0.25	*0.0*	0.25	1	*120.0*
ortho-Xylene	0.5	1	0.25	0.25	*0.0*	0.25	0.5	*66.7*
Total Xylenes	1	3	0.5	0.5	*0.0*	0.5	1.5	*100.0*
Polycyclic Aromatic Hydrocarbons (PAH)								
Naphthalene	1	1	0.5	0.5	*0.0*	0.5	0.5	*0.0*
Total Recoverable Hydrocarbons (TRH)								
TRH C_6-C_{10}	10	25	5	5	*0.0*	5	12.5	*85.7*
TRH >C_{10}-C_{16}	50	50	25	25	*0.0*	25	25	*0.0*
TRH >C_{16}-C_{34}	100	100	260	340	*26.7*	50	50	*0.0*
TRH >C_{34}-C_{40}	100	100	100	150	*40.0*	50	50	*0.0*
F1	10	25	5	5	*0.0*	5	12.5	*85.7*
F2	50	50	25	25	*0.0*	25	25	*0.0*
Polycyclic Aromatic Hydrocarbons (PAH)								
Naphthalene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.05	*133.3*
Acenaphthylene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.05	*133.3*
Acenaphthene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.05	*133.3*
Fluorene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.05	*133.3*
Phenanthrene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.05	*133.3*
Anthracene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.05	*133.3*
Fluoranthene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.05	*133.3*
Pyrene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.05	*133.3*
Benz(a)anthracene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.05	*133.3*
Chrysene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.05	*133.3*
Benzo(b)&(j)fluoranthene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.05	*133.3*
Benzo(k)fluoranthene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.05	*133.3*
Benzo(a) pyrene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.025	*163.6*
Indeno(1,2,3-c,d)pyrene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.05	*133.3*
Dibenz(a,h)anthracene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.05	*133.3*
Benzo(g,h,i)perylene	0.5	0.1	0.25	0.25	*0.0*	0.25	0.05	*133.3*
Carcinogenic PAH (B(a)P equivalent)	1.21	0.242	0.605	0.605	*0.0*	0.605	0.096	*145.2*
Sum of reported PAH	8	1.6	4	4	*0.0*	4	0.775	*135.1*
Metals								
Arsenic	5	4	24	22	*8.7*	6	2	*100.0*
Cadmium	1	0.4	0.5	0.5	*0.0*	0.5	0.2	*85.7*
Chromium	2	1	35	32	*9.0*	11	7	*44.4*
Copper	5	1	57	48	*17.1*	34	26	*26.7*
Mercury	0.1	0.1	0.1	0.05	*66.7*	0.05	0.05	*0.0*
Lead	5	1	282	226	*22.0*	30	20	*40.0*
Nickel	2	1	21	19	*10.0*	13	10	*26.1*
Zinc	5	1	454	350	*25.9*	58	48	*18.9*
Asbestos								
Asbestos			--	--	--	Nil detected 33.7g	Nil detected 40g	--

All units in mg/kg

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

Results underlined were not detected and are reported as half the detection limit for statistical purpose.

BOLD identifies where RPD results

intralaboratory	*interlaboratory*	
>50	*>60*	*where sample results are >10 x PQL*
>75	*>85*	*where sample results are > 5 to ≤10 x PQL*
>100	*>100*	*where sample results are >2 to ≤5 x PQL*
*AD>2.5 * PQL*		*where sample results are ≤2 x PQL*

Where results are within two of the above ranges the most conservative criteria have been used to assess duplicate performance

Quality Assurance Type	Primary PQL	Intralaboratory Duplicate		RPD %	Trip Blank	Trip Spike
Sample Identification		MW2	QA1		trip blank	trip spike
Depth		2			--	--
Date		19/11/2020			17/11/2020	17/11/2020
Sample Description		Brown, turbid, hydrocarbon odour, slight hydrocarbon sheen			Water	Water
Sample Purpose		Assessment			Quality Assurance	Quality Assurance
Sample Collected by		RCA - RJL			Laboratory	Laboratory
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)						
Benzene	1	1	1	*0.0*	<1	100%
Toluene	2	1	1	*0.0*	<2	95%
Ethylbenzene	2	1	1	*0.0*	<2	95%
meta- & para-Xylene	2	1	1	*0.0*	<2	90%
Ortho-xylene	2	1	1	*0.0*	<2	95%
Polycyclic Aromatic Hydrocarbons (PAH)						
Naphthalene	5	14	16	*13.3*	<5	90%
Total Recoverable Hydrocarbons (TRH)						
TRH C_6-C_{10}	20	220	230	*4.4*	<20	**--**
TRH >C_{10}-C_{16}	100	2120	2330	*9.4*	--	--
TRH >C_{16}-C_{34}	100	1610	2000	*21.6*	--	--
TRH >C_{34}-C_{40}	100	50	50	*0.0*	--	--
TRH C_6-C_{40}	320	4000	4610	*14.2*	--	--
F1	20	215	225	*4.5*	<20	--
F2	100	2106	2314	*9.4*	--	--
Polycyclic Aromatic Hydrocarbons (PAH)						
Naphthalene	0.1	7.9	6.2	*24.1*	--	--
Acenaphthylene	0.1	0.05	0.05	*0.0*	--	--
Acenaphthene	0.1	1.1	1.2	*8.7*	--	--
Fluorene	0.1	3.5	3.8	*8.2*	--	--
Phenanthrene	0.1	3.4	3.9	*13.7*	--	--
Anthracene	0.1	0.05	0.05	*0.0*	--	--
Fluoranthene	0.1	0.1	0.1	*0.0*	--	--
Pyrene	0.1	0.3	0.4	*28.6*	--	--
Benz(a)anthracene	0.1	0.05	0.05	*0.0*	--	--
Chrysene	0.1	0.05	0.05	*0.0*	--	--
Benzo(b)&(j)fluoranthene	0.1	0.05	0.05	*0.0*	--	--
Benzo(k)fluoranthene	0.1	0.05	0.05	*0.0*	--	--
Benzo(a) pyrene	0.05	0.025	0.025	*0.0*	--	--
Indeno(1,2,3-c,d)pyrene	0.1	0.05	0.05	*0.0*	--	--
Dibenz(a,h)anthracene	0.1	0.05	0.05	*0.0*	--	--
Benzo(g,h,i)perylene	0.1	0.05	0.05	*0.0*	--	--
Sum of reported PAH	1.55	16.775	16.075	*4.3*	--	--
Metals						
Arsenic	0.001	0.003	0.003	*0.0*	--	--
Cadmium	0.0001	0.00005	0.00005	*0.0*	--	--
Chromium	0.001	0.0005	0.0005	*0.0*	--	--
Copper	0.001	0.0005	0.0005	*0.0*	--	--
Mercury	0.0001	0.00005	0.00005	*0.0*	--	--
Lead	0.001	0.0005	0.0005	*0.0*	--	--
Nickel	0.001	0.012	0.012	*0.0*	--	--
Zinc	0.005	0.014	0.022	*44.4*	--	--

Note all units in mg/L

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

Results underlined were not detected and are reported as half the detection limit for statistical purpose.

BOLD identifies where RPD results

>50	*where sample results are >10 x PQL*
>75	*where sample results are > 5 to ≤10 x PQL*
>100	*where sample results are >2 to ≤5 x PQL*
*AD>2.5 * PQL*	*where sample results are ≤2 x PQL*

Where results are within two of the above ranges the most conservative criteria have been used to assess duplicate performance

***BOLD identified where** blanks > PQL*

***BOLD identified where** spikes outside of 70-130% recovery range*

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2039875**	Page	: 1 of 19
Amendment	: **1**		
Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Contact	: Grace White
Address	: PO BOX 175 CARRINGTON NSW, AUSTRALIA 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 4902 9200	Telephone	: +61 2 8784 8555
Project	: 14817	Date Samples Received	: 11-Nov-2020 15:45
Order number	: ----	Date Analysis Commenced	: 12-Nov-2020
C-O-C number	: ----	Issue Date	: 25-Nov-2020 13:24
Sampler	: Richie Lamont		
Site	: ----		
Quote number	: SYBQ/400/18		
No. of samples received	: 23		
No. of samples analysed	: 23		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive 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*
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EG020: Positive result for samples ES2039875-#022 and #023 have been confirmed by reanalysis.
- Amendment (18/11/20): This report has been amended and re-released to allow the reporting of additional analytical data. (Ultra tace PAH added)
- EP132: Where reported, Total PAH reported as the sum of Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benz(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene and Benzo(g,h,i)perylene.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	S3	S5	S6	S9	S11
			Sampling date / time	09-Nov-2020 00:00	09-Nov-2020 00:00	09-Nov-2020 00:00	09-Nov-2020 00:00	09-Nov-2020 00:00
Compound	CAS Number	LOR	Unit	ES2039875-001	ES2039875-002	ES2039875-003	ES2039875-004	ES2039875-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	3.6	19.0	11.8	1.0	16.3
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	11	11	20	14	31
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	21	17	30	27	24
Copper	7440-50-8	5	mg/kg	31	44	61	36	79
Lead	7439-92-1	5	mg/kg	37	20	37	102	89
Nickel	7440-02-0	2	mg/kg	15	27	42	20	33
Zinc	7440-66-6	5	mg/kg	126	101	173	172	447
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	0.8	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	0.8	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	0.7	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	0.6	<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	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	0.6	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	3.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	0.7	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	1.0	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.3	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S3	S5	S6	S9	S11
				Sampling date / time	09-Nov-2020 00:00	09-Nov-2020 00:00	09-Nov-2020 00:00	09-Nov-2020 00:00	09-Nov-2020 00:00
Compound	CAS Number	LOR	Unit		ES2039875-001	ES2039875-002	ES2039875-003	ES2039875-004	ES2039875-005
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	**1780**
C29 - C36 Fraction	----	100	mg/kg		<100	**140**	**140**	<100	**2100**
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	**140**	**140**	<50	**3880**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	**140**	**180**	<100	**3360**
>C34 - C40 Fraction	----	100	mg/kg		<100	**130**	<100	<100	**1410**
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	**270**	**180**	<50	**4770**
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**99.0**	**92.2**	**90.3**	**95.8**	**88.1**
2-Chlorophenol-D4	93951-73-6	0.5	%		**98.1**	**94.1**	**91.6**	**97.2**	**90.1**
2.4.6-Tribromophenol	118-79-6	0.5	%		**79.6**	**77.6**	**77.5**	**77.8**	**83.3**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**110**	**104**	**101**	**108**	**100**
Anthracene-d10	1719-06-8	0.5	%		**108**	**103**	**98.7**	**107**	**97.8**
4-Terphenyl-d14	1718-51-0	0.5	%		**97.7**	**93.0**	**89.4**	**97.4**	**86.4**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**96.7**	**82.1**	**99.1**	**102**	**96.5**
Toluene-D8	2037-26-5	0.2	%		**100**	**84.5**	**98.4**	**114**	**97.2**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S3	S5	S6	S9	S11
				Sampling date / time	09-Nov-2020 00:00	09-Nov-2020 00:00	09-Nov-2020 00:00	09-Nov-2020 00:00	09-Nov-2020 00:00
Compound	CAS Number	LOR	Unit		ES2039875-001	ES2039875-002	ES2039875-003	ES2039875-004	ES2039875-005
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		**118**	**98.4**	**117**	**125**	**114**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	S15	S17	S19	QA1	BH1/A
			Sampling date / time	09-Nov-2020 00:00	09-Nov-2020 00:00	09-Nov-2020 00:00	09-Nov-2020 00:00	10-Nov-2020 00:00
Compound	CAS Number	LOR	Unit	ES2039875-006	ES2039875-007	ES2039875-008	ES2039875-009	ES2039875-010
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	8.3	13.2	2.3	8.5	15.5
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	13	19	14	13	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	31	30	31	20	<2
Copper	7440-50-8	5	mg/kg	62	52	37	53	8
Lead	7439-92-1	5	mg/kg	45	96	37	22	14
Nickel	7440-02-0	2	mg/kg	53	31	25	31	<2
Zinc	7440-66-6	5	mg/kg	606	332	136	111	<5
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4.4	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	1.4	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.3	1.6	0.9	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	2.8	1.7	0.9	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.5	0.8	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	1.1	0.9	0.6	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	5.2	1.4	0.9	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	1.9	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	1.9	1.2	0.7	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	1.2	0.8	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	1.2	1.0	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	23.9	9.4	4.0	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	2.9	1.5	0.8	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	3.2	1.8	1.1	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	3.4	2.1	1.4	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S15	S17	S19	QA1	BH1/A
				Sampling date / time	09-Nov-2020 00:00	09-Nov-2020 00:00	09-Nov-2020 00:00	09-Nov-2020 00:00	10-Nov-2020 00:00
Compound	CAS Number	LOR	Unit		ES2039875-006	ES2039875-007	ES2039875-008	ES2039875-009	ES2039875-010
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		**50**	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		**5080**	**330**	**810**	<100	<100
C29 - C36 Fraction	----	100	mg/kg		**4090**	**320**	**630**	**280**	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		**9220**	**650**	**1440**	**280**	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		**90**	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		**7760**	**570**	**1280**	**290**	<100
>C34 - C40 Fraction	----	100	mg/kg		**2720**	**240**	**310**	**310**	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		**10600**	**810**	**1590**	**600**	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		**90**	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**90.9**	**93.0**	**95.3**	**98.2**	**93.4**
2-Chlorophenol-D4	93951-73-6	0.5	%		**91.8**	**93.3**	**95.6**	**98.3**	**94.2**
2.4.6-Tribromophenol	118-79-6	0.5	%		**87.0**	**96.1**	**91.1**	**94.6**	**90.5**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**101**	**103**	**106**	**107**	**104**
Anthracene-d10	1719-06-8	0.5	%		**95.2**	**98.5**	**103**	**103**	**102**
4-Terphenyl-d14	1718-51-0	0.5	%		**86.8**	**89.6**	**91.0**	**93.9**	**92.2**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**93.4**	**88.7**	**100**	**89.9**	**91.8**
Toluene-D8	2037-26-5	0.2	%		**93.2**	**90.0**	**107**	**91.8**	**93.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S15	S17	S19	QA1	BH1/A
				Sampling date / time	09-Nov-2020 00:00	09-Nov-2020 00:00	09-Nov-2020 00:00	09-Nov-2020 00:00	10-Nov-2020 00:00
Compound	CAS Number	LOR	Unit		ES2039875-006	ES2039875-007	ES2039875-008	ES2039875-009	ES2039875-010
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		**107**	**104**	**118**	**104**	**108**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QA2	BH1/C	BH2/B	BH2/C	BH3/A
			Sampling date / time	10-Nov-2020 00:00	10-Nov-2020 00:00	10-Nov-2020 00:00	10-Nov-2020 00:00	10-Nov-2020 00:00
Compound	CAS Number	LOR	Unit	ES2039875-011	ES2039875-012	ES2039875-013	ES2039875-014	ES2039875-015
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**13.1**	**10.6**	**15.1**	**24.1**	**14.5**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	<2	**6**	**3**	**5**	<2
Copper	7440-50-8	5	mg/kg	**6**	**55**	**20**	**34**	**6**
Lead	7439-92-1	5	mg/kg	**12**	**28**	**21**	**23**	**12**
Nickel	7440-02-0	2	mg/kg	<2	**24**	<2	**22**	<2
Zinc	7440-66-6	5	mg/kg	<5	**76**	**9**	**82**	**5**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QA2	BH1/C	BH2/B	BH2/C	BH3/A
				Sampling date / time	10-Nov-2020 00:00	10-Nov-2020 00:00	10-Nov-2020 00:00	10-Nov-2020 00:00	10-Nov-2020 00:00
Compound	CAS Number	LOR	Unit		ES2039875-011	ES2039875-012	ES2039875-013	ES2039875-014	ES2039875-015
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	**60**	<50
C15 - C28 Fraction	----	100	mg/kg		<100	**300**	<100	**250**	<100
C29 - C36 Fraction	----	100	mg/kg		<100	**130**	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	**430**	<50	**310**	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	**12**	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	**12**	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	**100**	<50	**130**	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	**330**	<100	**160**	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	**430**	<50	**290**	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	**100**	<50	**130**	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**98.2**	**92.3**	**91.8**	**91.8**	**87.2**
2-Chlorophenol-D4	93951-73-6	0.5	%		**97.7**	**92.8**	**92.2**	**92.2**	**87.2**
2.4.6-Tribromophenol	118-79-6	0.5	%		**91.7**	**86.2**	**83.8**	**83.2**	**84.0**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**108**	**102**	**101**	**102**	**102**
Anthracene-d10	1719-06-8	0.5	%		**105**	**100**	**99.1**	**100**	**102**
4-Terphenyl-d14	1718-51-0	0.5	%		**95.0**	**89.5**	**89.7**	**90.5**	**92.4**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**88.5**	**96.6**	**81.5**	**85.8**	**86.9**
Toluene-D8	2037-26-5	0.2	%		**89.1**	**96.3**	**84.6**	**82.1**	**88.8**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QA2	BH1/C	BH2/B	BH2/C	BH3/A
				Sampling date / time	10-Nov-2020 00:00	10-Nov-2020 00:00	10-Nov-2020 00:00	10-Nov-2020 00:00	10-Nov-2020 00:00
Compound	CAS Number	LOR	Unit		ES2039875-011	ES2039875-012	ES2039875-013	ES2039875-014	ES2039875-015
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		**104**	**109**	**103**	**92.7**	**100**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH3/D	BH4/A	BH4/C	A1	A2
			Sampling date / time	10-Nov-2020 00:00	10-Nov-2020 00:00	10-Nov-2020 00:00	09-Nov-2020 00:00	09-Nov-2020 00:00
Compound	CAS Number	LOR	Unit	ES2039875-016	ES2039875-017	ES2039875-018	ES2039875-019	ES2039875-020
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	7.6	15.4	11.0	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	----	No	No
Asbestos (Trace)	1332-21-4	5	Fibres	----	----	----	No	No
Asbestos Type	1332-21-4	-	--	----	----	----	-	-
Sample weight (dry)	----	0.01	g	----	----	----	25.4	24.2
APPROVED IDENTIFIER:	----	-	--	----	----	----	A. SMYLIE	A. SMYLIE
Synthetic Mineral Fibre	----	0.1	g/kg	----	----	----	No	No
Organic Fibre	----	0.1	g/kg	----	----	----	No	No
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	6	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	6	5	6	----	----
Copper	7440-50-8	5	mg/kg	41	10	34	----	----
Lead	7439-92-1	5	mg/kg	25	13	18	----	----
Nickel	7440-02-0	2	mg/kg	28	<2	44	----	----
Zinc	7440-66-6	5	mg/kg	88	<5	166	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	0.6	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.0	<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	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH3/D	BH4/A	BH4/C	A1	A2
				Sampling date / time	10-Nov-2020 00:00	10-Nov-2020 00:00	10-Nov-2020 00:00	09-Nov-2020 00:00	09-Nov-2020 00:00
Compound	CAS Number	LOR	Unit		ES2039875-016	ES2039875-017	ES2039875-018	ES2039875-019	ES2039875-020
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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 hydrocarbons	----	0.5	mg/kg		<0.5	**1.6**	<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 Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	**80**	<50	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	**300**	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	**380**	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	**180**	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	**200**	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	**380**	<50	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	**180**	<50	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**89.3**	**92.5**	**91.9**	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**90.3**	**92.7**	**95.4**	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH3/D	BH4/A	BH4/C	A1	A2
				Sampling date / time	10-Nov-2020 00:00	10-Nov-2020 00:00	10-Nov-2020 00:00	09-Nov-2020 00:00	09-Nov-2020 00:00
Compound	CAS Number	LOR	Unit		ES2039875-016	ES2039875-017	ES2039875-018	ES2039875-019	ES2039875-020
					Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
2.4.6-Tribromophenol	118-79-6	0.5	%		78.1	84.6	80.2	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		101	103	107	----	----
Anthracene-d10	1719-06-8	0.5	%		98.0	99.2	103	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		88.6	91.5	93.3	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		92.0	92.3	89.6	----	----
Toluene-D8	2037-26-5	0.2	%		93.5	88.0	94.1	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		105	96.7	104	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	A3	----	----	----	----
				Sampling date / time	09-Nov-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2039875-021	--------	--------	--------	--------
					Result	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		**No**	----	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres		**No**	----	----	----	----
Asbestos Type	1332-21-4	-	--		**-**	----	----	----	----
Sample weight (dry)	----	0.01	g		**33.6**	----	----	----	----
APPROVED IDENTIFIER:	----	-	--		**A. SMYLIE**	----	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg		**No**	----	----	----	----
Organic Fibre	----	0.1	g/kg		**No**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	MMW1	MMW2	----	----	----
			Sampling date / time	11-Nov-2020 00:00	09-Nov-2020 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2039875-022	ES2039875-023	--------	--------	--------
				Result	Result	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0002**	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.002**	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.117**	**0.003**	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.212**	**0.015**	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	µg/L	<0.5	<0.5	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L	**80**	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	**100**	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	**180**	<50	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	MMW1	MMW2	----	----	----
				Sampling date / time	11-Nov-2020 00:00	09-Nov-2020 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2039875-022	ES2039875-023	--------	--------	--------
					Result	Result	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	----	----	----
>C10 - C16 Fraction	----	100	µg/L		**100**	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		**100**	<100	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		**100**	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	----	----	----
Toluene	108-88-3	2	µg/L		<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	----	----	----
^ **Total Xylenes**	----	2	µg/L		<2	<2	----	----	----
^ **Sum of BTEX**	----	1	µg/L		<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	<5	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons									
3-Methylcholanthrene	56-49-5	0.1	µg/L		<0.1	<0.1	----	----	----
2-Methylnaphthalene	91-57-6	0.1	µg/L		<0.1	<0.1	----	----	----
7.12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L		<0.1	<0.1	----	----	----
Acenaphthene	83-32-9	0.1	µg/L		<0.1	<0.1	----	----	----
Acenaphthylene	208-96-8	0.1	µg/L		<0.1	<0.1	----	----	----
Anthracene	120-12-7	0.1	µg/L		<0.1	<0.1	----	----	----
Benz(a)anthracene	56-55-3	0.1	µg/L		<0.1	<0.1	----	----	----
Benzo(a)pyrene	50-32-8	0.05	µg/L		<0.05	<0.05	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.1	µg/L		<0.1	<0.1	----	----	----
Benzo(e)pyrene	192-97-2	0.1	µg/L		<0.1	<0.1	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.1	µg/L		<0.1	<0.1	----	----	----
Benzo(k)fluoranthene	207-08-9	0.1	µg/L		<0.1	<0.1	----	----	----
Chrysene	218-01-9	0.1	µg/L		<0.1	<0.1	----	----	----
Coronene	191-07-1	0.1	µg/L		<0.1	<0.1	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.1	µg/L		<0.1	<0.1	----	----	----
Fluoranthene	206-44-0	0.1	µg/L		<0.1	<0.1	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	MMW1	MMW2	----	----	----
				Sampling date / time	11-Nov-2020 00:00	09-Nov-2020 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2039875-022	ES2039875-023	--------	--------	--------
					Result	Result	----	----	----
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Fluorene	86-73-7	0.1	µg/L		<0.1	<0.1	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.1	µg/L		<0.1	<0.1	----	----	----
Naphthalene	91-20-3	0.1	µg/L		<0.1	<0.1	----	----	----
Perylene	198-55-0	0.1	µg/L		<0.1	<0.1	----	----	----
Phenanthrene	85-01-8	0.1	µg/L		<0.1	<0.1	----	----	----
Pyrene	129-00-0	0.1	µg/L		<0.1	<0.1	----	----	----
^ **Sum of PAHs**	----	0.05	µg/L		<0.05	<0.05	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.05	µg/L		<0.05	<0.05	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		**21.1**	**27.6**	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		**60.0**	**61.6**	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%		**71.4**	**64.8**	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		**64.6**	**85.2**	----	----	----
Anthracene-d10	1719-06-8	1.0	%		**79.8**	**89.2**	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		**80.6**	**91.3**	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**106**	**92.0**	----	----	----
Toluene-D8	2037-26-5	2	%		**101**	**105**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**104**	**115**	----	----	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**58.9**	**71.3**	----	----	----
Anthracene-d10	1719-06-8	0.1	%		**72.4**	**78.6**	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**80.1**	**87.1**	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	A1 - 09-Nov-2020 00:00	Mid brown soil.
EA200: Description	A2 - 09-Nov-2020 00:00	Mid brown soil.
EA200: Description	A3 - 09-Nov-2020 00:00	Mid brown soil.

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

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	43	135
Anthracene-d10	1719-06-8	48	138
4-Terphenyl-d14	1718-51-0	48	144

QUALITY CONTROL REPORT

Work Order	: **ES2039875**	Page	: 1 of 12
Amendment	: **1**		
Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Contact	: Grace White
Address	: PO BOX 175 CARRINGTON NSW, AUSTRALIA 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 4902 9200	Telephone	: +61 2 8784 8555
Project	: 14817	Date Samples Received	: 11-Nov-2020
Order number	: ----	Date Analysis Commenced	: 12-Nov-2020
C-O-C number	: ----	Issue Date	: 25-Nov-2020
Sampler	: Richie Lamont		
Site	: ----		
Quote number	: SYBQ/400/18		
No. of samples received	: 23		
No. of samples analysed	: 23		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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 Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3363146)									
ES2039578-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	38	36	6.21	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	36	35	0.00	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	31	31	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	243	227	6.67	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	153	164	7.13	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	1550	1500	2.92	0% - 20%
ES2039875-003	S6	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	30	34	12.7	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	42	43	3.23	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	20	23	13.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	61	62	0.00	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	37	39	5.85	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	173	179	3.58	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3363148)									
ES2039976-052	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	7	6	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	3	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	5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	45	42	7.04	No Limit
ES2039875-013	BH2/B	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	3	6	60.5	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	6	102	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3363148) - continued									
ES2039875-013	BH2/B	EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	20	32	47.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	21	21	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	9	19	73.7	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3363150)									
ES2039578-003	Anonymous	EA055: Moisture Content	----	0.1	%	29.2	29.8	2.26	0% - 20%
ES2039875-006	S15	EA055: Moisture Content	----	0.1	%	8.3	7.7	7.17	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3363151)									
ES2039875-015	BH3/A	EA055: Moisture Content	----	0.1	%	14.5	14.8	2.01	0% - 50%
ES2039976-055	Anonymous	EA055: Moisture Content	----	0.1	%	15.9	15.5	2.52	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3363147)									
ES2039578-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	61.0	63.3	3.72	0% - 20%
ES2039875-003	S6	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3363149)									
ES2039875-013	BH2/B	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3360285)									
ES2039875-001	S3	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
		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 hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES2039875-011	QA2	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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3360285) - continued									
ES2039875-011	QA2	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 hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3360286)									
ES2039875-001	S3	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
ES2039875-011	QA2	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 Petroleum Hydrocarbons (QC Lot: 3361580)									
ES2039875-001	S3	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES2039875-009	QA1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3360286)									
ES2039875-001	S3	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
ES2039875-011	QA2	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 Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3361580)									
ES2039875-001	S3	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES2039875-009	QA1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 3361580)									
ES2039875-001	S3	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 3361580) - continued									
ES2039875-001	S3	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		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
ES2039875-009	QA1	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		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

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 3367250)									
ES2040062-002	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
EW2005118-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.003	0.003	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 3367249)									
ES2039841-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EW2005136-010	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3363855)									
ES2039876-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
ES2039909-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3363855)									
ES2039876-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
ES2039909-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080: BTEXN (QC Lot: 3363855)									
ES2039876-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
ES2039909-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

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) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3363146)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	94.2	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	111	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	92.2	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	102	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.1 mg/kg	94.3	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	89.4	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	74.6	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3363148)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	100	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	117	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	90.4	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	100	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.1 mg/kg	101	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	88.0	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	75.4	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3363147)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.073 mg/kg	91.5	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3363149)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.073 mg/kg	91.6	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3360285)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	100.0	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	104	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	99.6	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	102	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	105	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	108	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	106	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	107	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	97.9	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	101	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	93.5	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	103	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	100	70.0	126

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3360285) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	100	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	100	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	102	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3360286)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	88.5	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	90.7	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	89.3	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3361580)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	111	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3360286)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	90.0	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	89.8	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	82.7	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3361580)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	111	68.4	128
EP080: BTEXN (QCLot: 3361580)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	109	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	107	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	110	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	108	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	113	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	110	63.0	119

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3367250)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	96.6	85.0	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	95.9	84.0	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	96.5	85.0	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	91.9	81.0	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.7	83.0	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	97.3	82.0	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	96.7	81.0	117
EG035F: Dissolved Mercury by FIMS (QCLot: 3367249)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	94.2	83.0	105
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3360569)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3360569) - continued								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	72.1	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	73.8	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	78.1	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	75.7	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	80.8	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	82.1	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	79.1	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	79.2	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	77.9	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	78.2	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	72.9	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	86.8	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	78.9	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	75.4	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	76.3	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	75.9	59.1	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3360567)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	67.8	55.8	112
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	77.6	71.6	113
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	78.7	56.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3363855)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	91.7	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3360567)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	71.4	57.9	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	78.4	62.5	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	82.6	61.5	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3363855)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	92.6	75.0	127
EP080: BTEXN (QCLot: 3363855)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	94.1	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	95.3	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	91.3	70.0	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	92.1	69.0	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	100	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	93.3	70.0	120
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3370880)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3370880) - continued								
EP132: 3-Methylcholanthrene	56-49-5	0.1	µg/L	<0.1	2 µg/L	82.8	60.0	120
EP132: 2-Methylnaphthalene	91-57-6	0.1	µg/L	<0.1	2 µg/L	62.9	59.0	123
EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L	<0.1	2 µg/L	76.8	36.0	144
EP132: Acenaphthene	83-32-9	0.1	µg/L	<0.1	2 µg/L	69.3	64.0	122
EP132: Acenaphthylene	208-96-8	0.1	µg/L	<0.1	2 µg/L	71.4	64.0	126
EP132: Anthracene	120-12-7	0.1	µg/L	<0.1	2 µg/L	78.2	65.0	127
EP132: Benz(a)anthracene	56-55-3	0.1	µg/L	<0.1	2 µg/L	81.8	64.0	130
EP132: Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	2 µg/L	81.0	64.0	126
EP132: Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.1	µg/L	<0.1	2 µg/L	82.3	62.0	126
EP132: Benzo(e)pyrene	192-97-2	0.1	µg/L	<0.1	2 µg/L	83.4	62.0	126
EP132: Benzo(g.h.i)perylene	191-24-2	0.1	µg/L	<0.1	2 µg/L	82.8	56.0	126
EP132: Benzo(k)fluoranthene	207-08-9	0.1	µg/L	<0.1	2 µg/L	82.7	68.0	130
EP132: Chrysene	218-01-9	0.1	µg/L	<0.1	2 µg/L	79.2	66.0	130
EP132: Coronene	191-07-1	0.1	µg/L	<0.1	2 µg/L	81.5	35.0	133
EP132: Dibenz(a.h)anthracene	53-70-3	0.1	µg/L	<0.1	2 µg/L	81.6	58.0	128
EP132: Fluoranthene	206-44-0	0.1	µg/L	<0.1	2 µg/L	80.8	65.0	127
EP132: Fluorene	86-73-7	0.1	µg/L	<0.1	2 µg/L	71.0	64.0	124
EP132: Indeno(1.2.3.cd)pyrene	193-39-5	0.1	µg/L	<0.1	2 µg/L	83.1	57.0	127
EP132: Naphthalene	91-20-3	0.1	µg/L	<0.1	2 µg/L	64.2	54.0	128
EP132: Perylene	198-55-0	0.1	µg/L	<0.1	2 µg/L	83.0	66.0	130
EP132: Phenanthrene	85-01-8	0.1	µg/L	<0.1	2 µg/L	77.0	65.0	129
EP132: Pyrene	129-00-0	0.1	µg/L	<0.1	2 µg/L	80.2	66.0	128

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3363146)							
ES2039578-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	104	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.3	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	95.3	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	91.4	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	95.2	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	94.7	70.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3363146) - continued							
ES2039578-001	Anonymous	EG005T: Zinc	7440-66-6	250 mg/kg	# Not Determined	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3363148)							
ES2039875-013	BH2/B	EG005T: Arsenic	7440-38-2	50 mg/kg	98.7	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	98.0	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	99.7	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	95.8	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	102	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	97.0	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	96.9	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3363147)							
ES2039578-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	# Not Determined	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3363149)							
ES2039875-013	BH2/B	EG035T: Mercury	7439-97-6	5 mg/kg	76.9	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3360285)							
ES2039875-001	S3	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	97.6	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	104	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3360286)							
ES2039875-001	S3	EP071: C10 - C14 Fraction	----	523 mg/kg	106	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	112	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	129	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3361580)							
ES2039875-001	S3	EP080: C6 - C9 Fraction	----	32.5 mg/kg	113	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3360286)							
ES2039875-001	S3	EP071: >C10 - C16 Fraction	----	860 mg/kg	106	73.0	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	122	53.0	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	116	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3361580)							
ES2039875-001	S3	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	111	70.0	130
EP080: BTEXN (QCLot: 3361580)							
ES2039875-001	S3	EP080: Benzene	71-43-2	2.5 mg/kg	96.4	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	95.6	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	102	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	99.9	70.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080: BTEXN (QCLot: 3361580) - continued							
ES2039875-001	S3	EP080: ortho-Xylene	95-47-6	2.5 mg/kg	101	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	96.0	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3367250)							
ES2039836-001	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	92.4	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	96.8	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	95.0	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	92.7	70.0	130
		EG020A-F: Lead	7439-92-1	1 mg/L	94.5	70.0	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	94.6	70.0	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	95.0	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3367249)							
ES2039830-002	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	85.9	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3363855)							
ES2039876-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	128	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3363855)							
ES2039876-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	128	70.0	130
EP080: BTEXN (QCLot: 3363855)							
ES2039876-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	77.5	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	94.7	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	97.3	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	98.4	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	98.7	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	88.4	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2039875**	Page	: 1 of 10
Amendment	: **1**		
Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Telephone	: +61 2 8784 8555
Project	: 14817	Date Samples Received	: 11-Nov-2020
Site	: ----	Issue Date	: 25-Nov-2020
Sampler	: Richie Lamont	No. of samples received	: 23
Order number	: ----	No. of samples analysed	: 23

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

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

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG005(ED093)T: Total Metals by ICP-AES	ES2039578--001	Anonymous	**Zinc**	7440-66-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG035T: Total Recoverable Mercury by FIMS	ES2039578--001	Anonymous	**Mercury**	7439-97-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	15	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	15	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

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

Method / ***Container*** / *Client Sample ID(s)*	***Sample Date***	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
S3, S5, S6, S9, S11, S15, S17, S19, QA1	**09-Nov-2020**	**----**	----	----	**13-Nov-2020**	23-Nov-2020	✓
Soil Glass Jar - Unpreserved (EA055)							
BH1/A, QA2, BH1/C, BH2/B, BH2/C, BH3/A, BH3/D, BH4/A, BH4/C	**10-Nov-2020**	**----**	----	----	**13-Nov-2020**	24-Nov-2020	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200)							
A1, A2, A3	**09-Nov-2020**	**----**	----	----	**12-Nov-2020**	08-May-2021	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
S3, S5, S6, S9, S11, S15, S17, S19, QA1	**09-Nov-2020**	**13-Nov-2020**	08-May-2021	✓	**13-Nov-2020**	08-May-2021	✓
Soil Glass Jar - Unpreserved (EG005T)							
BH1/A, QA2, BH1/C, BH2/B, BH2/C, BH3/A, BH3/D, BH4/A, BH4/C	**10-Nov-2020**	**13-Nov-2020**	09-May-2021	✓	**13-Nov-2020**	09-May-2021	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
S3, S5, S6, S9, S11, S15, S17, S19, QA1	**09-Nov-2020**	**13-Nov-2020**	07-Dec-2020	✓	**15-Nov-2020**	07-Dec-2020	✓
Soil Glass Jar - Unpreserved (EG035T)							
BH1/A, QA2, BH1/C, BH2/B, BH2/C, BH3/A, BH3/D, BH4/A, BH4/C	**10-Nov-2020**	**13-Nov-2020**	08-Dec-2020	✓	**15-Nov-2020**	08-Dec-2020	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
S3, S5, S6, S9, S11, S15, S17, S19, QA1	**09-Nov-2020**	**13-Nov-2020**	23-Nov-2020	✓	**14-Nov-2020**	23-Dec-2020	✓
Soil Glass Jar - Unpreserved (EP075(SIM))							
BH1/A, QA2, BH1/C, BH2/B, BH2/C, BH3/A, BH3/D, BH4/A, BH4/C	**10-Nov-2020**	**13-Nov-2020**	24-Nov-2020	✓	**14-Nov-2020**	23-Dec-2020	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071)							
S3, S5, S6, S9, S11, S15, S17, S19, QA1	**09-Nov-2020**	**13-Nov-2020**	23-Nov-2020	✓	**14-Nov-2020**	23-Dec-2020	✓
Soil Glass Jar - Unpreserved (EP080)							
S3, S5, S6, S9, S11, S15, S17, S19, QA1	**09-Nov-2020**	**13-Nov-2020**	23-Nov-2020	✓	**17-Nov-2020**	23-Nov-2020	✓
Soil Glass Jar - Unpreserved (EP071)							
BH1/A, QA2, BH1/C, BH2/B, BH2/C, BH3/A, BH3/D, BH4/A, BH4/C	**10-Nov-2020**	**13-Nov-2020**	24-Nov-2020	✓	**14-Nov-2020**	23-Dec-2020	✓
Soil Glass Jar - Unpreserved (EP080)							
BH1/A, QA2, BH1/C, BH2/B, BH2/C, BH3/A, BH3/D, BH4/A, BH4/C	**10-Nov-2020**	**13-Nov-2020**	24-Nov-2020	✓	**17-Nov-2020**	24-Nov-2020	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP071)							
S3, S5, S6, S9, S11, S15, S17, S19, QA1	**09-Nov-2020**	**13-Nov-2020**	23-Nov-2020	✓	**14-Nov-2020**	23-Dec-2020	✓
Soil Glass Jar - Unpreserved (EP080)							
S3, S5, S6, S9, S11, S15, S17, S19, QA1	**09-Nov-2020**	**13-Nov-2020**	23-Nov-2020	✓	**17-Nov-2020**	23-Nov-2020	✓
Soil Glass Jar - Unpreserved (EP071)							
BH1/A, QA2, BH1/C, BH2/B, BH2/C, BH3/A, BH3/D, BH4/A, BH4/C	**10-Nov-2020**	**13-Nov-2020**	24-Nov-2020	✓	**14-Nov-2020**	23-Dec-2020	✓
Soil Glass Jar - Unpreserved (EP080)							
BH1/A, QA2, BH1/C, BH2/B, BH2/C, BH3/A, BH3/D, BH4/A, BH4/C	**10-Nov-2020**	**13-Nov-2020**	24-Nov-2020	✓	**17-Nov-2020**	24-Nov-2020	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
S3, S5, S6, S9, S11, S15, S17, S19, QA1	**09-Nov-2020**	**13-Nov-2020**	23-Nov-2020	✓	**17-Nov-2020**	23-Nov-2020	✓
Soil Glass Jar - Unpreserved (EP080)							
BH1/A, QA2, BH1/C, BH2/B, BH2/C, BH3/A, BH3/D, BH4/A, BH4/C	**10-Nov-2020**	**13-Nov-2020**	24-Nov-2020	✓	**17-Nov-2020**	24-Nov-2020	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) MMW2	**09-Nov-2020**	**----**	----	----	**17-Nov-2020**	08-May-2021	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) MMW1	**11-Nov-2020**	**----**	----	----	**17-Nov-2020**	10-May-2021	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) MMW2	**09-Nov-2020**	**----**	----	----	**17-Nov-2020**	07-Dec-2020	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) MMW1	**11-Nov-2020**	**----**	----	----	**17-Nov-2020**	09-Dec-2020	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) MMW2	**09-Nov-2020**	**13-Nov-2020**	16-Nov-2020	✓	**14-Nov-2020**	23-Dec-2020	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) MMW1	**11-Nov-2020**	**13-Nov-2020**	18-Nov-2020	✓	**14-Nov-2020**	23-Dec-2020	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) MMW2	**09-Nov-2020**	**13-Nov-2020**	16-Nov-2020	✓	**13-Nov-2020**	23-Dec-2020	✓
Amber Glass Bottle - Unpreserved (EP071) MMW1	**11-Nov-2020**	**13-Nov-2020**	18-Nov-2020	✓	**13-Nov-2020**	23-Dec-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080) MMW2	**09-Nov-2020**	**17-Nov-2020**	23-Nov-2020	✓	**17-Nov-2020**	23-Nov-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080) MMW1	**11-Nov-2020**	**17-Nov-2020**	25-Nov-2020	✓	**17-Nov-2020**	25-Nov-2020	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) MMW2	**09-Nov-2020**	**13-Nov-2020**	16-Nov-2020	✓	**13-Nov-2020**	23-Dec-2020	✓
Amber Glass Bottle - Unpreserved (EP071) MMW1	**11-Nov-2020**	**13-Nov-2020**	18-Nov-2020	✓	**13-Nov-2020**	23-Dec-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080) MMW2	**09-Nov-2020**	**17-Nov-2020**	23-Nov-2020	✓	**17-Nov-2020**	23-Nov-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080) MMW1	**11-Nov-2020**	**17-Nov-2020**	25-Nov-2020	✓	**17-Nov-2020**	25-Nov-2020	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) MMW2	**09-Nov-2020**	**17-Nov-2020**	23-Nov-2020	✓	**17-Nov-2020**	23-Nov-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080) MMW1	**11-Nov-2020**	**17-Nov-2020**	25-Nov-2020	✓	**17-Nov-2020**	25-Nov-2020	✓
EP132B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP132) MMW2	**09-Nov-2020**	**13-Nov-2020**	16-Nov-2020	✓	**19-Nov-2020**	23-Dec-2020	✓
Amber Glass Bottle - Unpreserved (EP132) MMW1	**11-Nov-2020**	**13-Nov-2020**	18-Nov-2020	✓	**19-Nov-2020**	23-Dec-2020	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	26	**11.54**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	26	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	26	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	26	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	0	2	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	15	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Control Samples (LCS) - Continued							
Dissolved Mercury by FIMS	EG035F	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	0	2	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	15	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	WATER	In house: Referenced to USEPA 3640 (GPC Cleanup), 8270 GCMS Capiliary column, SIM mode. This method is compliant with NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
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.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Sep. Funnel Extraction /Acetylation of Phenolic Compounds	ORG14-AC	WATER	In house: Referenced to USEPA 3510 (Extraction) / In-house (Acetylation): A 1L sample is extracted into dichloromethane and concentrated to 1 mL with echange into cyclohexane. Phenolic compounds are reacted with acetic anhydride to yield phenyl acetates suitable for ultra-trace analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.

Wanida Roberts

From: Tyler Anderson
Sent: Wednesday, November 18, 2020 5:20 PM
To: Wanida Roberts; Helen Simpson; Wael Saleh; Edwandy Fadjar; Uma Nagendiram; Barbara Hanna
Subject: FW: [EXTERNAL] - RE: RESULTS & EDD for ALS Workorder : ES2039875 | Your Reference: 14817

Hi Wanida,

Can you please amend this workorder and add ultra trace PAHs please?

Hi Uma, FYI for invoicing.

Hi Ed, FYI for analysis.

Kind Regards,

Environmental Division
Sydney
Work Order Reference
ES2039875

Telephone : +61-2-8784 8555

Tyler Anderson
Client Services Coordinator, Environmental
Sydney

T +61 2 8784 8555 F +61 2 8784 8500
D +61 2 8784 8501
tyler.anderson@alsglobal.com
277-289 Woodpark Road
Smithfield NSW 2164 AUSTRALIA

From: Fiona Brooker [mailto:fionab@rca.com.au]
Sent: Wednesday, 18 November 2020 5:04 PM
To: ALSEnviro Sydney <ALSEnviro.Sydney@ALSGlobal.com>
Cc: Loren Schiavon <loren.schiavon@alsglobal.com>
Subject: [EXTERNAL] - RE: RESULTS & EDD for ALS Workorder : ES2039875 | Your Reference: 14817

Good afternoon

RCA made a slight error on the COC – we were after low level PAH for the water samples. Are you able to report those values please?

Regards

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

Fiona Brooker
Environmental Services Manager

t: 02 4902 9225 | f: 02 4902 9299 | m: 0408 687 529
e: fionab@rca.com.au | w: www.rca.com.au
a: PO Box 175 / 92 Hill Street, Carrington NSW 2294

A division of Robert Carr & Associates Pty. Ltd.

From: angel-no-reply@alsglobal.com <angel-no-reply@alsglobal.com>
Sent: Wednesday, 18 November 2020 3:40 PM
To: Fiona Brooker <fionab@rca.com.au>
Subject: RESULTS & EDD for ALS Workorder : ES2039875 | Your Reference: 14817

ALS

Deliverables for ALS Workorder ES2039875

Project: 14817

Dear FIONA BROOKER,

Please find enclosed the following deliverables for **ES2039875**:

- ES2039875_0_COA.pdf
- ES2039875_0_ENMRG.CSV
- 14817.ESDAT_ES2039875_0.Chemistry2e.CSV
- 14817.ESDAT_ES2039875_0.Header.XML
- 14817.ESDAT_ES2039875_0.Sample2e.CSV
- ES2039875_0_QC.pdf
- ES2039875_0_QCI.pdf
- ES2039875_0_XTAB.XLS
- ES2039875_COC(1).pdf
- ES2039875_COC.pdf

Report Recipients

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2039875**
Amendment : **1**

Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Contact	: Grace White
Address	: PO BOX 175 CARRINGTON NSW, AUSTRALIA 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: fionab@rca.com.au	E-mail	: Grace.White@ALSGlobal.com
Telephone	: +61 02 4902 9200	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 4902 9299	Facsimile	: +61-2-8784 8500
Project	: 14817	Page	: 1 of 3
Order number	: ----	Quote number	: ES2017ROBCAR0004 (SYBQ/400/18)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: Richie Lamont		

Dates

Date Samples Received	: 11-Nov-2020 15:45	Issue Date	: 18-Nov-2020
Client Requested Due Date	: 25-Nov-2020	Scheduled Reporting Date	: **25-Nov-2020**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Intact.
No. of coolers/boxes	: ----	Temperature	: 18.3 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 23 / 23

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).**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- 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 (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

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 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EA055-103 Moisture Content	SOIL - EA200G Asbestos Identification in Soils -	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2039875-001	09-Nov-2020 00:00	S3	✓		✓
ES2039875-002	09-Nov-2020 00:00	S5	✓		✓
ES2039875-003	09-Nov-2020 00:00	S6	✓		✓
ES2039875-004	09-Nov-2020 00:00	S9	✓		✓
ES2039875-005	09-Nov-2020 00:00	S11	✓		✓
ES2039875-006	09-Nov-2020 00:00	S15	✓		✓
ES2039875-007	09-Nov-2020 00:00	S17	✓		✓
ES2039875-008	09-Nov-2020 00:00	S19	✓		✓
ES2039875-009	09-Nov-2020 00:00	QA1	✓		✓
ES2039875-010	10-Nov-2020 00:00	BH1/A	✓		✓
ES2039875-011	10-Nov-2020 00:00	QA2	✓		✓
ES2039875-012	10-Nov-2020 00:00	BH1/C	✓		✓
ES2039875-013	10-Nov-2020 00:00	BH2/B	✓		✓
ES2039875-014	10-Nov-2020 00:00	BH2/C	✓		✓
ES2039875-015	10-Nov-2020 00:00	BH3/A	✓		✓
ES2039875-016	10-Nov-2020 00:00	BH3/D	✓		✓
ES2039875-017	10-Nov-2020 00:00	BH4/A	✓		✓
ES2039875-018	10-Nov-2020 00:00	BH4/C	✓		✓
ES2039875-019	09-Nov-2020 00:00	A1		✓	
ES2039875-020	09-Nov-2020 00:00	A2		✓	
ES2039875-021	09-Nov-2020 00:00	A3		✓	

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EP132B(PAH) Ultra Trace Polynuclear Aromatic Compounds	WATER - W-26 TRH/BTEXN/PAH/8 Metals
ES2039875-022	11-Nov-2020 00:00	MMW1	✓	✓
ES2039875-023	09-Nov-2020 00:00	MMW2	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- *AU Certificate of Analysis - NATA (COA)	Email	administrator@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	administrator@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	administrator@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	administrator@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	administrator@rca.com.au
- Chain of Custody (CoC) (COC)	Email	administrator@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	administrator@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	administrator@rca.com.au
- EDI Format - XTab (XTAB)	Email	administrator@rca.com.au

FIONA BROOKER

- *AU Certificate of Analysis - NATA (COA)	Email	fionab@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	fionab@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	fionab@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	fionab@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	fionab@rca.com.au
- Chain of Custody (CoC) (COC)	Email	fionab@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	fionab@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	fionab@rca.com.au
- EDI Format - XTab (XTAB)	Email	fionab@rca.com.au

Richie Lamont

- *AU Certificate of Analysis - NATA (COA)	Email	richiel@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	richiel@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	richiel@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	richiel@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	richiel@rca.com.au
- Chain of Custody (CoC) (COC)	Email	richiel@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	richiel@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	richiel@rca.com.au
- EDI Format - XTab (XTAB)	Email	richiel@rca.com.au

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2040972**	Page	: 1 of 5
Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Contact	: Grace White
Address	: PO BOX 175 CARRINGTON NSW, AUSTRALIA 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 4902 9200	Telephone	: +61 2 8784 8555
Project	: 14817	Date Samples Received	: 19-Nov-2020 10:00
Order number	: ----	Date Analysis Commenced	: 21-Nov-2020
C-O-C number	: ----	Issue Date	: 26-Nov-2020 15:20
Sampler	: ----		
Site	: Toongabbie		
Quote number	: SYBQ/400/18		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- 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*
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

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

- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEXN compounds spiked at 20 ug/L.
- EP132: Where reported, Total PAH reported as the sum of Naphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benz(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene and Benzo(g,h,i)perylene.

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	MW1	MW2	QA1	trip spike	trip blank
				Sampling date / time	19-Nov-2020 00:00	19-Nov-2020 00:00	19-Nov-2020 00:00	17-Nov-2020 00:00	17-Nov-2020 00:00
					ES2040972-001	ES2040972-002	ES2040972-003	ES2040972-004	ES2040972-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	**0.003**	**0.003**	----	----
Cadmium	7440-43-9	0.0001	mg/L		**0.0013**	<0.0001	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L		**0.003**	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L		**0.071**	**0.012**	**0.012**	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	----	----
Zinc	7440-66-6	0.005	mg/L		**0.164**	**0.014**	**0.022**	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	**160**	**180**	----	<20
C10 - C14 Fraction	----	50	µg/L		<50	**1550**	**1610**	----	----
C15 - C28 Fraction	----	100	µg/L		<100	**2280**	**2790**	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	**3830**	**4400**	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	**220**	**230**	----	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	**220**	**230**	----	<20
>C10 - C16 Fraction	----	100	µg/L		<100	**2120**	**2330**	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	**1610**	**2000**	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	**3730**	**4330**	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	**2110**	**2310**	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	**1**	**1**	**20**	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	**19**	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	**19**	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	**18**	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	**19**	<2
^ **Total Xylenes**	----	2	µg/L		<2	<2	<2	**37**	<2
^ **Sum of BTEX**	----	1	µg/L		<1	**1**	**1**	**95**	<1
Naphthalene	91-20-3	5	µg/L		<5	**14**	**16**	**18**	<5

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

Compound	CAS Number	LOR	Unit	Sample ID	MW1	MW2	QA1	trip spike	trip blank
				Sampling date / time	19-Nov-2020 00:00	19-Nov-2020 00:00	19-Nov-2020 00:00	17-Nov-2020 00:00	17-Nov-2020 00:00
					ES2040972-001	ES2040972-002	ES2040972-003	ES2040972-004	ES2040972-005
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons									
3-Methylcholanthrene	56-49-5	0.1	µg/L		<0.1	<0.1	<0.1	----	----
2-Methylnaphthalene	91-57-6	0.1	µg/L		<0.1	**10.6**	**7.8**	----	----
7.12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L		<0.1	<0.1	<0.1	----	----
Acenaphthene	83-32-9	0.1	µg/L		<0.1	**1.1**	**1.2**	----	----
Acenaphthylene	208-96-8	0.1	µg/L		<0.1	<0.1	<0.1	----	----
Anthracene	120-12-7	0.1	µg/L		<0.1	<0.1	<0.1	----	----
Benz(a)anthracene	56-55-3	0.1	µg/L		<0.1	<0.1	<0.1	----	----
Benzo(a)pyrene	50-32-8	0.05	µg/L		<0.05	<0.05	<0.05	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.1	µg/L		<0.1	<0.1	<0.1	----	----
Benzo(e)pyrene	192-97-2	0.1	µg/L		<0.1	<0.1	<0.1	----	----
Benzo(g.h.i)perylene	191-24-2	0.1	µg/L		<0.1	<0.1	<0.1	----	----
Benzo(k)fluoranthene	207-08-9	0.1	µg/L		<0.1	<0.1	<0.1	----	----
Chrysene	218-01-9	0.1	µg/L		<0.1	<0.1	<0.1	----	----
Coronene	191-07-1	0.1	µg/L		<0.1	<0.1	<0.1	----	----
Dibenz(a.h)anthracene	53-70-3	0.1	µg/L		<0.1	<0.1	<0.1	----	----
Fluoranthene	206-44-0	0.1	µg/L		<0.1	**0.1**	**0.1**	----	----
Fluorene	86-73-7	0.1	µg/L		<0.1	**3.5**	**3.8**	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.1	µg/L		<0.1	<0.1	<0.1	----	----
Naphthalene	91-20-3	0.1	µg/L		<0.1	**7.9**	**6.2**	----	----
Perylene	198-55-0	0.1	µg/L		<0.1	<0.1	<0.1	----	----
Phenanthrene	85-01-8	0.1	µg/L		<0.1	**3.4**	**3.9**	----	----
Pyrene	129-00-0	0.1	µg/L		<0.1	**0.3**	**0.4**	----	----
^ Sum of PAHs	----	0.05	µg/L		<0.05	----	----	----	----
^ Sum of PAHs	----	0.05	µg/L		----	**16.3**	**15.6**	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.05	µg/L		<0.05	<0.05	<0.05	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**100**	**98.6**	**105**	**119**	**118**
Toluene-D8	2037-26-5	2	%		**119**	**127**	**131**	**124**	**120**
4-Bromofluorobenzene	460-00-4	2	%		**116**	**108**	**110**	**115**	**110**
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%		**75.6**	**52.6**	**61.4**	----	----
Anthracene-d10	1719-06-8	0.1	%		**75.5**	**66.5**	**71.0**	----	----
4-Terphenyl-d14	1718-51-0	0.1	%		**75.4**	**66.3**	**71.2**	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	CAS Number	Recovery Limits (%) Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	43	135
Anthracene-d10	1719-06-8	48	138
4-Terphenyl-d14	1718-51-0	48	144

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2040972**	Page	: 1 of 6
Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Contact	: Grace White
Address	: PO BOX 175 CARRINGTON NSW, AUSTRALIA 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 4902 9200	Telephone	: +61 2 8784 8555
Project	: 14817	Date Samples Received	: 19-Nov-2020
Order number	: ----	Date Analysis Commenced	: 21-Nov-2020
C-O-C number	: ----	Issue Date	: 26-Nov-2020
Sampler	: ----		
Site	: Toongabbie		
Quote number	: SYBQ/400/18		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020F: Dissolved Metals by ICP-MS (QC Lot: 3381296)									
EN2007782-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.280	0.278	0.778	0% - 20%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.079	0.079	0.00	0% - 50%
ES2040903-005	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0008	0.0008	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.006	0.006	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.008	0.008	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.095	0.095	0.00	0% - 50%
EG035F: Dissolved Mercury by FIMS (QC Lot: 3381297)									
ES2040791-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES2040972-001	MW1	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3375659)									
ES2040972-001	MW1	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
ES2041118-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	30	30	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3375659)									
ES2040972-001	MW1	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
ES2041118-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	30	30	0.00	No Limit
EP080: BTEXN (QC Lot: 3375659)									

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080: BTEXN (QC Lot: 3375659) - continued									
ES2040972-001	MW1	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
ES2041118-005	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

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: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3381296)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	94.4	85.0	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	94.1	84.0	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	92.6	85.0	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	91.4	81.0	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	94.8	83.0	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	92.5	82.0	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	93.0	81.0	117
EG035F: Dissolved Mercury by FIMS (QCLot: 3381297)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	99.6	83.0	105
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3375545)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	71.9	55.8	112
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	93.7	71.6	113
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	83.2	56.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3375659)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	111	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3375545)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	74.7	57.9	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	94.2	62.5	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	65.7	61.5	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3375659)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	110	75.0	127
EP080: BTEXN (QCLot: 3375659)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	103	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	96.8	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	95.8	70.0	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	94.4	69.0	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	94.5	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	85.9	70.0	120
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3375544)								
EP132: 3-Methylcholanthrene	56-49-5	0.1	µg/L	<0.1	2 µg/L	90.3	60.0	120
EP132: 2-Methylnaphthalene	91-57-6	0.1	µg/L	<0.1	2 µg/L	75.2	59.0	123
EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	0.1	µg/L	<0.1	2 µg/L	104	36.0	144

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3375544) - continued								
EP132: Acenaphthene	83-32-9	0.1	µg/L	<0.1	2 µg/L	80.8	64.0	122
EP132: Acenaphthylene	208-96-8	0.1	µg/L	<0.1	2 µg/L	81.4	64.0	126
EP132: Anthracene	120-12-7	0.1	µg/L	<0.1	2 µg/L	88.9	65.0	127
EP132: Benz(a)anthracene	56-55-3	0.1	µg/L	<0.1	2 µg/L	91.9	64.0	130
EP132: Benzo(a)pyrene	50-32-8	0.05	µg/L	<0.05	2 µg/L	92.0	64.0	126
EP132: Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.1	µg/L	<0.1	2 µg/L	92.7	62.0	126
EP132: Benzo(e)pyrene	192-97-2	0.1	µg/L	<0.1	2 µg/L	89.5	62.0	126
EP132: Benzo(g.h.i)perylene	191-24-2	0.1	µg/L	<0.1	2 µg/L	93.5	56.0	126
EP132: Benzo(k)fluoranthene	207-08-9	0.1	µg/L	<0.1	2 µg/L	91.3	68.0	130
EP132: Chrysene	218-01-9	0.1	µg/L	<0.1	2 µg/L	92.2	66.0	130
EP132: Coronene	191-07-1	0.1	µg/L	<0.1	2 µg/L	96.0	35.0	133
EP132: Dibenz(a.h)anthracene	53-70-3	0.1	µg/L	<0.1	2 µg/L	92.5	58.0	128
EP132: Fluoranthene	206-44-0	0.1	µg/L	<0.1	2 µg/L	70.3	65.0	127
EP132: Fluorene	86-73-7	0.1	µg/L	<0.1	2 µg/L	83.9	64.0	124
EP132: Indeno(1.2.3.cd)pyrene	193-39-5	0.1	µg/L	<0.1	2 µg/L	92.9	57.0	127
EP132: Naphthalene	91-20-3	0.1	µg/L	<0.1	2 µg/L	67.7	54.0	128
EP132: Perylene	198-55-0	0.1	µg/L	<0.1	2 µg/L	91.9	66.0	130
EP132: Phenanthrene	85-01-8	0.1	µg/L	<0.1	2 µg/L	89.3	65.0	129
EP132: Pyrene	129-00-0	0.1	µg/L	<0.1	2 µg/L	70.2	66.0	128

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: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3381296)							
EN2007782-002	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	112	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	116	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	115	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	102	70.0	130
		EG020A-F: Lead	7439-92-1	1 mg/L	108	70.0	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	115	70.0	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	115	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3381297)							
ES2040791-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	98.6	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3375659)							
ES2040972-001	MW1	EP080: C6 - C9 Fraction	----	325 µg/L	117	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3375659)							
ES2040972-001	MW1	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	119	70.0	130
EP080: BTEXN (QCLot: 3375659)							
ES2040972-001	MW1	EP080: Benzene	71-43-2	25 µg/L	116	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	113	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	114	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	111	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	109	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	92.7	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2040972**	Page	: 1 of 5
Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Telephone	: +61 2 8784 8555
Project	: 14817	Date Samples Received	: 19-Nov-2020
Site	: Toongabbie	Issue Date	: 26-Nov-2020
Sampler	: ----	No. of samples received	: 5
Order number	: ----	No. of samples analysed	: 5

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

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

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Due for extraction	Evaluation	Analysis: Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
MW1, MW2, QA1	**19-Nov-2020**	**----**	----	----	**24-Nov-2020**	18-May-2021	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
MW1, MW2, QA1	**19-Nov-2020**	**----**	----	----	**25-Nov-2020**	17-Dec-2020	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
MW1, MW2, QA1	**19-Nov-2020**	**21-Nov-2020**	26-Nov-2020	✓	**24-Nov-2020**	31-Dec-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
trip blank	**17-Nov-2020**	**25-Nov-2020**	01-Dec-2020	✓	**25-Nov-2020**	01-Dec-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
MW1, MW2, QA1	**19-Nov-2020**	**25-Nov-2020**	03-Dec-2020	✓	**25-Nov-2020**	03-Dec-2020	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
MW1, MW2, QA1	**19-Nov-2020**	**21-Nov-2020**	26-Nov-2020	✓	**24-Nov-2020**	31-Dec-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
trip blank	**17-Nov-2020**	**25-Nov-2020**	01-Dec-2020	✓	**25-Nov-2020**	01-Dec-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
MW1, MW2, QA1	**19-Nov-2020**	**25-Nov-2020**	03-Dec-2020	✓	**25-Nov-2020**	03-Dec-2020	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
trip spike, trip blank	**17-Nov-2020**	**25-Nov-2020**	01-Dec-2020	✓	**25-Nov-2020**	01-Dec-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
MW1, MW2, QA1	**19-Nov-2020**	**25-Nov-2020**	03-Dec-2020	✓	**25-Nov-2020**	03-Dec-2020	✓
EP132B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP132)							
MW1, MW2, QA1	**19-Nov-2020**	**21-Nov-2020**	26-Nov-2020	✓	**24-Nov-2020**	31-Dec-2020	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	0	3	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	3	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	0	3	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	3	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	WATER	In house: Referenced to USEPA 3640 (GPC Cleanup), 8270 GCMS Capiliary column, SIM mode. This method is compliant with NEPM Schedule B(3)

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

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2176 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ Brisbane: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT:	RCA Australia
OFFICE:	92 Hill Street, Carrington
RCA Ref No:	14817
Toongabbie	
PROJECT MANAGER: F Brooker	CONTACT PH: 0408 687 529
SAMPLER: R Lamont	SAMPLER MOBILE: 0401 002 912
COC Emailed to ALS? (YES / NO)	EDD FORMAT (or default):
Email Reports to: administrator@rca.com.au + richiel@rca.com.au, fionab@rca.com.au	
Email Invoice to: as above	

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☑ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: SYBQ_400_17

COC SEQUENCE NUMBER (Circle)
COC: (1) 2 3 4 5 6 7
OF: (1) 2 3 4 5 6 7

FOR LABORATORY USE ONLY [illegible] No N/A [illegible] No N/A [illegible]

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
R Lamont (signature)	Tanzi (signature)		
DATE/TIME: 19/11/20	DATE/TIME: 19/11/20 10:00	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	~~W-[illegible]~~	W-18	BTEX	W-5	Low level PAH				Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	MW1	19/11/2020	W			~~X~~			X	X				
2	MW2	19/11/2020	W			~~X~~			X	X				
3	QA1	19/11/2020	W			~~X~~			X	X				
4	trip spike	17/11/20	W					X						
5	trip blank	17/11/20	W				X							
				TOTAL										

Environmental Division
Sydney
Work Order Reference
ES2040972

Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2040972**

Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Contact	: Grace White
Address	: PO BOX 175 CARRINGTON NSW, AUSTRALIA 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: fionab@rca.com.au	E-mail	: Grace.White@ALSGlobal.com
Telephone	: +61 02 4902 9200	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 4902 9299	Facsimile	: +61-2-8784 8500
Project	: 14817	Page	: 1 of 2
Order number	: ----	Quote number	: ES2017ROBCAR0004 (SYBQ/400/18)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Toongabbie		
Sampler	:		

Dates

Date Samples Received	: 19-Nov-2020 10:00	Issue Date	: 20-Nov-2020
Client Requested Due Date	: 26-Nov-2020	Scheduled Reporting Date	: **26-Nov-2020**

Delivery Details

Mode of Delivery	: Client Drop Off	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 11.5 - Ice present
Receipt Detail	:	No. of samples received / analysed	: 5 / 5

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 (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

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 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EP080 BTEXN	WATER - EP132B(PAH) Ultra Trace Polynuclear Aromatic Compounds	WATER - W-05 TRH/BTEXN/8 Metals	WATER - W-18 TRH(C6 - C9)/BTEXN
ES2040972-001	19-Nov-2020 00:00	MW1		✓	✓	
ES2040972-002	19-Nov-2020 00:00	MW2		✓	✓	
ES2040972-003	19-Nov-2020 00:00	QA1		✓	✓	
ES2040972-004	17-Nov-2020 00:00	trip spike	✓			
ES2040972-005	17-Nov-2020 00:00	trip blank				✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- *AU Certificate of Analysis - NATA (COA)	Email	administrator@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	administrator@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	administrator@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	administrator@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	administrator@rca.com.au
- Chain of Custody (CoC) (COC)	Email	administrator@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	administrator@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	administrator@rca.com.au
- EDI Format - XTab (XTAB)	Email	administrator@rca.com.au

FIONA BROOKER

- *AU Certificate of Analysis - NATA (COA)	Email	fionab@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	fionab@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	fionab@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	fionab@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	fionab@rca.com.au
- Chain of Custody (CoC) (COC)	Email	fionab@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	fionab@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	fionab@rca.com.au
- EDI Format - XTab (XTAB)	Email	fionab@rca.com.au

Richie Lamont

- *AU Certificate of Analysis - NATA (COA)	Email	richiel@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	richiel@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	richiel@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	richiel@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	richiel@rca.com.au
- Chain of Custody (CoC) (COC)	Email	richiel@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	richiel@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	richiel@rca.com.au
- EDI Format - XTab (XTAB)	Email	richiel@rca.com.au

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2104605**	Page	: 1 of 19
Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: ADMIN ADMINISTRATOR	Contact	: Grace White
Address	: PO BOX 175 CARRINGTON NSW, AUSTRALIA 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 2 4902 9200	Telephone	: +61 2 8784 8555
Project	: 14817	Date Samples Received	: 10-Feb-2021 15:48
Order number	: ----	Date Analysis Commenced	: 11-Feb-2021
C-O-C number	: ----	Issue Date	: 17-Feb-2021 15:30
Sampler	: Richie Lamont, ZAC LAUGHLAN		
Site	: ----		
Quote number	: SYBQ/400/18		
No. of samples received	: 19		
No. of samples analysed	: 19		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive 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*
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

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

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS 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) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	S21	S22	S23	S24	S25
			Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit	ES2104605-001	ES2104605-002	ES2104605-003	ES2104605-004	ES2104605-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**15.7**	**1.9**	**1.3**	**1.7**	<1.0
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**24**	**54**	**23**	**26**	**7**
Cadmium	7440-43-9	1	mg/kg	<1	<1	**1**	<1	<1
Chromium	7440-47-3	2	mg/kg	**35**	**50**	**40**	**37**	**26**
Copper	7440-50-8	5	mg/kg	**57**	**62**	**48**	**47**	**71**
Lead	7439-92-1	5	mg/kg	**282**	**68**	**160**	**72**	**24**
Nickel	7440-02-0	2	mg/kg	**21**	**25**	**21**	**18**	**30**
Zinc	7440-66-6	5	mg/kg	**454**	**164**	**172**	**136**	**123**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	**0.1**	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	**0.7**
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	**0.7**
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	**0.7**
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	**0.8**
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	**2.9**
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	**0.7**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S21	S22	S23	S24	S25
				Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit		ES2104605-001	ES2104605-002	ES2104605-003	ES2104605-004	ES2104605-005
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		**140**	**220**	**150**	**410**	**1140**
C29 - C36 Fraction	----	100	mg/kg		**160**	**300**	**180**	**550**	**1310**
^ C10 - C36 Fraction (sum)	----	50	mg/kg		**300**	**520**	**330**	**960**	**2450**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		**260**	**420**	**270**	**780**	**2100**
>C34 - C40 Fraction	----	100	mg/kg		**100**	**230**	**120**	**400**	**800**
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		**360**	**650**	**390**	**1180**	**2900**
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**99.7**	**94.8**	**88.3**	**91.3**	**88.9**
2-Chlorophenol-D4	93951-73-6	0.5	%		**96.7**	**93.0**	**93.2**	**92.0**	**87.2**
2.4.6-Tribromophenol	118-79-6	0.5	%		**96.5**	**80.8**	**78.6**	**88.0**	**77.2**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**108**	**108**	**109**	**106**	**106**
Anthracene-d10	1719-06-8	0.5	%		**105**	**104**	**102**	**101**	**101**
4-Terphenyl-d14	1718-51-0	0.5	%		**106**	**105**	**116**	**105**	**92.5**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**92.4**	**94.3**	**96.3**	**94.5**	**94.7**
Toluene-D8	2037-26-5	0.2	%		**100.0**	**104**	**109**	**108**	**109**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S21	S22	S23	S24	S25
				Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit		ES2104605-001	ES2104605-002	ES2104605-003	ES2104605-004	ES2104605-005
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		**103**	**106**	**108**	**106**	**112**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	S26	S27	S28	QA5	TP1A
			Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit	ES2104605-006	ES2104605-007	ES2104605-008	ES2104605-009	ES2104605-010
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	<1.0	2.1	<1.0	14.9	9.3
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	----	----	No
Asbestos (Trace)	1332-21-4	5	Fibres	----	----	----	----	No
Asbestos Type	1332-21-4	-	--	----	----	----	----	-
Sample weight (dry)	----	0.01	g	----	----	----	----	55.3
APPROVED IDENTIFIER:	----	-	--	----	----	----	----	A. SMYLIE
Synthetic Mineral Fibre	----	0.1	g/kg	----	----	----	----	No
Organic Fibre	----	0.1	g/kg	----	----	----	----	No
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	12	<5	22	6
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	25	30	19	32	11
Copper	7440-50-8	5	mg/kg	54	46	47	48	30
Lead	7439-92-1	5	mg/kg	<5	28	9	226	27
Nickel	7440-02-0	2	mg/kg	19	30	26	19	11
Zinc	7440-66-6	5	mg/kg	38	227	57	350	61
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	----	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	----	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S26	S27	S28	QA5	TP1A
				Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit		ES2104605-006	ES2104605-007	ES2104605-008	ES2104605-009	ES2104605-010
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Endrin	72-20-8	0.05	mg/kg		----	----	----	----	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	----	----	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	----	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg		----	----	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	----	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		----	----	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		----	----	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		----	----	----	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	----	----	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		----	----	----	----	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	----	----	----	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	----	----	----	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		----	----	----	----	<0.2
Dimethoate	60-51-5	0.05	mg/kg		----	----	----	----	<0.05
Diazinon	333-41-5	0.05	mg/kg		----	----	----	----	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	----	----	----	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		----	----	----	----	<0.2
Malathion	121-75-5	0.05	mg/kg		----	----	----	----	<0.05
Fenthion	55-38-9	0.05	mg/kg		----	----	----	----	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	----	----	----	<0.05
Parathion	56-38-2	0.2	mg/kg		----	----	----	----	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	----	----	----	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	----	----	----	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	----	----	----	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		----	----	----	----	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		----	----	----	----	<0.05
Ethion	563-12-2	0.05	mg/kg		----	----	----	----	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		----	----	----	----	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		----	----	----	----	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S26	S27	S28	QA5	TP1A
				Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit		ES2104605-006	ES2104605-007	ES2104605-008	ES2104605-009	ES2104605-010
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<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	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<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	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	**180**	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	**220**	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	**400**	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	**140**	<100	**340**	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	**150**	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	**140**	<50	**490**	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	S26	S27	S28	QA5	TP1A
				Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit		ES2104605-006	ES2104605-007	ES2104605-008	ES2104605-009	ES2104605-010
					Result	Result	Result	Result	Result
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	----	----	----	**75.9**
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	----	----	----	**70.1**
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**94.8**	**93.8**	**95.0**	**91.9**	**86.5**
2-Chlorophenol-D4	93951-73-6	0.5	%		**95.1**	**94.4**	**94.5**	**92.1**	**86.8**
2.4.6-Tribromophenol	118-79-6	0.5	%		**93.7**	**92.5**	**89.2**	**91.7**	**87.5**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**108**	**106**	**107**	**102**	**96.3**
Anthracene-d10	1719-06-8	0.5	%		**109**	**104**	**106**	**101**	**95.8**
4-Terphenyl-d14	1718-51-0	0.5	%		**109**	**107**	**106**	**102**	**96.0**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**91.9**	**94.6**	**93.2**	**88.4**	**90.3**
Toluene-D8	2037-26-5	0.2	%		**101**	**103**	**100**	**97.8**	**101**
4-Bromofluorobenzene	460-00-4	0.2	%		**101**	**107**	**102**	**98.7**	**105**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP2A	TP3A	TP4A	TP4D	TP3D
				Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit		ES2104605-011	ES2104605-012	ES2104605-013	ES2104605-014	ES2104605-015
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		14.2	17.4	14.3	14.1	26.1
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		No	No	No	No	No
Asbestos (Trace)	1332-21-4	5	Fibres		No	No	No	No	No
Asbestos Type	1332-21-4	-	--		-	-	-	-	-
Sample weight (dry)	----	0.01	g		40.9	33.7	32.5	42.0	26.0
APPROVED IDENTIFIER:	----	-	--		A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE
Synthetic Mineral Fibre	----	0.1	g/kg		No	No	No	No	No
Organic Fibre	----	0.1	g/kg		No	No	No	No	No
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		6	7	37	<5	39
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		11	15	36	16	63
Copper	7440-50-8	5	mg/kg		34	21	50	14	63
Lead	7439-92-1	5	mg/kg		30	23	34	12	59
Nickel	7440-02-0	2	mg/kg		13	11	19	8	11
Zinc	7440-66-6	5	mg/kg		58	42	122	18	904
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		----	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		----	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg		----	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg		----	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg		----	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg		----	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg		----	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		----	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		----	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP2A	TP3A	TP4A	TP4D	TP3D
				Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit		ES2104605-011	ES2104605-012	ES2104605-013	ES2104605-014	ES2104605-015
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Endrin	72-20-8	0.05	mg/kg		----	<0.05	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	<0.05	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg		----	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		----	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		----	<0.2	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		----	<0.05	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-29-3	0.05	mg/kg		----	<0.05	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	<0.05	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	<0.05	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		----	<0.2	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		----	<0.05	----	----	----
Diazinon	333-41-5	0.05	mg/kg		----	<0.05	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	<0.05	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		----	<0.2	----	----	----
Malathion	121-75-5	0.05	mg/kg		----	<0.05	----	----	----
Fenthion	55-38-9	0.05	mg/kg		----	<0.05	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	<0.05	----	----	----
Parathion	56-38-2	0.2	mg/kg		----	<0.2	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	<0.05	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	<0.05	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	<0.05	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		----	<0.05	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		----	<0.05	----	----	----
Ethion	563-12-2	0.05	mg/kg		----	<0.05	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		----	<0.05	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		----	<0.05	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP2A	TP3A	TP4A	TP4D	TP3D
				Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit		ES2104605-011	ES2104605-012	ES2104605-013	ES2104605-014	ES2104605-015
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<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	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<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	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	**130**
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	**130**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	**130**
>C34 - C40 Fraction	----	100	mg/kg		<100	**100**	<100	<100	**120**
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	**100**	<50	<50	**250**
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP2A	TP3A	TP4A	TP4D	TP3D
				Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit		ES2104605-011	ES2104605-012	ES2104605-013	ES2104605-014	ES2104605-015
					Result	Result	Result	Result	Result
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	88.0	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	79.0	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		93.5	95.8	95.4	96.5	95.3
2-Chlorophenol-D4	93951-73-6	0.5	%		93.2	91.8	94.3	95.7	93.8
2.4.6-Tribromophenol	118-79-6	0.5	%		94.4	94.4	93.8	95.6	96.4
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		105	106	108	110	108
Anthracene-d10	1719-06-8	0.5	%		103	103	107	108	105
4-Terphenyl-d14	1718-51-0	0.5	%		101	102	104	104	103
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		81.4	80.6	81.7	82.7	75.3
Toluene-D8	2037-26-5	0.2	%		86.6	85.2	84.8	84.0	80.7
4-Bromofluorobenzene	460-00-4	0.2	%		93.5	84.9	85.3	89.5	81.1

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	TP1B	TP2B	TP3B	TP4C	----
			Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	----
Compound	CAS Number	LOR	Unit	ES2104605-016	ES2104605-017	ES2104605-018	ES2104605-019	--------
				Result	Result	Result	Result	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	14.6	19.6	19.5	18.4	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	----
Asbestos (Trace)	1332-21-4	5	Fibres	No	No	No	No	----
Asbestos Type	1332-21-4	-	--	-	-	-	-	----
Sample weight (dry)	----	0.01	g	30.1	32.1	34.5	60.2	----
APPROVED IDENTIFIER:	----	-	--	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE	----
Synthetic Mineral Fibre	----	0.1	g/kg	No	No	No	No	----
Organic Fibre	----	0.1	g/kg	No	No	No	No	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	8	17	5	7	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	----
Chromium	7440-47-3	2	mg/kg	13	28	16	15	----
Copper	7440-50-8	5	mg/kg	42	45	20	40	----
Lead	7439-92-1	5	mg/kg	95	42	22	203	----
Nickel	7440-02-0	2	mg/kg	17	22	10	13	----
Zinc	7440-66-6	5	mg/kg	132	231	55	151	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP1B	TP2B	TP3B	TP4C	----
				Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	----
Compound	CAS Number	LOR	Unit		ES2104605-016	ES2104605-017	ES2104605-018	ES2104605-019	--------
					Result	Result	Result	Result	----
EP068A: Organochlorine Pesticides (OC) - Continued									
Endrin	72-20-8	0.05	mg/kg		<0.05	<0.05	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	<0.05	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg		<0.05	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<0.2	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		<0.05	<0.05	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	<0.05	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	<0.05	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	<0.05	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	<0.2	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		<0.05	<0.05	----	----	----
Diazinon	333-41-5	0.05	mg/kg		<0.05	<0.05	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	<0.05	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	<0.2	----	----	----
Malathion	121-75-5	0.05	mg/kg		<0.05	<0.05	----	----	----
Fenthion	55-38-9	0.05	mg/kg		<0.05	<0.05	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Parathion	56-38-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	<0.05	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	<0.05	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	<0.05	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	<0.05	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	<0.05	----	----	----
Ethion	563-12-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	<0.05	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	<0.05	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	TP1B	TP2B	TP3B	TP4C	----
			Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	----
Compound	CAS Number	LOR	Unit	ES2104605-016	ES2104605-017	ES2104605-018	ES2104605-019	--------
				Result	Result	Result	Result	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<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	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<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	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg	<100	**120**	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	**120**	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	----
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg	<100	**120**	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg	<100	**110**	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	**230**	<50	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP1B	TP2B	TP3B	TP4C	----
				Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	----
Compound	CAS Number	LOR	Unit		ES2104605-016	ES2104605-017	ES2104605-018	ES2104605-019	--------
					Result	Result	Result	Result	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**82.7**	**78.5**	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**89.6**	**65.3**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**96.6**	**92.0**	**90.1**	**89.4**	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**96.1**	**91.5**	**89.1**	**89.0**	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**97.0**	**96.2**	**97.4**	**94.7**	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**109**	**106**	**106**	**106**	----
Anthracene-d10	1719-06-8	0.5	%		**107**	**101**	**102**	**102**	----
4-Terphenyl-d14	1718-51-0	0.5	%		**102**	**101**	**103**	**101**	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**78.3**	**87.6**	**87.1**	**81.3**	----
Toluene-D8	2037-26-5	0.2	%		**83.4**	**97.9**	**90.8**	**79.5**	----
4-Bromofluorobenzene	460-00-4	0.2	%		**87.0**	**96.9**	**93.5**	**81.2**	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	TP1A - 09-Feb-2021 00:00	Mid brown soil.
EA200: Description	TP2A - 09-Feb-2021 00:00	Mid brown soil.
EA200: Description	TP3A - 09-Feb-2021 00:00	Mid brown soil.
EA200: Description	TP4A - 09-Feb-2021 00:00	Mid brown soil.
EA200: Description	TP4D - 09-Feb-2021 00:00	Mid brown soil.
EA200: Description	TP3D - 09-Feb-2021 00:00	Mid brown soil.
EA200: Description	TP1B - 09-Feb-2021 00:00	Mid brown soil.
EA200: Description	TP2B - 09-Feb-2021 00:00	Mid brown soil.
EA200: Description	TP3B - 09-Feb-2021 00:00	Mid brown soil.
EA200: Description	TP4C - 09-Feb-2021 00:00	Mid brown soil.

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
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

Inter-Laboratory Testing

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

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

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2104605**	Page	: 1 of 9
Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: ADMIN ADMINISTRATOR	Contact	: Grace White
Address	: PO BOX 175 CARRINGTON NSW, AUSTRALIA 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 2 4902 9200	Telephone	: +61 2 8784 8555
Project	: 14817	Date Samples Received	: 10-Feb-2021
Order number	: ----	Date Analysis Commenced	: 11-Feb-2021
C-O-C number	: ----	Issue Date	: 17-Feb-2021
Sampler	: Richie Lamont, ZAC LAUGHLAN		
Site	: ----		
Quote number	: SYBQ/400/18		
No. of samples received	: 19		
No. of samples analysed	: 19		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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 Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3508922)									
ES2104605-004	S24	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	37	31	19.4	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	18	14	22.3	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	26	19	31.3	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	47	34	31.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	72	55	26.9	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	136	131	3.67	0% - 20%
ES2104605-014	TP4D	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	16	15	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	8	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	8	49.5	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	14	14	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	22	61.2	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	18	16	13.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3508925)									
ES2104605-002	S22	EA055: Moisture Content	----	0.1	%	1.9	1.6	16.5	No Limit
ES2104605-013	TP4A	EA055: Moisture Content	----	0.1	%	14.3	13.7	3.84	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3508921)									
ES2104100-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2104605-004	S24	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3508923)									
ES2104605-014	TP4D	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3506217)									
ES2104605-010	TP1A	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3506217) - continued									
ES2104605-010	TP1A	EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3506217)									
ES2104605-010	TP1A	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3506218)									
ES2104605-012	TP3A	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
		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 hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES2104605-010	TP1A	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
		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 hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3506023)									
ES2104605-001	S21	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES2104605-011	TP2A	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3506219)									
ES2104605-012	TP3A	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
ES2104605-010	TP1A	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 Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3506023)									
ES2104605-001	S21	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES2104605-011	TP2A	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: 3506219)									
ES2104605-012	TP3A	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
ES2104605-010	TP1A	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: BTEXN (QC Lot: 3506023)									
ES2104605-001	S21	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		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
ES2104605-011	TP2A	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		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

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) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3508922)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	106	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	111	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	117	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	109	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.1 mg/kg	104	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	105	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	85.3	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3508921)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.073 mg/kg	107	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3508923)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.073 mg/kg	96.6	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 3506217)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	86.2	69.0	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	94.3	65.0	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	88.2	67.0	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	86.4	68.0	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	91.9	65.0	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	88.4	67.0	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	93.3	69.0	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	96.2	62.0	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	90.8	63.0	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	85.2	66.0	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	89.9	64.0	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	91.3	66.0	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	83.0	67.0	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	91.4	67.0	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	93.7	69.0	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	89.1	69.0	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	92.9	56.0	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	92.4	62.0	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	94.0	66.0	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	96.7	64.0	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	98.7	54.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3506217)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3506217) - continued								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	84.4	59.0	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	96.2	62.0	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	68.2	54.0	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	102	67.0	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	93.9	70.0	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	92.1	72.0	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	78.0	68.0	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	100	68.0	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	92.6	69.0	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	97.0	76.0	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	102	64.0	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	95.9	70.0	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	91.9	69.0	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	95.5	66.0	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	98.3	68.0	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	89.2	62.0	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	97.3	68.0	120
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	96.3	65.0	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	103	41.0	123
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3506218)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	103	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	103	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	96.9	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	102	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	105	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	109	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	106	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	108	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	104	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	104	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	104	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	106	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	102	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	102	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	102	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	108	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3506023)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	86.1	68.4	128

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report		
					Spike	Spike Recovery (%)	Recovery Limits (%)
				Result	Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3506219)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	90.5	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	97.0	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	101	71.0	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3506023)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	87.0	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3506219)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	94.8	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	98.3	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	97.0	63.0	131
EP080: BTEXN (QCLot: 3506023)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	89.7	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	91.0	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	93.6	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	91.9	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	95.3	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	95.4	63.0	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**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
				Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3508922)							
ES2104492-011	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	96.1	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.6	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	98.6	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	105	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	99.2	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	91.6	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	91.0	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3508921)							
ES2104100-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	85.7	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3508923)							
ES2104605-014	TP4D	EG035T: Mercury	7439-97-6	5 mg/kg	86.0	70.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 3506217)							
ES2104605-010	TP1A	EP068: gamma-BHC	58-89-9	0.5 mg/kg	109	70.0	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	87.6	70.0	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	82.5	70.0	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	85.3	70.0	130
		EP068: Endrin	72-20-8	2 mg/kg	98.4	70.0	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	80.0	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3506217)							
ES2104605-010	TP1A	EP068: Diazinon	333-41-5	0.5 mg/kg	82.8	70.0	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	80.6	70.0	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	74.6	70.0	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	85.9	70.0	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	82.9	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3506218)							
ES2104605-010	TP1A	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	87.9	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	99.4	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3506023)							
ES2104605-001	S21	EP080: C6 - C9 Fraction	----	32.5 mg/kg	96.6	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3506219)							
ES2104605-010	TP1A	EP071: C10 - C14 Fraction	----	523 mg/kg	102	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	111	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	125	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3506023)							
ES2104605-001	S21	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	105	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3506219)							
ES2104605-010	TP1A	EP071: >C10 - C16 Fraction	----	860 mg/kg	101	73.0	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	117	53.0	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	125	52.0	132
EP080: BTEXN (QCLot: 3506023)							
ES2104605-001	S21	EP080: Benzene	71-43-2	2.5 mg/kg	101	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	94.6	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	100	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	95.3	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	98.0	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	92.9	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2104605**	Page	: 1 of 6
Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: ADMIN ADMINISTRATOR	Telephone	: +61 2 8784 8555
Project	: 14817	Date Samples Received	: 10-Feb-2021
Site	: ----	Issue Date	: 17-Feb-2021
Sampler	: Richie Lamont, ZAC LAUGHLAN	No. of samples received	: 19
Order number	: ----	No. of samples analysed	: 19

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.**

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
S21, S22, S23, S24, S25, S26, S27, S28, QA5, TP1A, TP2A, TP3A, TP4A, TP4D, TP3D, TP1B, TP2B, TP3B, TP4C	**09-Feb-2021**	**----**	----	----	**12-Feb-2021**	23-Feb-2021	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200)							
TP1A, TP2A, TP3A, TP4A, TP4D, TP3D, TP1B, TP2B, TP3B, TP4C	**09-Feb-2021**	**----**	----	----	**11-Feb-2021**	08-Aug-2021	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
S21, S22, S23, S24, S25, S26, S27, S28, QA5, TP1A, TP2A, TP3A, TP4A, TP4D, TP3D, TP1B, TP2B, TP3B, TP4C	**09-Feb-2021**	**12-Feb-2021**	08-Aug-2021	✓	**12-Feb-2021**	08-Aug-2021	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
S21, S22, S23, S24, S25, S26, S27, S28, QA5, TP1A, TP2A, TP3A, TP4A, TP4D, TP3D, TP1B, TP2B, TP3B, TP4C	**09-Feb-2021**	**12-Feb-2021**	09-Mar-2021	✓	**15-Feb-2021**	09-Mar-2021	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
TP1A, TP3A, TP1B, TP2B	**09-Feb-2021**	**11-Feb-2021**	23-Feb-2021	✓	**15-Feb-2021**	23-Mar-2021	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068)							
TP1A, TP3A, TP1B, TP2B	**09-Feb-2021**	**11-Feb-2021**	23-Feb-2021	✓	**15-Feb-2021**	23-Mar-2021	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
S21, S22, S23, S24, S25, S26, S27, S28, QA5, TP1A, TP2A, TP3A, TP4A, TP4D, TP3D, TP1B, TP2B, TP3B, TP4C	**09-Feb-2021**	**11-Feb-2021**	23-Feb-2021	✓	**15-Feb-2021**	23-Mar-2021	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
S21, S22, S23, S24, S25, S26, S27, S28, QA5, TP1A, TP2A, TP3A, TP4A, TP4D, TP3D, TP1B, TP2B, TP3B, TP4C	**09-Feb-2021**	**11-Feb-2021**	23-Feb-2021	✓	**15-Feb-2021**	23-Feb-2021	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
S21, S22, S23, S24, S25, S26, S27, S28, QA5, TP1A, TP2A, TP3A, TP4A, TP4D, TP3D, TP1B, TP2B, TP3B, TP4C	**09-Feb-2021**	**11-Feb-2021**	23-Feb-2021	✓	**15-Feb-2021**	23-Feb-2021	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
S21, S22, S23, S24, S25, S26, S27, S28, QA5, TP1A, TP2A, TP3A, TP4A, TP4D, TP3D, TP1B, TP2B, TP3B, TP4C	**09-Feb-2021**	**11-Feb-2021**	23-Feb-2021	✓	**15-Feb-2021**	23-Feb-2021	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	26	**11.54**	**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	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	26	**7.69**	**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	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	26	**7.69**	**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	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	26	**7.69**	**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	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.

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

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2176 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ Brisbane: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT:	RCA Australia	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☑ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):
OFFICE:	92 Hill Street, Carrington		
RCA Ref No:	14817	ALS QUOTE NO.:	SYBQ_400_17
Toongabbie			
PROJECT MANAGER: F Brooker		CONTACT PH: 0408 687 529	
SAMPLER: R Lamont / Z Laughlan		SAMPLER MOBILE: 0401 002 912	
COC Emailed to ALS? (YES / NO)		EDD FORMAT (or default):	
Email Reports to: administrator@rca.com.au + enviro@rca.com.au			
Email Invoice to: as above			

COC SEQUENCE NUMBER (Circle): COC: (1) 2 3 4 5 6 7 — CF: 1 (2) 3 4 5 6 7

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
M.Belk (RCA)			Ward
DATE/TIME: 11/2/21; 3.40 p.m.	DATE/TIME: 10/2/21 15:47	DATE/TIME: 10/2/21 17:00	DATE/TIME: 10/2/21 07:30

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	S-26 (TRH, BTEX, PAH, Metals)	S-21 (TRH, BTEX, PAH, Lead)	S-18	BTEX	Asbestos presence/absence	S-12 OCP/OPP		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	S21	9/2/21	S			X							
2	S22					X							
3	S23					X							
4	S24					X							
5	S25					X							
6	S26					X							
7	S27					X							
8	S28					X							
9	QA5					X							
10	TP1A					X				X	X		
11	TP2A					X				X			
12	TP3A					X				X	X		
				TOTAL									

Caution / Forward Lab / Split WO
Lab / Analysis:
Organised by / Date: Newcastle
Relinquished by / Date: As below
Courier / Courier:
WO No.:
Attach by PO / Internal Sheet

Environmental Division Sydney
Work Order Reference
ES2104605

Telephone : +61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2176 Ph: 02 8784 8555 E: samples.sydney@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph: 02 4968 9433 E: samples.newcastle@alsenviro.com
☐ Brisbane: 32 Shand St, Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsenviro.com
☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT: RCA Australia	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☑ Standard TAT (List due date):	FOR LABORATORY USE ONLY
OFFICE: 92 Hill Street, Carrington		☐ Non Standard or urgent TAT (List due date):	
RCA Ref No: 14817	ALS QUOTE NO.: SYBQ_400_17	COC SEQUENCE NUMBER (Circle)	
Toongabbie		COC: 1 (2) 3 4 5 6 7	
PROJECT MANAGER: F Brooker	CONTACT PH: 0408 687 529	OF: 1 (2) 3 4 5 6 7	

SAMPLER: R Lamont / Z Laughlan	SAMPLER MOBILE: 0401 002 912	RELINQUISHED BY:	RECEIVED BY: [signature]	RELINQUISHED BY: [signature] / RECEIVED BY:
COC Emailed to ALS? (YES / NO)	EDD FORMAT (or default):			
Email Reports to: administrator@rca.com.au + enviro@rca.com.au		DATE/TIME:	DATE/TIME: 10/2/21 15:47	DATE/TIME: 10/2/21 17:00 / DATE/TIME:
Email Invoice to: as above				

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	S-26 (TRH, BTEX, PAH, Metals)	S-21 (TRH, BTEX, PAH, Lead)	S-18	BTEX	Asbestos presence/absence	S-12 OCP/OPP			Additional Information: Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
13	TP4A	9/2/21	S			X				X				
14	TP4D	↓	↓			X				X				
15	TP3D	↓	↓			X				X				
16	TP1B	↓	↓			X				X	X			
17	TP2B	↓	↓			X				X	X			
18	TP3B	↓	↓			X				X				
19	TP4C	↓	↓			X				X				
					TOTAL									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2104605**

Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: ADMIN ADMINISTRATOR	Contact	: Grace White
Address	: PO BOX 175 CARRINGTON NSW, AUSTRALIA 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: administrator@rca.com.au	E-mail	: Grace.White@ALSGlobal.com
Telephone	: +61 2 4902 9200	Telephone	: +61 2 8784 8555
Facsimile	: +61 2 4902 9299	Facsimile	: +61-2-8784 8500
Project	: 14817	Page	: 1 of 3
Order number	: ----	Quote number	: ES2017ROBCAR0004 (SYBQ/400/18)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: Richie Lamont, ZAC LAUGHLAN		

Dates

Date Samples Received	: 10-Feb-2021 15:48	Issue Date	: 11-Feb-2021
Client Requested Due Date	: 17-Feb-2021	Scheduled Reporting Date	: **17-Feb-2021**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: 10.1'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 19 / 19

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.**
- 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 (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

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 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EA200G Asbestos Identification in Soils -	SOIL - S-12 OC/OP Pesticides	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2104605-001	09-Feb-2021 00:00	S21	✓			✓
ES2104605-002	09-Feb-2021 00:00	S22	✓			✓
ES2104605-003	09-Feb-2021 00:00	S23	✓			✓
ES2104605-004	09-Feb-2021 00:00	S24	✓			✓
ES2104605-005	09-Feb-2021 00:00	S25	✓			✓
ES2104605-006	09-Feb-2021 00:00	S26	✓			✓
ES2104605-007	09-Feb-2021 00:00	S27	✓			✓
ES2104605-008	09-Feb-2021 00:00	S28	✓			✓
ES2104605-009	09-Feb-2021 00:00	QA5	✓			✓
ES2104605-010	09-Feb-2021 00:00	TP1A	✓	✓	✓	✓
ES2104605-011	09-Feb-2021 00:00	TP2A	✓	✓		✓
ES2104605-012	09-Feb-2021 00:00	TP3A	✓	✓	✓	✓
ES2104605-013	09-Feb-2021 00:00	TP4A	✓	✓		✓
ES2104605-014	09-Feb-2021 00:00	TP4D	✓	✓		✓
ES2104605-015	09-Feb-2021 00:00	TP3D	✓	✓		✓
ES2104605-016	09-Feb-2021 00:00	TP1B	✓	✓	✓	✓
ES2104605-017	09-Feb-2021 00:00	TP2B	✓	✓	✓	✓
ES2104605-018	09-Feb-2021 00:00	TP3B	✓	✓		✓
ES2104605-019	09-Feb-2021 00:00	TP4C	✓	✓		✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ADMINISTRATOR

- *AU Certificate of Analysis - NATA (COA)	Email	administrator@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	administrator@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	administrator@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	administrator@rca.com.au
- Chain of Custody (CoC) (COC)	Email	administrator@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	administrator@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	administrator@rca.com.au
- EDI Format - XTab (XTAB)	Email	administrator@rca.com.au

ALL INVOICES

- A4 - AU Tax Invoice (INV)	Email	administrator@rca.com.au

ENVIRO

- *AU Certificate of Analysis - NATA (COA)	Email	enviro@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	enviro@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	enviro@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	enviro@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	enviro@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	enviro@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	enviro@rca.com.au
- EDI Format - XTab (XTAB)	Email	enviro@rca.com.au

Appendix H

Summary of Results

Sample Identification	PQL	Guideline [A]						S3	S5	S6	S9	S11	S15	S17	S19	BH1/A	BH1/C	BH2/B	BH2/C
Sample Depth (m) [B]		HSL 'D'			ESL C&I	Non-sensitive ML	DC D	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1.7	3.7	2.7	3.7
Date		SAND 0-<1m	SAND 1-<2m	SAND 2-<4m	Coarse	Coarse		9/11/20	9/11/20	9/11/20	9/11/20	9/11/20	9/11/20	9/11/20	9/11/20	10/11/20	10/11/20	10/11/20	10/11/20
Sample Profile								Fill - Sandy Clay	Fill - Sandy Clay	Fill - Sandy Clay	Fill - Sandy Clay	Fill - Sandy Clay	Fill - Sandy Clay	Fill - Sandy Clay	Fill - Sandy Clay	Silty Shaley Clay	Silty Shaley Clay	Silty Sandy Clay	Sandy Clay
Dominant Stratum [C]								Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand
PID (ppm)								--	--	--	--	--	--	--	--	0.7	4.3	5.2	13.2
Sample Purpose								Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment
Sample collected by								RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)																			
Benzene	0.2	3	3	3	75		430	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	0.5	NL	NL	NL	135		99000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5	NL	NL	NL	165		27000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
meta- and para-Xylene	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	1	230	NL	NL	180		81000	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Polycyclic Aromatic Hydrocarbons (PAH)																			
Naphthalene		NL	NL	NL	370		11000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Recoverable Hydrocarbons (TRH)																			
TRH C_6-C_{10}	10					700	26000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	12
TRH >C_{10}-C_{16}	50				170	1000	20000	<50	<50	<50	<50	<50	90	<50	<50	<50	100	<50	130
TRH >C_{16}-C_{34}	100				1700	3500	27000	<100	140	180	<100	3360	*7760*	570	1280	<100	330	<100	160
TRH >C_{34}-C_{40}	100				3300	10000	38000	<100	130	<100	<100	1410	2720	240	310	<100	<100	<100	<100
F1	10	260	370	630	215			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10.9
F2	50	NL	NL	NL				<50	<50	<50	<50	<50	90	<50	<50	<50	100	<50	130

All results are in units of mg/kg.

Blank Cell indicates no criterion available

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

F1 = TRH C_6-C_{10} minus BTEX. F1 PQL deemed equal TRH C_6-C_{10}.

F2 = TRH >C_{10}-C_{16} minus naphthalene. F2 PQL deemed = TRH >C_{10}-C_{16}.

[A] ASC NEPM 1999 (amended April 2013) Vapour Based Health Screening Levels (HSL) 'D' (Commercial/Industrial)

[A] ASC NEPM 1999 (amended April 2013) Ecological Screening Levels (ESL) C&I (Commercial and Industrial)

[A] ASC NEPM 1999 (amended April 2013) Management Limits (ML) Non-Sensitive Sites (Commercial and Industrial)

[A] CRC Care Technical Report 10, September 2011 Direct Contact (DC) Health Screening Levels 'D' (Commercial/Industrial)

[B] Start of sample, generally over a 0.1m interval

[C] Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented, most conservative criterion used

NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than the solubility capacity for that compound based on a petroleum mixture. Vapour is therefore not a risk for this compound.

Results for TRH have been compared to TPH guidelines.

Presented ESL for naphthalene is an Ecological Investigation Level

ESL are applicable for material at less than 2m depths below finished surface/ground level

For the purpose of the Tier 1 ESL/EIL assessment, all background concentrations are assumed to be zero

ESL for TRH >C_{16}-C_{34} and >C_{34}-C_{40} are low reliability

Results shown in **BOLD** are in excess of the vapour based HSL

Results shown in shading are >250% of the vapour based HSL

Results shown in underline are in excess of the ESL

Results shown in *italics* are in excess of the management limit

Results shown in patterned cells are in excess of the direct contact HSL

Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline [A]						BH3/A	BH3/D	BH4/A	BH4/C	S21	S22	S23	S24	S25	S26	S27	S28
Sample Depth (m) [B]		HSL 'D'			ESL C&I	Non-sensitive ML	DC D	1.7	4.7	1.7	3.7	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Date		SAND 0-<1m	SAND 1-<2m	SAND 2-<4m	Coarse	Coarse		10/11/20	10/11/20	10/11/20	10/11/20	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21
Sample Profile								Silty Sandy Clay	Silty Shaley Clay	Silty Shaley Clay	Silty Shaley Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Gravelly Sand	Gravelly Sand	Gravelly Sand
Dominant Stratum [C]								Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand
PID (ppm)								0.4	1	11.1	1.9	--	--	--	--	--	--	--	--
Sample Purpose								Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment
Sample collected by								RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)																			
Benzene	0.2	3	3	3	75		430	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	0.5	NL	NL	NL	135		99000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5	NL	NL	NL	165		27000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
meta- and para-Xylene	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	1	230	NL	NL	180		81000	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Polycyclic Aromatic Hydrocarbons (PAH)																			
Naphthalene		NL	NL	NL	370		11000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Recoverable Hydrocarbons (TRH)																			
TRH C_6-C_{10}	10					700	26000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
TRH >C_{10}-C_{16}	50				170	1000	20000	<50	<50	180	<50	<50	<50	<50	<50	<50	<50	<50	<50
TRH >C_{16}-C_{34}	100				1700	3500	27000	<100	<100	200	<100	260	420	270	780	2100	<100	140	<100
TRH >C_{34}-C_{40}	100				3300	10000	38000	<100	<100	<100	<100	100	230	120	400	800	<100	<100	<100
F1	10	260	370	630	215			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2	50	NL	NL	NL				<50	<50	180	<50	<50	<50	<50	<50	<50	<50	<50	<50

All results are in units of mg/kg.

Blank Cell indicates no criterion available

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

F1 = TRH C_6-C_{10} minus BTEX. F1 PQL deemed equal TRH C_6-C_{10}.

F2 = TRH >C_{10}-C_{16} minus naphthalene. F2 PQL deemed = TRH >C_{10}-C_{16}.

[A] ASC NEPM 1999 (amended April 2013) Vapour Based Health Screening Levels (HSL) 'D' (Commercial/Industrial)

[A] ASC NEPM 1999 (amended April 2013) Ecological Screening Levels (ESL) C&I (Commercial and Industrial)

[A] ASC NEPM 1999 (amended April 2013) Management Limits (ML) Non-Sensitive Sites (Commercial and Industrial)

[A] CRC Care Technical Report 10, September 2011 Direct Contact (DC) Health Screening Levels 'D' (Commercial/Industrial)

[B] Start of sample, generally over a 0.1m interval

[C] Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented, most conservative criterion used

NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than the solubility capacity for that compound based on a petroleum mixture. Vapour is therefore not a risk for this compound.

Results for TRH have been compared to TPH guidelines.

Presented ESL for naphthalene is an Ecological Investigation Level

ESL are applicable for material at less than 2m depths below finished surface/ground level

For the purpose of the Tier 1 ESL/EIL assessment, all background concentrations are assumed to be zero

ESL for TRH >C_{16}-C_{34} and >C_{34}-C_{40} are low reliability

Results shown in **BOLD** are in excess of the vapour based HSL

Results shown in shading are >250% of the vapour based HSL

Results shown in underline are in excess of the ESL

Results shown in *italics* are in excess of the management limit

Results shown in patterned cells are in excess of the direct contact HSL

Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline [A]						TP1A	TP1B	TP2A	TP2B	TP3A	TP3B	TP3D	TP4A	TP4C	TP4D
Sample Depth (m) [B]		HSL 'D'			ESL C&I	Non-sensitive ML	DC D	0.5	1	0.5	1.1	0.5	1	2	0.5	1.5	2
Date		SAND 0-<1m	SAND 1-<2m	SAND 2-<4m	Coarse	Coarse		9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21
Sample Profile								Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Clay	Clay	Sandy Clay	Sandy Clay	Clay
Dominant Stratum [C]								Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand
PID (ppm)								0	0	0	0	0	0	0	0	0	0
Sample Purpose								Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment
Sample collected by								RCA-ZL	RCA-ZL	RCA-ZL	RCA-ZL	RCA-ZL	RCA-ZL	RCA-ZL	RCA-ZL	RCA-ZL	RCA-ZL
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)																	
Benzene	0.2	3	3	3	75		430	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	0.5	NL	NL	NL	135		99000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5	NL	NL	NL	165		27000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
meta- and para-Xylene	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	0.5							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	1	230	NL	NL	180		81000	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Polycyclic Aromatic Hydrocarbons (PAH)																	
Naphthalene		NL	NL	NL	370		11000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Recoverable Hydrocarbons (TRH)																	
TRH C_6-C_{10}	10					700	26000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
TRH >C_{10}-C_{16}	50				170	1000	20000	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
TRH >C_{16}-C_{34}	100				1700	3500	27000	<100	<100	<100	<100	<100	130	<100	120	<100	<100
TRH >C_{34}-C_{40}	100				3300	10000	38000	<100	<100	100	<100	<100	120	<100	110	<100	<100
F1	10	260	370	630	215			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2	50	NL	NL	NL				<50	<50	<50	<50	<50	<50	<50	<50	<50	<50

All results are in units of mg/kg.

Blank Cell indicates no criterion available

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

F1 = TRH C_6-C_{10} minus BTEX. F1 PQL deemed equal TRH C_6-C_{10}.

F2 = TRH >C_{10}-C_{16} minus naphthalene. F2 PQL deemed = TRH >C_{10}-C_{16}.

[A] ASC NEPM 1999 (amended April 2013) Vapour Based Health Screening Levels (HSL) 'D' (Commercial/Industrial)

[A] ASC NEPM 1999 (amended April 2013) Ecological Screening Levels (ESL) C&I (Commercial and Industrial)

[A] ASC NEPM 1999 (amended April 2013) Management Limits (ML) Non-Sensitive Sites (Commercial and Industrial)

[A] CRC Care Technical Report 10, September 2011 Direct Contact (DC) Health Screening Levels 'D' (Commercial/Industrial)

[B] Start of sample, generally over a 0.1m interval

[C] Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented, most conservative criterion used

NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than the solubility capacity for that compound based on a petroleum mixture. Vapour is therefore not a risk for this compound.

Results for TRH have been compared to TPH guidelines.

Presented ESL for naphthalene is an Ecological Investigation Level

ESL are applicable for material at less than 2m depths below finished surface/ground level

For the purpose of the Tier 1 ESL/EIL assessment, all background concentrations are assumed to be zero

ESL for TRH >C_{16}-C_{34} and >C_{34}-C_{40} are low reliability

Results shown in **BOLD** are in excess of the vapour based HSL

Results shown in shading are >250% of the vapour based HSL

Results shown in underline are in excess of the ESL

Results shown in *italics* are in excess of the management limit

Results shown in patterned cells are in excess of the direct contact HSL

Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline [A]		S3	S5	S6	S9	S11	S15	S17	S19	BH1/A	BH1/C	BH2/B	BH2/C	BH3/A	BH3/D
Sample Depth (m) [B]		HIL 'D'	EIL C&I	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1.7	3.7	2.7	3.7	1.7	4.7
Date				9/11/20	9/11/20	9/11/20	9/11/20	9/11/20	9/11/20	9/11/20	9/11/20	10/11/20	10/11/20	10/11/20	10/11/20	10/11/20	10/11/20
Sample Profile				Fill - Sandy Clay	Fill - Sandy Clay	Fill - Sandy Clay	Fill - Sandy Clay	Fill - Sandy Clay	Fill - Sandy Clay	Fill - Sandy Clay	Fill - Sandy Clay	Silty Shaley Clay	Silty Shaley Clay	Silty Sandy Clay	Sandy Clay	Silty Sandy Clay	Silty Shaley Clay
Sample Purpose				Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment
Sample collected by				RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL
Polycyclic Aromatic Hydrocarbons (PAH)																	
Naphthalene	0.5		370	<0.5	<0.5	<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	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	0.5			<0.5	<0.5	<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	0.5			<0.5	<0.5	<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	0.5			<0.5	<0.5	<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	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	0.5			<0.5	0.8	<0.5	<0.5	<0.5	<0.5	1.3	1.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	0.5			<0.5	0.8	<0.5	<0.5	<0.5	<0.5	2.8	1.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.1	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)&(j)fluoranthene	0.5			<0.5	0.7	<0.5	<0.5	<0.5	<0.5	5.2	1.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	0.5			<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	<0.5
Benzo(a) pyrene	0.5		1.4	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	1.9	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	0.5			<0.5	<0.5	<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	0.5			<0.5	0.6	<0.5	<0.5	<0.5	<0.5	1.2	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carcinogenic PAH (B(a)P equivalent)	1.21	40		0.605	1.0035	0.605	0.605	0.605	0.605	3.153	1.794	0.605	0.605	0.605	0.605	0.605	0.605
Sum of reported PAH	8	4000		4	6.25	4	4	4	4	25.15	11.4	4	4	4	4	4	4
Metals																	
Arsenic	5	3000	160	11	11	20	14	31	13	19	14	<5	<5	<5	<5	<5	<5
Cadmium	1	900		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	3600	310	21	17	30	27	24	31	30	31	<2	6	3	5	<2	6
Copper	5	240000	400	31	44	61	36	79	62	52	37	8	55	20	34	6	41
Mercury	0.1	730		<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
Lead	5	1500	1800	37	20	37	102	89	45	96	37	14	28	21	23	12	25
Nickel	2	6000	55	15	27	42	20	33	53	31	25	<2	24	<2	22	<2	28
Zinc	5	400000	360	126	101	173	172	447	606	332	136	<5	76	9	82	5	88
Organochlorine Pesticides (OCP)																	
alpha-BHC	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
HCB	0.05	10		--	--	--	--	--	--	--	--	--	--	--	--	--	--
b-BHC	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
g-BHC (Lindane)	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
d-BHC	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Heptachlor	0.05	6		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aldrin	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Heptachlor epoxide	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
trans-Chlordane	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
alpha-Endosulfan	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-Chlordane	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dieldrin	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
DDE	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Endrin	0.05	10		--	--	--	--	--	--	--	--	--	--	--	--	--	--
beta-Endosulfan	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
DDD	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Endrin Aldehyde	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Endosulfan sulfate	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--

Sample Identification	PQL	Guideline [A]		BH4/A	BH4/C	A1	A2	A3	S21	S22	S23	S24	S25	S26	S27	S28	TP1A
Sample Depth (m) [B]		HIL 'D'	EIL C&I	1.7	3.7	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.5
Date				10/11/20	10/11/20	10/11/20	10/11/20	10/11/20	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21
Sample Profile				Silty Shaley Clay	Silty Shaley Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Gravelly Sand	Gravelly Sand	Gravelly Sand	Sandy Clay
Sample Purpose				Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment
Sample collected by				RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL	RCA-ZL
Polycyclic Aromatic Hydrocarbons (PAH)																	
Naphthalene	0.5		370	<0.5	<0.5	--	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	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	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	0.5			0.6	<0.5	--	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	0.5			1	<0.5	--	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	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	0.5			<0.5	<0.5	--	--	--	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<0.5	<0.5
Pyrene	0.5			<0.5	<0.5	--	--	--	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	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	0.5			<0.5	<0.5	--	--	--	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<0.5	<0.5
Benzo(b)&(j)fluoranthene	0.5			<0.5	<0.5	--	--	--	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	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	0.5		1.4	<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	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	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	0.5			<0.5	<0.5	--	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carcinogenic PAH (B(a)P equivalent)	1.21	40		0.605	0.605	--	--	--	0.605	0.605	0.605	0.605	0.6645	0.605	0.605	0.605	0.605
Sum of reported PAH	8	4000		5.1	4	--	--	--	4	4	4	4	5.9	4	4	4	4
Metals																	
Arsenic	5	3000	160	<5	6	--	--	--	24	54	23	26	7	<5	12	<5	6
Cadmium	1	900		<1	<1	--	--	--	<1	<1	1	<1	<1	<1	<1	<1	<1
Chromium	2	3600	310	5	6	--	--	--	35	50	40	37	26	25	30	19	11
Copper	5	240000	400	10	34	--	--	--	57	62	48	47	71	54	46	47	30
Mercury	0.1	730		<0.1	<0.1	--	--	--	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead	5	1500	1800	13	18	--	--	--	282	68	160	72	24	<5	28	9	27
Nickel	2	6000	55	<2	44	--	--	--	21	25	21	18	30	19	30	26	11
Zinc	5	400000	360	<5	166	--	--	--	454	164	172	136	123	38	227	57	61
Organochlorine Pesticides (OCP)																	
alpha-BHC	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
HCB	0.05	10		--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
b-BHC	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
g-BHC (Lindane)	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
d-BHC	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Heptachlor	0.05	6		--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Aldrin	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Heptachlor epoxide	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
trans-Chlordane	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
alpha-Endosulfan	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
cis-Chlordane	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Dieldrin	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
DDE	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Endrin	0.05	10		--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
beta-Endosulfan	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
DDD	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Endrin Aldehyde	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Endosulfan sulfate	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05

Sample Identification	PQL	Guideline [A]		TP1B	TP2A	TP2B	TP3A	TP3B	TP3D	TP4A	TP4C	TP4D
Sample Depth (m) [B]		HIL 'D'	EIL C&I	1	0.5	1.1	0.5	1	2	0.5	1.5	2
Date				9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21
Sample Profile				Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Clay	Clay	Sandy Clay	Sandy Clay	Clay
Sample Purpose				Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment
Sample collected by				RCA-ZL	RCA-ZL	RCA-ZL	RCA-ZL	RCA-ZL	RCA-ZL	RCA-ZL	RCA-ZL	RCA-ZL
Polycyclic Aromatic Hydrocarbons (PAH)												
Naphthalene	0.5		370	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)&(j)fluoranthene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a) pyrene	0.5		1.4	<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	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	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	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carcinogenic PAH (B(a)P equivalent)	1.21	40		0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605
Sum of reported PAH	8	4000		4	4	4	4	4	4	4	4	4
Metals												
Arsenic	5	3000	160	6	7	37	<5	39	8	17	5	7
Cadmium	1	900		<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	3600	310	11	15	36	16	63	13	28	16	15
Copper	5	240000	400	34	21	50	14	63	42	45	20	40
Mercury	0.1	730		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lead	5	1500	1800	30	23	34	12	59	95	42	22	203
Nickel	2	6000	55	13	11	19	8	11	17	22	10	13
Zinc	5	400000	360	58	42	122	18	904	132	231	55	151
Organochlorine Pesticides (OCP)												
alpha-BHC	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
HCB	0.05	10		<0.05	--	<0.05	<0.05	--	--	--	--	--
b-BHC	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
g-BHC (Lindane)	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
d-BHC	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Heptachlor	0.05	6		<0.05	--	<0.05	<0.05	--	--	--	--	--
Aldrin	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Heptachlor epoxide	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
trans-Chlordane	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
alpha-Endosulfan	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
cis-Chlordane	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Dieldrin	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
DDE	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Endrin	0.05	10		<0.05	--	<0.05	<0.05	--	--	--	--	--
beta-Endosulfan	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
DDD	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Endrin Aldehyde	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Endosulfan sulfate	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--

Sample Identification	PQL	Guideline [A]		S3	S5	S6	S9	S11	S15	S17	S19	BH1/A	BH1/C	BH2/B	BH2/C	BH3/A	BH3/D
Sample Depth (m) [B]		HIL 'D'	EIL C&I	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1.7	3.7	2.7	3.7	1.7	4.7
Date				9/11/20	9/11/20	9/11/20	9/11/20	9/11/20	9/11/20	9/11/20	9/11/20	10/11/20	10/11/20	10/11/20	10/11/20	10/11/20	10/11/20
DDT	0.2		180	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Endrin Ketone	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methoxychlor	0.2	300		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlordane (cis + trans)	0.1	50		--	--	--	--	--	--	--	--	--	--	--	--	--	--
DDT+DDD+DDE	0.3	240		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aldrin + Dieldrin	0.1	6		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Endosulfan (aplha+beta)	0.1	270		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Organophosphorous Pesticides (OPP)																	
Chlorpyrifos	0.05	160		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dichlorvos	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Demeton-S-methyl	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Monocrotophos	0.2			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dimethoate	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Diazinon	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Parathion-methyl	0.2			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Malathion	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fenthion	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorpyrifos	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Parathion	0.2			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pirimphos-ethyl	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorfenvinphos	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromophos-ethyl	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fenamiphos	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Prothiofos	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethion	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbophenothion	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Azinphos Methyl	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	--
Asbestos																	
Detected Asbestos Weight Sample weight				--	--	--	--	--	--	--	--	--	--	--	--	--	--

All results are in units of mg/kg, except for asbestos.

Blank Cell indicates no criterion available

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

[A] ASC NEPM 1999 (amended April 2013) Health Investigation Levels (HIL) 'D' (Commercial/Industrial).

[A] ASC NEPM 1999 (amended April 2013) Ecological Investigation Levels (EIL) C&I (Commercial and Industrial).

[B] Start of sample, generally over a 0.1m interval

The Carcinogenic PAH value is calculated by multiplying the concentration of each of the 8 carcinogenic PAH compounds by its B(a)P toxic equivalence factor and summing these products.

HIL for Chromium are for Chromium VI

Presented ecological value for benzo(a)pyrene is a low reliability Ecological Screening Level

ESL are applicable for material at less than 2m depths below finished surface/ground level

For the purpose of the Tier 1 ESL/EIL assessment, all background concentrations are assumed to be zero

EIL for Naphthalene are for fresh (<2years) Naphthalene

EIL for Arsenic are for aged (>2years) Arsenic

EIL for Chromium are the added contaminant limit for aged (>2years) Chromium III in soils of 1% clay, the most conservative of the criteria.

EIL for Copper are the added contaminant limit for aged (>2years) Copper in soils of pH 6.5.

EIL for Lead are the added contaminant limit for aged (>2years) Lead.

EIL for Nickel are the added contaminant limit for aged (>2years) Nickel in soils of 5% CEC the most conservative of the criteria.

EIL for Zinc are the added contaminant limit for aged (>2years) Zinc in soils of 5% CEC and pH of 6.5, the most conservative of the criteria at pH 6.5.

EIL for DDT are for fresh (<2years) DDT

EIL for DDT are for fresh (<2years) DDT

Results shown in **BOLD** are in excess of the HIL

Results shown in shading are >250% of the HIL

Results shown in underline are in excess of EIL

Where summation required (PAH, OCP) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline [A]		BH4/A	BH4/C	A1	A2	A3	S21	S22	S23	S24	S25	S26	S27	S28	TP1A
Sample Depth (m) [B]		HIL 'D'	EIL C&I	1.7	3.7	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.5
Date				10/11/20	10/11/20	10/11/20	10/11/20	10/11/20	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21
DDT	0.2		180	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.2
Endrin Ketone	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Methoxychlor	0.2	300		--	--	--	--	--	--	--	--	--	--	--	--	--	<0.2
Chlordane (cis + trans)	0.1	50		--	--	--	--	--	--	--	--	--	--	--	--	--	0.05
DDT+DDD+DDE	0.3	240		--	--	--	--	--	--	--	--	--	--	--	--	--	0.15
Aldrin + Dieldrin	0.1	6		--	--	--	--	--	--	--	--	--	--	--	--	--	0.05
Endosulfan (aplha+beta)	0.1	270		--	--	--	--	--	--	--	--	--	--	--	--	--	0.05
Organophosphorous Pesticides (OPP)																	
Chlorpyrifos	0.05	160		--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Dichlorvos	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Demeton-S-methyl	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.2
Monocrotophos	0.2			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Dimethoate	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Diazinon	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Parathion-methyl	0.2			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.2
Malathion	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Fenthion	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Chlorpyrifos	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Parathion	0.2			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.2
Pirimphos-ethyl	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Chlorfenvinphos	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Bromophos-ethyl	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Fenamiphos	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Prothiofos	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Ethion	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Carbophenothion	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Azinphos Methyl	0.05			--	--	--	--	--	--	--	--	--	--	--	--	--	<0.05
Asbestos																	
Detected Asbestos Weight Sample weight				--	--	Nil detected 25.4g	Nil detected 24.2g	Nil detected 33.6g	--	--	--	--	--	--	--	--	Nil detected 55.3g

All results are in units of mg/kg, except for asbestos.

Blank Cell indicates no criterion available

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

[A] ASC NEPM 1999 (amended April 2013) Health Investigation Levels (HIL) 'D' (Commercial/Industrial).

[A] ASC NEPM 1999 (amended April 2013) Ecological Investigation Levels (EIL) C&I (Commercial and Industrial).

[B] Start of sample, generally over a 0.1m interval

The Carcinogenic PAH value is calculated by multiplying the concentration of each of the 8 carcinogenic PAH compounds by its B(a)P toxic equivalence factor and summing these products.

HIL for Chromium are for Chromium VI

Presented ecological value for benzo(a)pyrene is a low reliability Ecological Screening Level

ESL are applicable for material at less than 2m depths below finished surface/ground level

For the purpose of the Tier 1 ESL/EIL assessment, all background concentrations are assumed to be zero

EIL for Naphthalene are for fresh (<2years) Naphthalene

EIL for Arsenic are for aged (>2years) Arsenic

EIL for Chromium are the added contaminant limit for aged (>2years) Chromium III in soils of 1% clay, the most conservative of the criteria.

EIL for Copper are the added contaminant limit for aged (>2years) Copper in soils of pH 6.5.

EIL for Lead are the added contaminant limit for aged (>2years) Lead.

EIL for Nickel are the added contaminant limit for aged (>2years) Nickel in soils of 5% CEC the most conservative of the criteria.

EIL for Zinc are the added contaminant limit for aged (>2years) Zinc in soils of 5% CEC and pH of 6.5, the most conservative of the criteria at pH 6.5.

EIL for DDT are for fresh (<2years) DDT

EIL for DDT are for fresh (<2years) DDT

Results shown in **BOLD** are in excess of the HIL

Results shown in shading are >250% of the HIL

Results shown in underline are in excess of EIL

Where summation required (PAH, OCP) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline [A]		TP1B	TP2A	TP2B	TP3A	TP3B	TP3D	TP4A	TP4C	TP4D
Sample Depth (m) [B]		HIL 'D'	EIL C&I	1	0.5	1.1	0.5	1	2	0.5	1.5	2
Date				9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21
DDT	0.2		180	<0.2	--	<0.2	<0.2	--	--	--	--	--
Endrin Ketone	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Methoxychlor	0.2	300		<0.2	--	<0.2	<0.2	--	--	--	--	--
Chlordane (cis + trans)	0.1	50		0.05	--	0.05	0.05	--	--	--	--	--
DDT+DDD+DDE	0.3	240		0.15	--	0.15	0.15	--	--	--	--	--
Aldrin + Dieldrin	0.1	6		0.05	--	0.05	0.05	--	--	--	--	--
Endosulfan (aplha+beta)	0.1	270		0.05	--	0.05	0.05	--	--	--	--	--
Organophosphorous Pesticides (OPP)												
Chlorpyrifos	0.05	160		<0.05	--	<0.05	<0.05	--	--	--	--	--
Dichlorvos	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Demeton-S-methyl	0.05			<0.2	--	<0.2	<0.2	--	--	--	--	--
Monocrotophos	0.2			<0.05	--	<0.05	<0.05	--	--	--	--	--
Dimethoate	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Diazinon	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Parathion-methyl	0.2			<0.2	--	<0.2	<0.2	--	--	--	--	--
Malathion	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Fenthion	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Chlorpyrifos	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Parathion	0.2			<0.2	--	<0.2	<0.2	--	--	--	--	--
Pirimphos-ethyl	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Chlorfenvinphos	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Bromophos-ethyl	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Fenamiphos	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Prothiofos	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Ethion	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Carbophenothion	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Azinphos Methyl	0.05			<0.05	--	<0.05	<0.05	--	--	--	--	--
Asbestos												
Detected Asbestos Weight Sample weight				Nil detected 40.9g	Nil detected 33.7g	Nil detected 32.5g	Nil detected 42g	Nil detected 26g	Nil detected 30.1g	Nil detected 32.1g	Nil detected 34.5g	Nil detected 60.2g

All results are in units of mg/kg, except for asbestos.

Blank Cell indicates no criterion available

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

[A] ASC NEPM 1999 (amended April 2013) Health Investigation Levels (HIL) 'D' (Commercial/Industrial).

[A] ASC NEPM 1999 (amended April 2013) Ecological Investigation Levels (EIL) C&I (Commercial and Industrial).

[B] Start of sample, generally over a 0.1m interval

The Carcinogenic PAH value is calculated by multiplying the concentration of each of the 8 carcinogenic PAH compounds by its B(a)P toxic equivalence factor and summing these products.

HIL for Chromium are for Chromium VI

Presented ecological value for benzo(a)pyrene is a low reliability Ecological Screening Level

ESL are applicable for material at less than 2m depths below finished surface/ground level

For the purpose of the Tier 1 ESL/EIL assessment, all background concentrations are assumed to be zero

EIL for Naphthalene are for fresh (<2years) Naphthalene

EIL for Arsenic are for aged (>2years) Arsenic

EIL for Chromium are the added contaminant limit for aged (>2years) Chromium III in soils of 1% clay, the most conservative of the criteria.

EIL for Copper are the added contaminant limit for aged (>2years) Copper in soils of pH 6.5.

EIL for Lead are the added contaminant limit for aged (>2years) Lead.

EIL for Nickel are the added contaminant limit for aged (>2years) Nickel in soils of 5% CEC the most conservative of the criteria.

EIL for Zinc are the added contaminant limit for aged (>2years) Zinc in soils of 5% CEC and pH of 6.5, the most conservative of the criteria at pH 6.5.

EIL for DDT are for fresh (<2years) DDT

EIL for DDT are for fresh (<2years) DDT

Results shown in **BOLD** are in excess of the HIL

Results shown in shading are >250% of the HIL

Results shown in underline are in excess of EIL

Where summation required (PAH, OCP) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Human Health (Vapour Based) Guideline [A]		MMW1	MMW2	MW1	MW2
Sample Depth (m) [B]		HSL 'D'		4	4	4	2
Date		SAND 2-<4m	SAND 4-<8m	11/11/20	9/11/20	19/11/20	19/11/20
Sample Description				Brown, turbid, no odour, no sheen	Clear, no odour, no sheen	Clear, no odour, no sheen	Brown, turbid, hydrocarbon odour, slight hydrocarbon sheen
Dominant Stratum [C]				Clay	Clay	Clay	Clay
Sample Purpose				Assessment	Assessment	Assessment	Assessment
Sample collected by				RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)							
Benzene	1	5000	5000	<1	<1	<1	1
Toluene	2	NL	NL	<2	<2	<2	<2
Ethylbenzene	2	NL	NL	<2	<2	<2	<2
meta- and para-Xylene	2			<2	<2	<2	<2
ortho-Xylene	2			<2	<2	<2	<2
Total Xylenes	4	NL	NL	2	2	2	2
Polycyclic Aromatic Hydrocarbons (PAH)							
Naphthalene	5	NL	NL	<5	<5	<5	14
Total Recoverable Hydrocarbons (TRH)							
TRH C_6-C_{10}	20			<20	<20	<20	220
TRH >C_{10}-C_{16}	100			100	<100	<100	2120
TRH >C_{16}-C_{34}	100			<100	<100	<100	1610
TRH >C_{34}-C_{40}	100			<100	<100	<100	<100
F1	20	6000	6000	<20	<20	<20	215
F2	100	NL	NL	<100	<100	<50	2106

All results are in units of μg/L

Blank Cell indicates no criterion available

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

F1 = TRH C_6-C_{10} minus BTEX. F1 PQL deemed equal TRH C_6-C_{10}.

F2 = TRH >C_{10}-C_{16} minus naphthalene. F2 PQL deemed = TRH >C_{10}-C_{16}.

[A] ASC NEPM 1999 (as amended 2013) Vapour Based Health Screening Level (HSL) 'D' (Commercial/Industrial)

[B] Sample depths presented are as encountered prior to commencement of sampling

[C] Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented, most conservative criterion used

NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than the solubility capacity for that compound based on a petroleum mixture. Vapour is therefore not a risk for this compound.

Results for TRH have been compared to TPH guidelines.

Results shown in shading are in excess of the HSL

Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Aquatic Ecosystem Guideline [A]		Human Health (Ingestion) Guideline [B]	MMW1	MMW2	MW1	MW2
Sample Depth (m) [C]		99% Fresh	95% Fresh		4	4	4	2
Date					11/11/20	9/11/20	19/11/20	19/11/20
Sample Description					Brown, turbid, no odour, no sheen	Clear, no odour, no sheen	Clear, no odour, no sheen	Brown, turbid, hydrocarbon odour, slight hydrocarbon sheen
Sample Purpose					Assessment	Assessment	Assessment	Assessment
Sample collected by					RCA - RJL	RCA - RJL	RCA - RJL	RCA - RJL
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)								
Benzene	1		950	1	<1	<1	<1	1
Toluene	2		*180*	800	<2	<2	<2	<2
Ethylbenzene	2		*80*	300	<2	<2	<2	<2
meta- and para-Xylene	2		*275*		<2	<2	<2	<2
ortho-Xylene	2		350		<2	<2	<2	<2
Total Xylenes	4			600	2	2	2	2
Total Recoverable Hydrocarbons (TRH)								
TRH C_6-C_{10}	20				<20	<20	<20	220
TRH >C_{10}-C_{16}	100				100	<100	<100	2120
TRH >C_{16}-C_{34}	100				<100	<100	<100	1610
TRH >C_{34}-C_{40}	100				<100	<100	<100	<100
TRH C_6-C_{40}	320		*7*		**210**	160	160	**4000**
Polycyclic Aromatic Hydrocarbons (PAH)								
Naphthalene	0.1		16		<0.1	<0.1	<0.1	7.9
Acenaphthylene	0.1				<0.1	<0.1	<0.1	<0.1
Acenaphthene	0.1				<0.1	<0.1	<0.1	1.1
Fluorene	0.1				<0.1	<0.1	<0.1	3.5
Phenanthrene[D]	0.1	*0.6*			<0.1	<0.1	<0.1	3.4
Anthracene[D]	0.1	*0.01*			<0.1	<0.1	<0.1	<0.1
Fluoranthene[D]	0.1	*1*			<0.1	<0.1	<0.1	0.1
Pyrene	0.1				<0.1	<0.1	<0.1	0.3
Benz(a)anthracene	0.1				<0.1	<0.1	<0.1	<0.1
Chrysene	0.1				<0.1	<0.1	<0.1	<0.1
Benzo(b)&(j)fluoranthene	0.1				<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	0.1				<0.1	<0.1	<0.1	<0.1
Benzo(a) pyrene[D]	0.05	*0.1*		0.01	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	0.1				<0.1	<0.1	<0.1	<0.1
Dibenz(a,h)anthracene	0.1				<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	0.1				<0.1	<0.1	<0.1	<0.1
Metals								
Arsenic	1		13	10	<1	<1	<1	3
Cadmium	1		0.2	2	0.2	<0.1	0.13	<0.1
Chromium	1		1	50	<1	<1	<1	<1
Copper	1		1.4	2000	**2**	<1	**3**	<1
Lead	0.1		3.4	10	<0.1	<0.1	<0.1	<0.1
Mercury[D]	1	0.06		1	<1	<1	<1	<1
Nickel	1		11		**117**	3	**71**	**12**
Zinc	5		8		**212**	**15**	**164**	**14**

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

All results are in units of μg/L

Blank Cell indicates no criterion available

[A] % Protection Level for Receiving Water Type.

[B] Australian Drinking Water Guidelines.

[C] Sample depths presented are as encountered prior to commencement of sampling

[D] Bioaccummulative Compounds

Ecological guidelines in *italics* are low level reliability guidelines

Ecological arsenic guideline based on As (V) for fresh, the lowest of presented criteria Drinking water guidelines are based on total arsenic

Guidelines for chromium are based on Cr (VI)

Ecological guidelines for mercury are based on inorganic mercury. Drinking Water guidelines for mercury are based on total mercury.

Results for TRH have been compared to TPH guidelines.

Results shown in shading are in excess of the 99% aquatic ecosystems guidelines

Results shown in **BOLD** are in excess of the 99% aquatic ecosystems guidelines

Results shown in underline are in excess of the human health (ingestion) guideline

Where summation required (Xylene,TRH,PAH) calculation includes components reported as non detected as 1/2 PQL.

RCA Australia (2021b) UPST Validation Report: 57 Station Road, Toongabbie, NSW ref:14817 – 401/1.

UPST VALIDATION REPORT
57 STATION ROAD, TOONGABBIE

Prepared for John M Fraser Pty Ltd

Prepared by RCA Australia

RCA ref 14817-404/0

MARCH 2021

DRAFT

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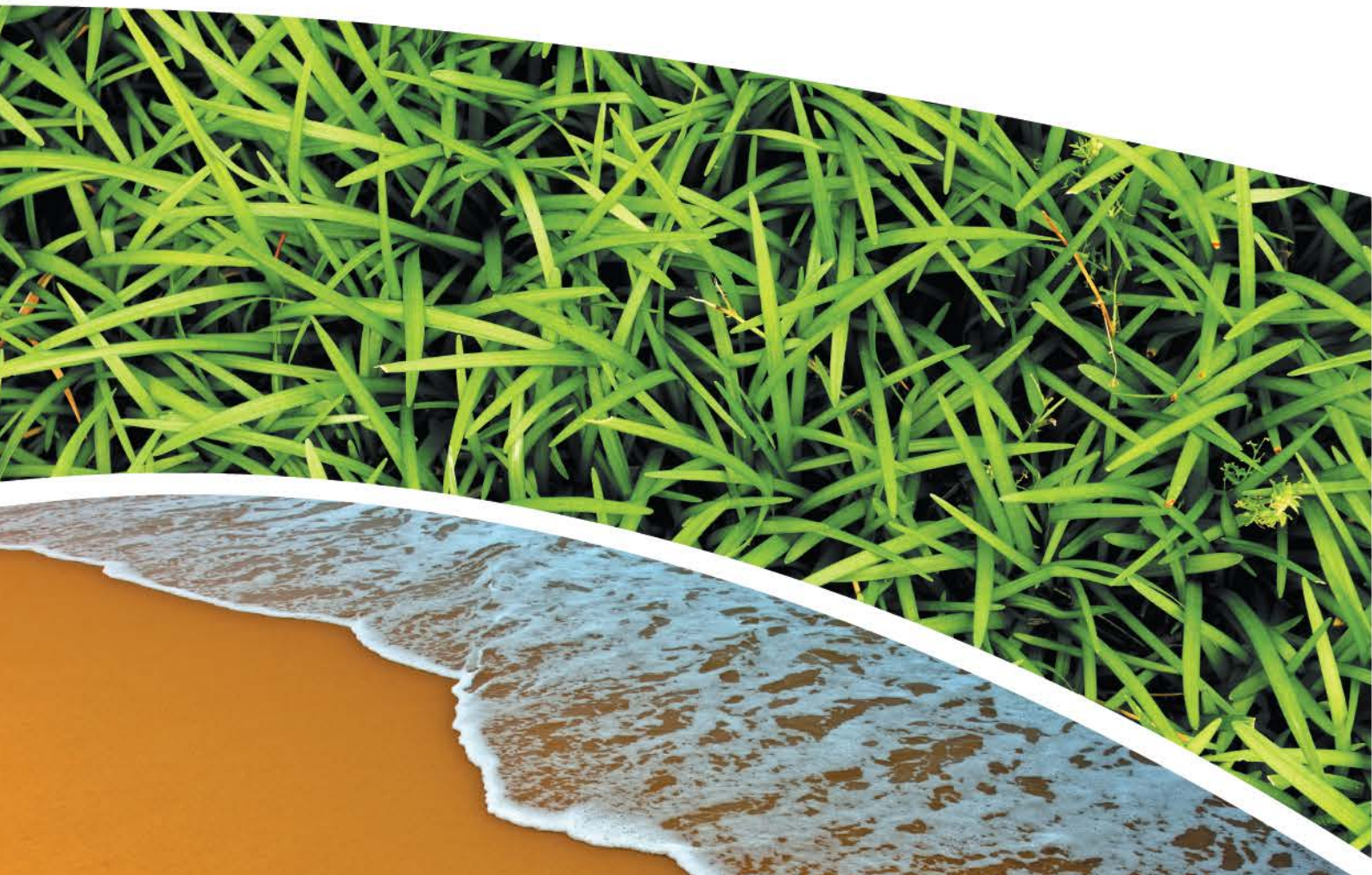

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RCA ref 14817-404/0

12 March 2021

John M Fraser Pty Ltd
57 Station Road
TOONGABBIE NSW 2146

Attention: Mr John Fraser

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UPST VALIDATION REPORT
57 STATION ROAD, TOONGABBIE NSW

EXECUTIVE SUMMARY

This validation report has presented the observations and results of sampling undertaken for the validation of the removal of three (3) underground petroleum storage tanks (UPST) at 57 Station Road, Toongabbie (herein referred to as the 'site').

In October 2007 a Phase 1 and Phase 2 environmental site assessment was undertaken by RCA (Ref [2]). The 2007 assessment concluded that the site was suitable for ongoing use however as the site is currently being processed for sale an update in the assessment was required due to the significant lapse in time and to account for the changes in operation at the site.

RCA completed an updated Phase 2 environmental site assessment in November 2020 (Ref [3]). The updated assessment concluded that the baseline conditions at the site were suitable for the continued commercial/industrial use without formal management or remediation, noting that the management of the UPST area must be undertaken in accordance with the Regulations (Ref [4]). The report recommended the decommissioning of the UPST in accordance with the requirements of the Regulations (Ref [4]) prior to redevelopment or in the event that the UPST are not required for use at the site. The report also identified two (2) surface soil locations within the south eastern portion of the site with hydrocarbon contamination due to minor spill/leaks from vehicle engines. These were not considered to impact on the suitability of the use of the site.

The site is currently occupied for commercial / industrial purpose by a non-operational timber mill and waste management solution storage facility for vehicles and bins.

The potential for contamination, based on the review of previous assessments (Ref [2] and Ref [3]) and the preliminary conceptual site model was limited to the presence of UPST located in the southern portion of the site and the two (2) previously identified surface soil locations.

All soil concentrations from samples collected within the UPST area were below the relevant human health and ecological guidelines. No samples were collected from the surface scrapes however there was an absence of visual staining within the underlying soil material. It is considered that the contamination at both locations was limited to the surface material only and as such the observed absence of staining below this material is sufficient verification of the removal of the contamination.

No further groundwater sampling was undertaken as part of the validation however it is expected that the previous concentrations of hydrocarbons, which were below the vapour based human health criteria and not considered to pose a risk to the environment (Blacktown Creek), and will decrease following the removal of the UPST and the contaminated soil which had been situated within the pits. It is noted that the metals concentrations identified within the groundwater (Ref [3]) are considered to be related to regional groundwater quality and not associated with potential contamination at the site.

Documentation of wastes exported from and material imported to the site as part of the works has been undertaken by the UPST removal contractor (Action Installation & Services). RCA has reviewed these documents and consider these to be consistent with documentation and discussions undertaken during the tank decommissioning and subsequent earthworks period. All waste appears to have been disposed of in accordance with NSW waste legislative requirements.

Based on the results and observations of the validation works by RCA and previous conclusions on the state of groundwater at the site RCA considers that the UPST has been appropriately decommissioned and that the site is suitable for continued commercial/industrial use.

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SUMMARY OF RESULTS

1 INTRODUCTION

This report presents the findings of validation works undertaken at 57 Station Road, Toongabbie.

The validation works have been undertaken as part of the removal process for three (3) underground petroleum storage tanks (UPST) located at the site. The removal of the UPST was undertaken as the proposed purchaser of the site did not require the UPST to be retained on site and was considered to be Category 2 remediation works under the SEPP – Remediation of Land (Ref [1]).

Previous assessments undertaken at the site (Ref [2] and Ref [3]) described the location of two (2) UPST positioned near the existing office buildings. One (1) UPST was a 16,000L (herein referred to as 'Tank 1') utilised for the storage of diesel and the other was a 16,000L (herein referred to as 'Tank 2') utilised for the storage of unleaded fuel. Two (2) bowers were also located near the tanks (Ref [2]) along with dip points, pipes and ventilation infrastructure (Ref [3]). An additional UPST (10,000L) was identified (herein referred to as 'Tank 3') beneath a concrete hardstand during the decommissioning works. It is noted that it RCA are not aware of whether the additional storage tank was utilised for the storage of diesel or unleaded fuel.

A previous assessment (Ref [3]) further identified the presence of hydrocarbon contamination within surface soils in the south eastern portion of the site: while these concentrations were not considered to pose a significant risk for continued commercial use of the site, the prospective purchaser requested that this material be removed and this was undertaken concurrently with the decommissioning works.

This validation report has been prepared at the request of Mr John M Fraser, the current owner of the site, and has been prepared in accordance with the requirements of the Regulations (Ref [4]).

1.1 OBJECTIVES

The objectives of the decommissioning and associated remediation works were to reduce / mitigate the potential risk to human health and the environment posed by the presence of the UPST and contaminated backfill sands.

1.2 SCOPE OF WORKS

The scope of work for the validation comprised:

- Liaison with Action Install & Services (AIS) personnel during excavation and removal of the UPST. AIS was appointed by the site owner to undertake the decommissioning works.
- Collection of validation samples from walls and base of tank pit excavation(s) to confirm the removal of contamination associated with the UPST.
- Review of provided tank destruction certification documentation and material tracking records from AIS for the disposal of waste generated from the decommissioning.
- Review the certification of material imported to site by AIS.

- Preparation of this validation report in general accordance with the guidelines (Ref [4] & [5]).

2 SITE IDENTIFICATION

The site is described as 57 Station Road, Toongabbie, NSW and Lot B, DP404669.

The site was occupied in the northern portion of the site by a timber mill and is still currently occupied in the south western portion of the site by a waste management solution storage facility for vehicles and bins.

Additional site details are shown in **Table 1**.

Table 1 *Site Details*

Current zoning (Ref [6])	IN1- General Industrial
Current use(s)	Former timber mill in the northern portion of the site. Bulk garbage bin storage in the southern portion of the site.
Size of site	Approximately 2.6ha
Land use to the: **North**	Blacktown Creek, then general industrial/commercial properties.
South	Station Road, then railway line and then residential properties.
East	McCoy Park (recreational area) and residential properties.
West	General industrial/commercial properties.
Nearest sensitive receptor (human health)	Residential properties <100m to the east and <100m to the south (on other side of railway line).
Nearest sensitive receptor (environmental)	Blacktown Creek approximately 40m north of the site. Blacktown Creek flows into Toongabbie Creek approximately 225m west of the site.

Drawing 1, **Appendix A** shows the locality and the layout of the site.

3 SITE HISTORY ASSESSMENT

3.1 PREVIOUS INVESTIGATIONS

3.1.1 RCA AUSTRALIA – PHASE 1 & 2 ENVIRONMENTAL SITE ASSESSMENT

An environmental site assessment (Ref [2]) was undertaken of the site, which at the time comprised a timber yard, with the aim of the assessment to characterise the potential for contamination of the site prior to sale.

The works involved assessment of site history and background information as well as the drilling of thirty (36) boreholes across the site, and collection of forty (40) samples. Three (3) of the boreholes were converted to groundwater monitoring wells and groundwater samples collected.

Two (2) UPST were located near the office buildings. One (1) UST was 16,000L and used for diesel. The other UST was a 13,500L and was used for unleaded fuel. Two (2) bowsers were located above the tanks. The locations of these facilities as well as sampling locations of relevance to this validation report are shown on **Drawing 1**, **Appendix A**, noting that the groundwater wells were situated in the northern portion of the site approximately 120m away from the UPST area

The site history identified prior to the site being a timber yard it was rural land i.e., market garden from at least 1938 to 1962, with John M Fraser taking ownership, with the site zoned at the time of the report 4(a) Industrial – General.

Contaminants in soil were below the relevant guidelines at the time for residential land use, with concentrations of benzene, toluene, ethyl benzene, xylene (BTEX), organochlorine pesticides (OCP) and polychlorinated biphenyls (PCB) below the laboratory detection limits, and concentrations of total recoverable hydrocarbons[1] (TRH), polycyclic aromatic hydrocarbons (PAH) and metals (arsenic, cadmium, chromium, copper, nickel, lead, zinc, mercury) either not detected or detected at low levels.

Groundwater wells were sampled twice as part of the assessment (Ref [2]), with the initial samples exhibiting TRH concentrations exceeding the relevant ecological guidelines, and the subsequent samples (approximately five (5) weeks later) exhibiting lower concentrations of TRH below the ecological guidelines relevant at the time however with concentrations of copper and zinc in excess of the ecological guidelines relevant at the time.

The detected TRH, copper and zinc values were not considered to warrant further investigation nor any actions and it was considered that the concentrations may be potentially attributed to local conditions rather than activities undertaken at the site.

The site was considered suitable for activities as permitted under HIL 'A' criteria, residential properties with access to soil, based on the contaminant concentrations.

[1] Laboratory analysis of hydrocarbons is now (since 2013) being reported as TRH instead of what was previously reported as total petroleum hydrocarbons (TPH). The change in terminology does not reflect a change in testing method, rather recognises that the testing includes all forms of hydrocarbons, not just petroleum hydrocarbons. Further laboratory analysis using a silica gel clean up (TRH_{sg}) is considered to enable a better identification of the extent of petroleum based contamination. The previous report (Ref [2]) uses the TPH terminology.

3.1.2 RCA AUSTRALIA – UPDATED PHASE 2 ENVIRONMENTAL SITE ASSESSMENT

A Phase 2 environmental site assessment (Ref [3]) was undertaken of the site, which at the time comprised a timber yard and a waste management solution storage facility, to characterise the potential for contamination of the site prior to sale. A car wreckers was in the process of vacating a portion of the site. Additional works were completed in February 2021 (Ref [7]) to address the requirements of the prospective purchaser of the site: these works were undertaken concurrently with the decommissioning works as described herein.

The initial works in November 2020 involved the assessment of site history and background information as well as the drilling of four (4) bores and collection of samples from within close proximity to the UPST and the collection of twenty three (23) surface samples from across the site. Two (2) of the boreholes were converted into groundwater monitoring wells for the purpose of assessing any potential contamination from the tanks. The additional works in February 2021 involved testing pitting at four (4) locations within the northern portion of the site as well as collecting eight (8) surface samples.

The update of site history information identified that the changes to site comprised the use of the south eastern portion of the site by the auto wreckers. No potential contamination sources in the vicinity of the site were considered to have the potential to impact at the site.

Contamination in soil was not identified at the site with the exception of three (3) locations: two (2) surface samples and one (1) borehole. Two (2) of these locations were identified within the eastern portion of the site and were noted to be from minor spill/leaks from vehicle engines. The third location was taken within the immediate proximity to the UPST area and was considered to be associated with the groundwater sourced from the UPST area.

The additional surface samples and test pitting works identified minimal contamination in the soil with the exception of three (3) locations. Two (2) locations were in excess of the ecological criteria for metals and one (1) for TRH. All exceedances were deemed to have no bearing on the potential risk to human health for commercial / industrial land use.

Hydrocarbon and metals contamination in the groundwater was identified: the hydrocarbons in two (2) of the three (3) wells in close proximity to the UPST area and the metals in all of the monitoring wells including one situated to the far north of the site approximately 130m from the UPST area. The hydrocarbon contamination was considered to be localised in the area of the UPST and not to have caused widespread contamination of the groundwater. The concentrations of metals were considered likely representative of site strata. The report concluded that there was no risk to human health or the environment based on the site's current use and that remediation of groundwater at the site was not needed. RCA recommended further assessment of groundwater prior to excavations at depths of two (2) metres or more below the surface, prior to any groundwater extraction and in the event of redevelopment to a more sensitive site use.

The original report concluded that the site was considered suitable for continued commercial / industrial use and noted that management of the UPST area must be undertaken in accordance with the correct Regulations (Ref [4]). The updated report noted that decommissioning and remediation works had been undertaken (as reported herein') and that some minor contamination in excess of ecological criteria (Ref [8]) does remain at the site however it was not considered that any specific remediation or management would be necessary due to the isolated concentrations.

3.2 GEOLOGY AND HYDROGEOLOGY

RCA reviewed published geological and hydrogeological maps and the previous assessment (Ref [3]) and summarised the findings in **Table 2**.

Table 2 *Geology and Hydrogeology*

Soil type	Blacktown - residual
Acid sulfate soil	There is no known occurrence of acid sulfate soils.
Groundwater use	No groundwater use is currently known to be undertaken at the site. A review of available information (Ref [9]) for bores with 500m of the site indicates usage being monitoring bores only. Standing water level was only provided on one (1) of the works summaries which indicated a standing water level of 11.7m in a bore drilled to a final depth of 13m. The topography of the site of the well in relation to this site is unknown.
Number of monitoring wells on site	Four (4) wells in total: three (3) within close proximity to the UPST and the fourth located in the north eastern portion of the site (Ref [3]). Monitoring wells installed as part of the previous assessment (Ref [2]) could not be located as part of the updated assessment works (Ref [3]).
Depth to groundwater	Depths vary from approximately 0.3m (MW2) to 3.5m (MW1) (Ref [3]) noting that potential groundwater in MW2 may be present due to its location adjacent to Tank1 and 3. It is also noted that there is a significant topographical difference with the northern portion of the site at a lower elevation.
Estimated Groundwater flow direction	Unknown, thought to be to the north, towards Blacktown Creek.
Background water quality	Unknown

4 PRELIMINARY CONCEPTUAL SITE MODEL

Based on RCA's understanding of the ongoing storage and use of petroleum in underground facilities at the site, potential contamination, exposure pathways, and receptors are as follows:

- Subsurface soil contamination from the base of the tank which may have caused groundwater contamination directly or due to infiltration. Use of the dispensing facilities may also have resulted in surface soil contamination in immediate vicinity of the facilities.

- The risks associated with this material are considered to be from inhalation, especially in the case of vapours beneath buildings, underground structures and service pits, as well as ingestion and dermal contact.
- Off site impacts are possible, depending on the extent of the contamination and the location of the facilities or otherwise discuss potential. Some transportation/migration of contamination may have occurred in stormwater in the event of surface contamination from the dispensing facilities.

A graphical representation of the conceptual site model (CSM) for the site is provided in **Drawing 2**, **Appendix A**.

5 SAMPLING AND ANALYTICAL QUALITY PLAN

No formal sampling and analytical quality plan (SAQP) was developed for the project. The scope of work was provided in RCA's proposal dated the 4 February 2021 for the works and the following sections detail the basis for the scope.

Table 3 *Data Quality Objectives of the Site Investigation*

Data Quality Objective	Description
Step 1- State the Problem	Based on previous assessments (Ref [2] and Ref [3]) and the preliminary conceptual site model, there is the potential for hydrocarbon and metals contamination to be present in subsurface soils and groundwater arising within localised areas around the UPST onsite. Removal and decommissioning of the USPT is to be undertaken, thus validation of the area is required in accordance with the Regulations (Ref [4]) to determine whether the contamination has been removed. Scraping of surface soils in two (2) locations within the eastern portion based on results reported in the previous assessment (Ref [3]).
Step 2- Identify the Goal and Decisions	To adequately determine whether the presence of the UPST and varying historical activities undertaken at the site have given rise to contamination exceeding acceptable levels for ongoing commercial / industrial uses.
Step 3- Identify the Inputs to the decisions	Previous sampling results from two (2) locations in the eastern portion of the site (Ref [3]). Inspection by RCA personnel during the removal of the UPST, including for any visual or odorous signs of contamination. Guideline (Ref [6]) recommendations for sample locations and analytical suite. Additional sampling results. Guidelines for assessing risk to human health and the environment from contaminated soil and/or groundwater. Full details of the relevant guidelines are included in **Appendix B**.

Data Quality Objective	Description
Step 4- Define the Boundaries of the investigation	The horizontal extent of the assessment has been defined by the excavated walls of the tank pits noting that there would be some input from RCA regarding the extent of excavation based on visual and olfactory observations of contamination. The vertical extent was defined to the depth of residual soil, expected to be approximately 2.5m below the surface based on the size of the tanks and depth of the backfill sands. It is noted that there would be some input from RCA regarding the extent of excavation based on visual and olfactory observations of contamination. Practical constraints that could have interfered with sampling comprised the locations of the UPST in regards to existing building structures such that any potential contamination could not adequately be removed from site. No specific temporal constraints were identified. No specific financial constrains were identified, noting that any variations to costs identified to client were to be confirmed with client prior to additional cost being incurred.
Step 5- Develop the Decision Rules	Project specific data quality indicators (DQI) of accuracy, precision, completeness, representativeness and comparability are detailed in the Quality Assurance and Control Assessment for the project, **Appendix C**.
Step 6- Acceptable Limits on Decision Rules	The following provides the basis of the data's useability assessment which is not in accordance with the DQI: • The result's closeness to the guideline concentrations. • Specific contaminant of concern (carcinogen, bioaccumulation potential, available exposure pathways). • The area of sample location(s) in question including the potential lateral and vertical extent of questionable information. • Whether the uncertainty can be effectively managed by site management controls. Refer to the Quality Assurance and Control Assessment for the project, **Appendix C**.

The scope of work, **Section 6**, is considered to comprise Step 7 of the DQO.

6 FIELDWORK

An environmental engineer and scientist experienced in the handling of potentially contaminated soil undertook the validation works on 9 February 2021. Photographs taken during the works which are referred to below and are attached in **Appendix D**, and an outline of the area of works is shown on **Drawing 1**, **Appendix A**.

The scope of work included:

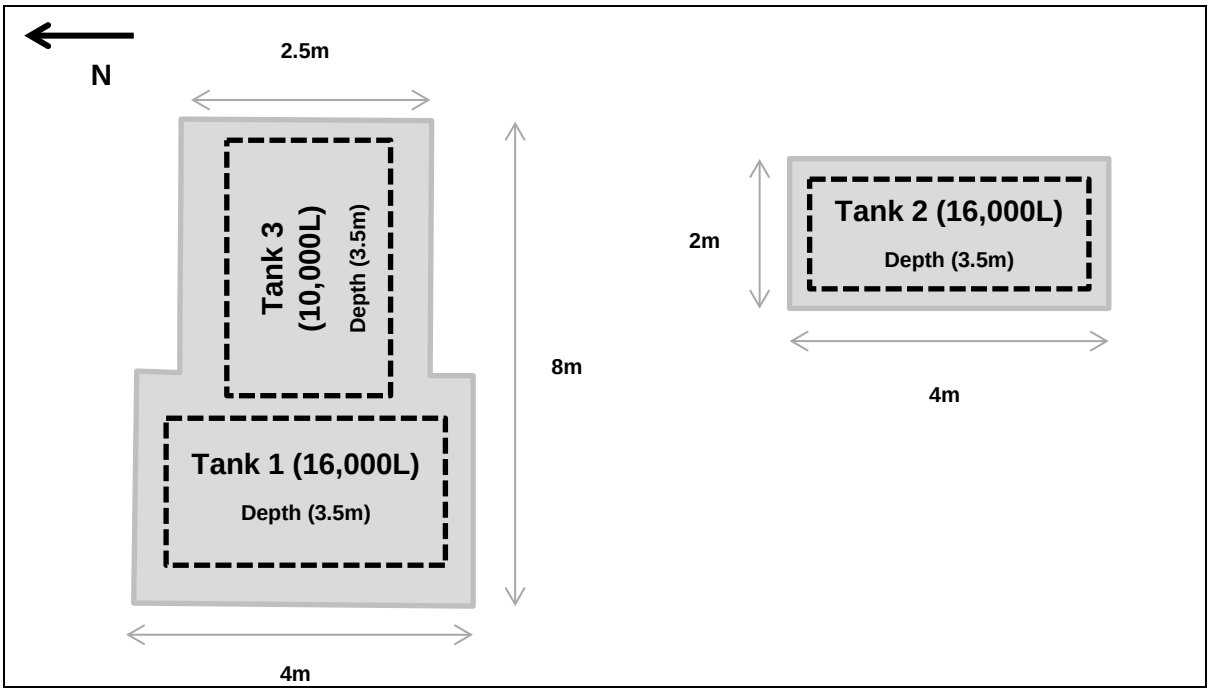
- Inspecting the removal of one (1) UPST (Tank 3).
    - Tank 1 and Tank 2 had been removed prior to RCA arriving at site however were still at the site and RCA were able to undertake an inspection of their integrity.
- Scraping of surface material (<0.3m) at two (2) locations within the eastern portion of the site to determine the depth of previously identified minor spill/leaks from vehicle engines into the soil strata.
- Observation of the removal and separation of the various material types within the excavations.
- The collection of twenty four (24) soil samples:
    - Eight (8) samples were collected from the walls of the UPST pits approximately 1 metre below the existing ground surface (mbgs).
    - Six (6) samples were collected from the bases of the UPST pits approximately 3.5mbgs.
    - Ten (10) samples were collected from the stockpiled material removed from all pit excavations.
    - Samples taken within the excavated pits were collected from natural sandy clay materials at the extent of the excavation with the assistance of the AIS excavator. Samples from the stockpiles were collected with hand tools by RCA personnel.
    - Screening of samples with photionisation detector (PID) for volatiles.
- Submission of all validation soil samples were laboratory analysed for total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene, xylene (BTEX), polycyclic aromatic hydrocarbons (PAH) and lead. The waste samples were additionally analysed for arsenic, cadmium, chromium, copper, nickel, zinc and mercury.

Sampling locations taken within each pit are shown on **Drawing 1**, **Appendix A**.

Works undertaken as part of the decommissioning works confirmed the presence of both tanks: Tank 1 was located north of Tank 2 with both tanks oriented north – south. Tank 3 was identified below a subsurface concrete slab during the excavation of Tank 1 Photograph 1, **Appendix D**), positioned adjacent to Tank 1 oriented east – west and had a storage capacity of 10,000L. Tank 1 and Tank 2 were empty at the time of excavation: there was fluid present within Tank 3 which was extracted by a licensed waste contractor prior to the removal of Tank 3 from the site (refer **Appendix E** for liquid waste docket).

Details of the tanks and tank pits are summarised in **Figure 1** below.

Figure 1 *Tank locations and pit dimensions (9 February 2021)*



No visual or olfactory indications of contamination were observed during validation works with the exception of some minimal black staining on the northern and southern walls surrounding Tank 3 (Photograph 2, **Appendix D**). A strong hydrocarbon odour was present during the excavation of Tank 3 and within the material excavated from the vicinity of this tank.

No indications of anthropogenic waste, including ACM, were observed during excavation of the UST. Concrete and asphalt material were identified above Tank 3 (Photograph 3, **Appendix D**): this material was removed by AIS (refer section **8.2**).

Assessment of the soil within the both excavated pits was undertaken to a maximum depth of 3.5mbgs until backfill sands were longer present. Roadbase material comprising pale grey, sandy clay was identified at the surface above Tank 1 and Tank 2. Backfill sands were identified to a maximum depth of 3.5mbgs in both pits (Photograph 4, **Appendix D**). It is noted that the backfill sand material excavated around Tank 3 presented a strong hydrocarbon odour. A red/brown mottled grey, firm to stiff clay, with sand surrounded the excavated tank pits (Photograph 5, **Appendix D**).

Groundwater was encountered at the base of both excavated pits (Photograph 6, **Appendix D**) at around 3.5mgbs and was observed to be slowly entering both pits during validation works. A light sheen and a hydrocarbon odour were present within groundwater at the base of Tank 1 and 3. No odour or sheen was present within groundwater observed beneath Tank 2.

RCA observed the removed tanks and all tanks appeared to be in good condition with no noticeable signs of damage (Photograph 7, **Appendix D**).

The direction of surface water flow across the site is considered to be from the higher southern portion of the site to the lower northern portion and a small open drain along the northern boundary (Photograph 8, **Appendix D**). It would be anticipated that surface water runoff from the excavated area of the UPST would be slight based on the minimal change in elevation within the area and the large portion of permeable surface (**Appendix A**).

7 QUALITY ASSURANCE/QUALITY CONTROL

RCA has assessed the quality assurance and control in **Appendix C** and found it to be acceptable for the purpose of site assessment.

8 VALIDATION RESULTS AND DISSCUSSION

8.1 CONTAMINATION

All soil results are compared to the commercial/industrial land use criteria (Ref [8]) in **Appendix F** as summarised below.

- BTEXN and PAH concentrations were not detected at all locations and are considered to be below the relevant human health and ecological criteria (Ref [8]).
- Lead concentrations were detected at all locations at levels significantly lower than the relevant human health and ecological criteria (Ref [8]).
- TRH were either not detected or were detected at low concentrations below the relevant human health and ecological criteria (Ref [8]).

Results for groundwater monitoring undertaken at locations adjacent to the UPST have been included in a Phase 2 environmental assessment previously completed by RCA (Ref [3]). The outcome of these results has been discussed in the final characterisation of the site (section **9**).

8.2 MATERIAL DOCUMENTATION

Assessment of all excavated pit material including backfill sands, roadbase material and the clay was also undertaken by RCA, these results have been included in a separate waste classification report (Ref [10]).

In summary, the majority of backfill sands, roadbase and clay material were classified as general solid waste (Ref [11]) with a mixture of backfill sands and clays from around Tank 1 and 3 classified as restricted solid waste (Ref [11]).

AIS tracked the movement of exported and imported material (**Appendix E**) at the site. A summary of all material imported and exported from site is included below.

- Certification of material exported from site:

- General solid waste – This material consisted of backfill sands from the Tank 2 excavation, roadbase material from the surface of Tank 1 and excess clay material generated from removal of all tanks. AIS removed approximately 150 tonnes of material to Brandown Quarry, Waste and Recycling Services (Brandown). This is a licensed (EPL5186) waste facility permitted to receive general solid waste.
- Category 1 (light) and 2 (medium) concrete – Approximately 24 tonnes of material was exported to Brandown: the receipt of this material is considered to be in accordance with EPL5186.
- Restricted Solid Waste – This material consisted of a mixture of backfill sands and clay material excavated from in and around Tank 1 and 3. AIS removed approximately 43 tonnes of material to SUEZ Recycling and Recovery Pty Ltd. This is a licensed (EPL4068) waste facility permitted to receive restricted solid waste.
- Waste water – Approximately 4,000L of '*Grade B J120*' waste water was removed from within Tank 3 by Enviro Waste Services Group. Removal of this water was observed by RCA during the validation works. Enviro Waste are licensed (EPL13039 and EPL20444) waste contractors permitted to transport and receive hydrocarbon contaminated water.

- Certification of material imported to site:
  - Backfill material – This material (165 tonnes) was imported to site from Hanson Construction Material Pty Ltd for use in filling the tank excavation holes. Hanson operates a licensed (EPL1789) quarry and as such no specific certification of this material is considered necessary.

9 SITE CONTAMINATION CHARACTERISATION

The assessment of soil at fourteen (14) locations (base and walls) across the two (2) excavated UPST pits is considered in accordance with the guidelines (Ref [4] and Ref [5]). RCA considers the sampling density is sufficient to identify and delineate the lateral and vertical extent of any potential contamination sourced from the UPST and associated infrastructure (pipes and bowsers).

Results of the UPST validation sampling indicate that there is no more than negligible hydrocarbon remaining: concentrations of TRH >C_{10}-C_{16} within base sample V11 (Tank 1) were found to exceed the ecological guideline (Ref [8]) however these apply only to soils to a depth of 2m below the surface (Ref [8]) and as such it is not considered that the hydrocarbon contamination poses any risk to the environment.

Previous investigation of the groundwater bores around the UPST (Ref [3]) identified the presence of hydrocarbons in excess of ecological guidelines (Ref [8]) only noting that the use of groundwater as drinking water is not considered viable. Concentrations of metals were identified in all groundwater monitoring wells however these were considered to be associated with regional groundwater quality rather than indicative of the presence of contamination. The hydrocarbon contamination was considered to be localised around the UPST and not to represent a risk to the environment due to the distance to the nearest receptor (Blacktown Creek) and the low contaminant concentrations in the other wells, some of which are downgradient of the impacted wells. The hydrocarbon contamination status MMW1 and MW2 is expected to improve with time following the removal of the contaminated soil within the tank pits and as such no groundwater remediation is considered necessary.

Based on the findings of the validation sampling works that indicate the absence of any significant contamination within the sub surface soils surrounding the former UPST, and the visual observation of the removal of previously identified surface soil contamination, RCA considers that the decommissioning of the UPST has been undertaken in accordance with the Regulations (Ref [4]) and is suitable for the continued commercial use.

10 CONCLUSIONS

This validation report has presented the observations and results of sampling undertaken for the remedial works undertaken at 57 Station Road, Toongabbie.

Works comprised the removal of three (3) UPST which were situated in the southern portion of the site and the scraping of surface contamination identified as part of a previous assessment (Ref [3]) as well as the collection of validation samples from the base and wall of the UPST pits. Samples were analysed for hydrocarbons and metals.

All soil concentrations from samples collected within the UPST area were below the relevant human health and ecological guidelines.

No samples were collected from the surface scrapes however there was an absence of visual staining. Based on the understanding that the contamination was as a result of leaks from vehicles stored during use of the site as a wrecker's yard it is considered that the contamination was shallow and that the absence of staining is sufficient verification of the removal of the contamination.

No further groundwater sampling was undertaken as part of the validation however it is expected that the previous concentrations of hydrocarbons, which were below the vapour based human health criteria and not considered to pose a risk to the environment, and will decrease following the removal of the UPST and the contaminated soil which had been situated within the pits. It is noted that the metals concentrations identified within the groundwater (Ref [3]) are considered to be related to regional groundwater quality and not associated with potential contamination at the site.

Documentation of wastes exported from and material imported to the site as part of the works has been undertaken by the UPST removal contractor (Action Installation & Services). RCA has reviewed these documents and consider these to be consistent with documentation and discussions undertaken during the tank decommissioning and subsequent earthworks period. All waste appears to have been disposed of in accordance with NSW waste legislative requirements.

Based on the results and observations of the validation works by RCA and previous conclusions on the state of groundwater at the site RCA considers that the UPST has been appropriately decommissioned and that the site is suitable for continued commercial/industrial use.

11 LIMITATIONS

This report has been prepared for John M Fraser Pty Ltd in accordance with an agreement with RCA Australia (RCA). The services performed by RCA have been conducted in a manner consistent with that generally exercised by members of its profession and consulting practice.

This report has been prepared for the sole use of John M Fraser Pty Ltd. The report may not contain sufficient information for purposes of other uses or for parties other than John M Fraser Pty Ltd. This report shall only be presented in full and may not be used to support objectives other than those stated in the report without written permission from RCA Australia.

The information in this report is considered accurate at the date of issue with regard to the current conditions of the site. Conditions can vary across any site that cannot be explicitly defined by investigation.

Environmental conditions including contaminant concentrations can change in a limited period of time. This should be considered if the report is used following a significant period of time after the date of issue.

Yours faithfully

RCA AUSTRALIA

Zac Laughlan
Environmental Engineer

Fiona Brooker
Environmental Services Manager

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[1] Department of Urban Affairs and Planning, *State Environmental Planning Policy (SEPP): Remediation of Land*, August 1998.

[2] RCA Australia, *Phase 1 and 2 Environmental Site Assessment, 57 Station Road, Toongabbie, NSW,* RCA Ref: 6360-002, October 2007.

[3] RCA Australia, *Updated Phase 2 Environmental Site Assessment, 57 Station Road, Toongabbie, NSW,* RCA Ref: 14817- 401, November 2020.

[4] NSW EPA, *Guidelines for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019*, December 2020.

[5] NSW EPA, *Guidelines for Consultants Reporting on Contaminated Sites,* April 2020.

[6] Blacktown Local Environment Plan 2015 under the Environmental Planning and Assessment Act 1979, published July 2015.

[7] RCA Australia, *Updated Phase 2 Environmental Site Assessment, 57 Station Road, Toongabbie, NSW,* RCA Ref: 14817- 401rev1, February 2021.

[8] NEPC, *National Environment Protection (Assessment of Site Contamination) Measure*, 1999 as amended 2013.

[9] https://realtimedata.waternsw.com.au/water.stm

[10] RCA Australia, *Waste Classification Letter, 57 Station Road, Toongabbie, NSW,* RCA Ref: 14817- 403rev1, February 2021.

[11] NSW EPA, *Waste Classification Guidelines*, *Part 1; Classifying Waste*, November 2014.

[12] CRC Care, *Technical Report 10, Health screening levels for petroleum in soil and groundwater*, September 2011.

[13] NSW EPA, *Technical Note: Investigation of Service Station Sites*, April 2014.

[14] Standards Australia, *Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds*, AS 4482.1-2005.

GLOSSARY

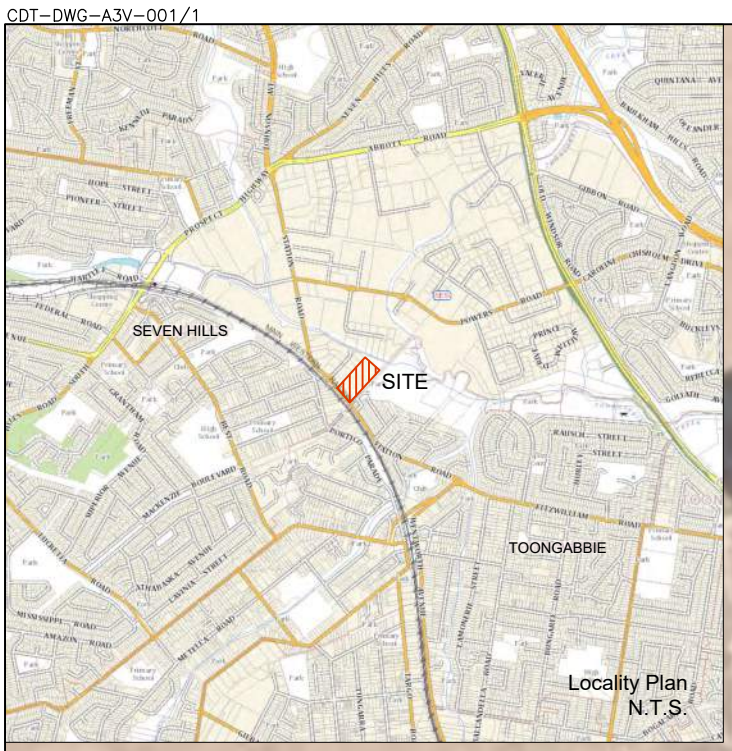
ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure.
EIL	Ecological investigation level. Relates to soil concentrations which may pose a risk to ecological health.
ESL	Ecological screening level. Relates to vapour risk from petroleum hydrocarbons which may pose a risk to ecological health.
HIL	Health investigation level. Relates to soil concentrations which may pose a risk to human health in soil.
HSL	Health screening level. Relates to the vapour risk from petroleum hydrocarbons which may pose a risk to human health in soil.

Intralaboratory	A sample split into two and sent blind to the sample laboratory for comparative analysis.
ISL	Investigation screening levels for soil. Comprised of HIL/EIL and HSL/ESL
LEP	Local environment plan. A planning tool for the Local Government.
NEPC	National Environment Protection Council.
NSW EPA	NSW Environment Protection Authority – made a separate entity in 2011 to regulates the contaminated land industry.
PID	Photoionisation detector. Measures volatile gases in air or emanating from soil or water.
PQL	Practical Quantitation Limit.
QA	Quality Assurance.
QC	Quality Control.
RPD	Relative Percentage Difference.
UPSS	Underground petroleum storage system.
UPST	Underground petroleum storage tank.
Chemical Compounds	
BTEX	Benzene, toluene, ethylbenzene, xylene.
PAH	Polycyclic aromatic hydrocarbons. Multi-ring compounds found in fuels, oils and creosote. These are also common combustion products.
TPH	Total petroleum hydrocarbons.
TRH	Total recoverable hydrocarbons

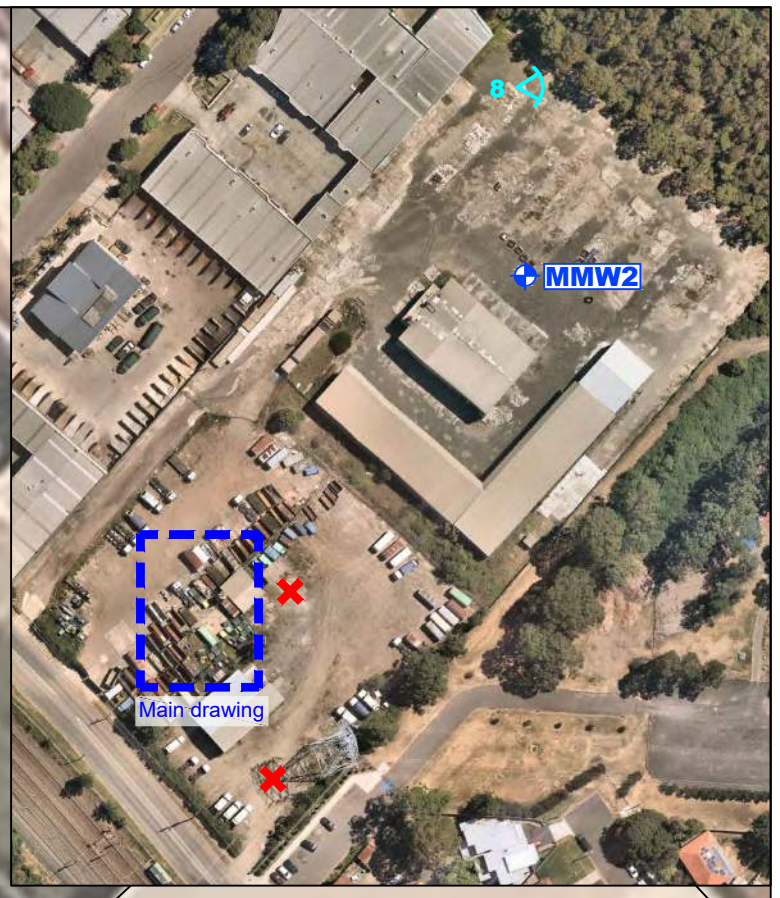
Appendix A

Drawings

CDT-DWG-A3V-001/1



Locality Plan
N.T.S.



Former amenities building

MMW1
V9
Tank 1
V10
V12
MW1
BH2
V11
V13
Tank 3
V14
V7
MW2
V8
BH1
V2
V3
Tank 2
V6
V5
V4
V1
1
2
3
4
5
6
7
9
10

DRAFT

LEGEND

- Approximate sample location
- Approximate location of previously assessed BH1 and BH2 (Ref[2])
- Approximate photograph location and direction
- Approximate location of surface scraps
- Monitoring well
- Underground petroleum storage tank
- Excavated pit
- Bowsers

NOTES:

Aerial image taken from Nearmap, January 26 2021
(used in accordance with commercial licence)

Location of photograph 9 and 10 have been approximated as both were taken by AIS.

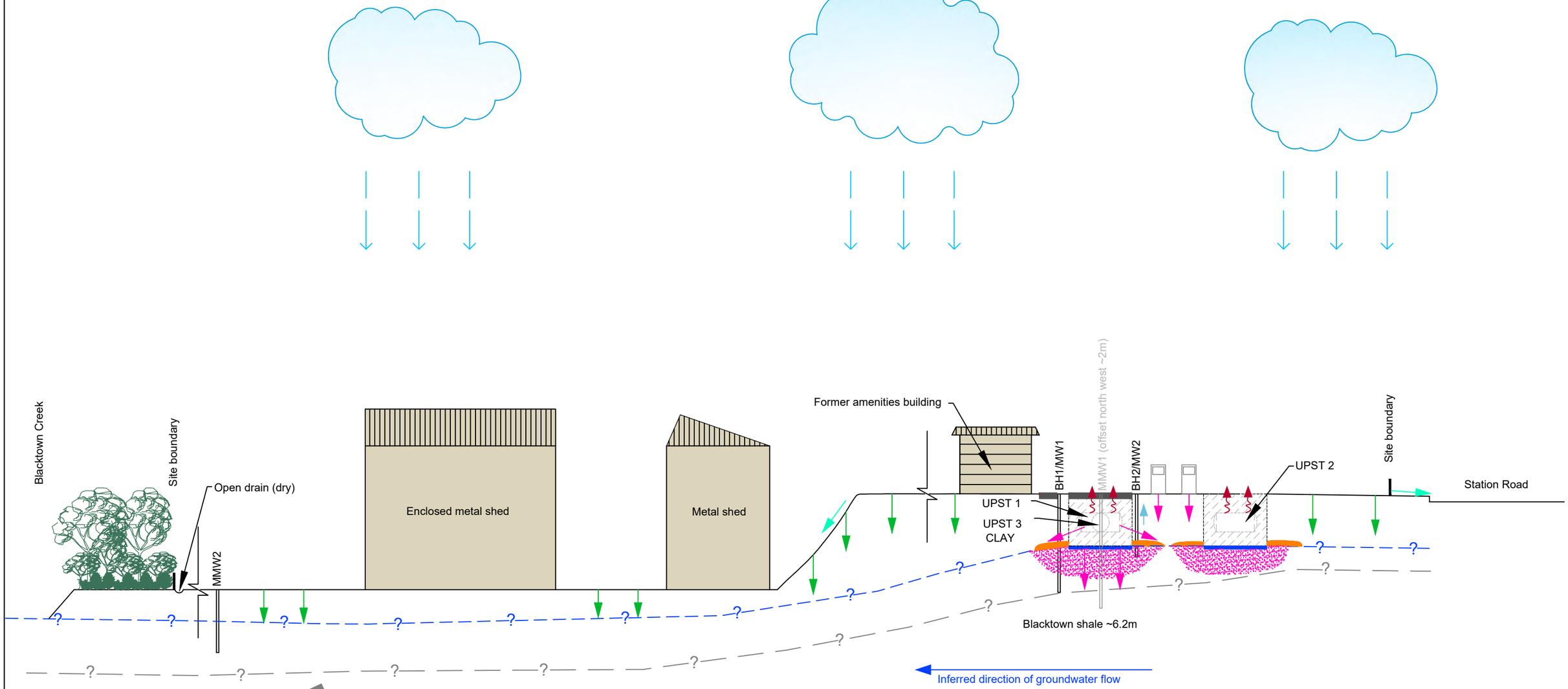
0 1 2 3 4 5 6
metres

N

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

SITE LOCALITY, LAYOUT, AND SAMPLE LOCATION PLAN
VALIDATION REPORT
57 STATION ROAD
TOONGABBIE

CLIENT	John M Fraser Pty Ltd			RCA Ref	14817-404/0
DRAWN BY	ZL/FB	SCALE	1:125 (A3)	DRAWING No 1	REV 0
APPROVED BY	FB	DATE	12/03/2021	OFFICE	NEWCASTLE



LEGEND

- Rock
- Interpolated groundwater depth
- Groundwater encountered at base of tank pit
- Concrete area
- Former bowsers
- Underground petroleum storage tanks
- Backfill sands material
- Infiltration
- Potential vapour migration
- Surface water
- Potential groundwater mounding (BH2/MW2)
- Contaminant flow
- Potential free product
- Potential dissolved contaminations

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

CONCEPTUAL SITE MODEL VALIDATION REPORT 57 STATION ROAD TOONGABBIE

CLIENT	John M Fraser Pty Ltd			RCA Ref	14817-404/0
DRAWN BY	ZL	SCALE	N.T.S.(A3)	DRAWING No 2	REV 0
APPROVED BY	FB	DATE		OFFICE	NEWCASTLE

CDT-DWG-A3H-001/1

Appendix B

Screening Levels and Guidelines

NATIONAL ENVIRONMENT PROTECTION (ASSESSMENT OF SITE CONTAMINATION) MEASURE 1999 AS AMENDED 2013

Soil

The investigation and screening levels (ISL) utilised for the assessment of the soil on site were sourced from the National Environment Protection Measure for the Assessment of Site Contamination (ASC NEPM, Ref [8]). These ISL are not derived as acceptance criteria for contamination at a site, but as levels above which specific consideration of risk, based on the site use and potential exposure, is required. If a risk is determined as present, then remediation and/or management must be undertaken.

Assessment ISL are based on:

- Human Health.

  Intentionally conservative health investigation levels (HIL) have been derived for four (4) generic land use settings.

  - HIL 'A' - Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry). This category includes children's day care centres, preschools and primary schools.
  - HIL 'B' - Residential with minimal opportunities for soil access includes dwellings with fully and permanently paved yard space such as high rise buildings and flats.
  - HIL 'C' - Public open space such as parks, playgrounds, playing fields (e.g. ovals) secondary schools and footpaths. It does not include undeveloped public open space (such as urban bushland and reserves).
  - HIL 'D' - Commercial/industrial such as shops, offices, factories and industrial sites.

  The exposure scenario for the derivation of the relevant land use setting is set out in the table below. The commercial/industrial exposure scenario has been chosen based on the current and proposed use of the site.

  Health screening levels (HSL) have been determined for risks associated from vapour intrusion from petroleum[2] compound contamination for the same land use settings. These HSL are additionally based on the fraction of compound, the soil texture and the depth of the encountered soil.

  Direct hydrocarbon contact criteria are not provided in the ASC NEPM (Ref [8]), however these are provided in CRC Care Technical Report 10 (Ref [12]) which is the source document for the HSL.

- Ecological Health

  These levels are considered to apply to soil within two (2) metres of the surface, the root zone and habitation zone of many species.

[2] Laboratory analysis of hydrocarbons is being reported as total recoverable hydrocarbons (TRH). This testing method includes all forms of hydrocarbons, not just petroleum hydrocarbons and therefore can be considered a conservative measure against the chosen TPH criteria. Further laboratory analysis using a silica gel clean up (TRH_{sg}) is considered to enable a better identification of the extent of petroleum based contamination.

Ecological investigation levels (EIL) have been determined for arsenic, copper, chromium III, DDT, naphthalene, nickel, lead and zinc in soil based on species sensitivity model and for three (3) generic land use settings:

- Areas of ecological significance – for areas where the primary intention is for the conservation and protection of the natural environment. Protection level of 99%.
- Urban residential areas and public open space – broadly equivalent to the HIL A, HIL B and HIL C land use settings. Protection level of 80%.
- Commercial and industrial land uses – considered to be broadly equivalent to HIL D land use setting. Protection level of 60%.

Methodology for the derivation of EIL for other contaminants is available in the ASC NEPM (Ref [8]) and requires additional soil character data.

Ecological screening levels (ESL) have been determined for petroleum compound contamination. Due to limitations in the data only moderate reliability ESL have been determined for fractions $<C_{16}$, applied generically in fine and coarse grained soils. ESL for petroleum fractions $> C_{16}$, BTEX and naphthalene are consider low reliability.

The commercial/industrial EIL has been chosen for the current assessment due to the nature of the sites current and future use.

- Aesthetics

Aesthetic considerations operate separately to the HIL/HSL and EIL/ESL assessment. Issues to be considered include:

- Highly malodorous soils or extracted groundwater (e.g. strong residual petroleum hydrocarbon odours, hydrogen sulphide in soil or extracted groundwater, organosulfur compounds).
- Hydrocarbon sheen on surface water.
- Discoloured chemical deposits or soil staining with chemical waste other than of a very minor nature.
- Large monolithic deposits of otherwise low-risk material, e.g. gypsum as powder or plasterboard, cement kiln dust.
- Presence of putrescible refuse including material that may generate hazardous levels of methane such as a deep-fill profile of green waste or large quantities of timber waste.
- Soils containing residue from animal burial (e.g. former abattoir sites).

Site assessment requires consideration of the quantity, type and distribution of foreign material or odours in relation to the specific land use and its sensitivity. For example, higher expectations for soil quality would apply to residential properties with gardens compared with industrial settings.

Tier 1 assessment comprises the comparison of the soil data with the HIL/HSL and EIL/ESL. In the event that some concentrations are in excess of the relevant criteria, the summary statistics of the data set may be utilised for assessment purpose. Consideration of a range of statistics is recommended; at a minimum the $95\%UCL_{ave}$ should be compared to the relevant criteria as long as:

- No single value exceeds 250% of the relevant criterion.
- The standard deviation of the results for each analyte is less than 50% of the relevant criterion.

In addition to appropriate consideration and application of the HSL and ESL, there are a number of policy considerations which reflect the nature and properties of petroleum hydrocarbons:

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

The ASC NEPM (Ref [8]) has therefore provided management limits, the application of which will require consideration of site-specific factors such as the depth of building basements and services and depth to groundwater, to determine the maximum depth to which the limits should apply. The management limits may have less relevance at operating industrial sites (including mine sites) which have no or limited sensitive receptors in the area of potential impact. When the management limits are exceeded, further site-specific assessment and management may enable any identified risk to be addressed.

The presence of site hydrocarbon 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.

The following figure has been taken from the ASC NEPM (Ref [8]) to illustrate the assessment methodology in regards to petroleum contamination.

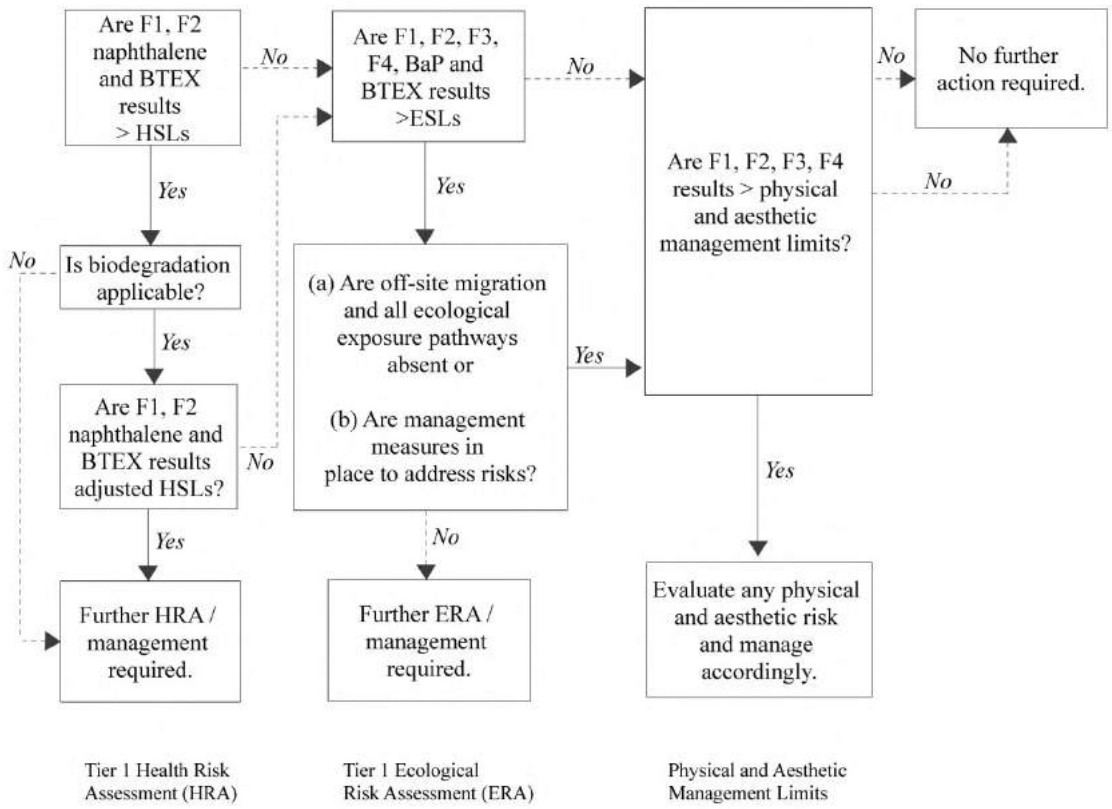


Figure 2 *Flowchart for the Tier 1 human and ecological risk assessment of petroleum hydrocarbon contamination – application of HSL and ESL and consideration of management limits*

Commercial/Industrial Premises

Summary of Exposure Pathways	Abbreviations	Units	Parameters
			Adult
Body weight	BW_A or BW_C	kg	70
Exposure duration	ED_A or ED_C	years	30
Exposure frequency	EF	days	240
Soil/dust ingestion rate[1]	IR_{SA} or IR_{SC}	mg/day	25 [5]
Soil/dust to skin adherence factor	AF	$mg/cm^2/day$	0.5
Skin surface area	SA_A or SA_C	cm^2	20 000
Fraction of skin exposed	F_s	%	19
Dermal absorption factor	DAF	%	Chemical specific values applied
Time spent indoors on site each day	ET_i	hours	8
Time spent outdoors on site each day	ET_o	hours	1
Home-grown fraction of vegetables consumed	F_{HG}	%	0
Vegetable & fruit consumption rate	C_y (veg and fruit)	g/day	-
Averaging time for carcinogens ('lifetime')	AT_{NT}	years	70
Dust lung retention factor	RF	%	37.5

Soil ingestion rates for the HIL D scenario are based on the default soil/dust ingestion rates, corrected for an 8 hr/day daily exposure duration (50% of total waking hours)

TECHNICAL NOTE: INVESTIGATION OF SERVICE STATIONS

This reference (Ref [13]) details the process for the investigation and assessment of service stations including the use of preliminary site assessment, detailed site assessment and when additional assessment and/or remediation may be required. The Note recommends the following as minimal sampling density and analytical requirements for soil samples in proximity to underground and aboveground hydrocarbon facilities:

- Backfill soils
    - Two (2) per underground petroleum storage tank (UPST).
    - 1 per bowser.
    - 1 per line
- Residual soils
    - Two (2) per UPST.
    - 1 per bowser.
    - 1 per line.
    - 1 per 25m^2 beneath above ground storage tank.
- Pit water
    - 1 sample.

Samples are to be analysed for total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, xylene (BTEX) and lead. Polycyclic aromatic hydrocarbons (PAH) and phenols are to be added to the analytical suite where waste oil is suspected.

While the Note is targeted to service station sites, the sampling and analytical recommendations are considered relevant for any site where hydrocarbon storage or dispensing has been undertaken and have been utilised for this project. No criteria for hydrocarbon concentrations are provided; the reader is referred to the ASC NEPM (Ref [8]).

These guidelines have been utilised for the current validation assessment based on the removal of USPT from site.

NSW EPA 2014, WASTE CLASSIFICATION GUIDELINES

The waste classification guidelines (Ref [11]) are designed to ensure waste streams are managed appropriately and in accordance with the Protection of the Environment Operations Act 1997 (the POEO Act) and its associated regulations. The guidelines classify waste into groups which pose similar risks to the environment and human health; and facilitate their management and appropriate disposal.

Six waste classes are used:

- Special waste:
    - Clinical or related waste, asbestos waste, waste tyres.
- Liquid waste:

  - As defined by angle of repose, temperature at which it is free flowing and physical composition.
- Hazardous waste.
- Restricted solid waste.
- General solid waste (putrescible).
- General solid waste (non-putrescible).

Classification begins with determination of whether the waste is ‘special waste’. If not determination of whether material is classified as liquid waste is then required. Material which is not liquid waste, or is special waste due to asbestos content, must be compared to pre-classification definitions. Without pre-classification, the potential for hazardous characteristics (such as explosives, gases, flammable materials, oxidising, toxic and corrosive substances) must be established. If material cannot be classified as hazardous, assessment by chemical analysis must be undertaken. Without assessment, material must be managed as if hazardous waste.

Chemical classification is two tiered. The first set of criteria is based on total contaminant concentrations, whereas the second set of criteria is based on a leachable (TCLP) concentration and a total contaminant concentration. The total concentrations criteria are generally higher in conjunction with TCLP testing than if it was not undertaken.

Appendix C

Quality Assurance Review and Laboratory Report Sheets

A total of two (2) intralaboratory soil duplicate samples were submitted blind to the laboratory for analysis with the batch of samples. This represents a percentage of 8% which is less than the frequency recommended by the Australian Standard AS 4482.1 (Ref [14]) and RCA protocol. It is noted that the current quality assurance sampling at the site was undertaken as a continued process from previously completed sampling at the site. Therefore, the ratio of intralaboratory to interlaboratory samples and percentage is in accordance with the Standards (Ref [14]) and RCA protocol, this includes an additional interlaboratory duplicate sample which was collected and submitted for analysis with the current samples.

1 (one) trip blank and 1 (one) trip spike were submitted. This submission is in accordance with the frequency recommended by the Australian Standard AS 4482.1 (Ref [14]) and RCA protocol.

RCA omitted the field blank due to the low potential for cross contamination during the sampling process and the equipment wash due to the low potential for cross contamination from the sampling equipment.

Results, as shown further in this **Appendix**, indicate no soil analyses which reported RPD in excess of the acceptance criteria.

ALS was chosen as the primary laboratory. ALS is NATA accredited and are experienced in the analytical requirements for potentially contaminated soil.

ALS undertook internal quality assurance testing. Results are contained within the laboratory report sheets, included in this **Appendix**, noting that the results of waste classification samples (which have been reported separately (Ref [10]) are included within the report and as such have been included in the assessment. **Table 5** presents a summary of their review.

Table 4 *Internal Quality Assurance Review*

	Number Samples (including QA)	Laboratory Duplicates	Spikes	Laboratory Control Samples	Laboratory Blanks
Requirement		**10%**	**5%**	**One every batch**	**One every batch**
Soil					
Metals (As, Cd, Cr, Cu, Ni, Pb, Zn)	28	2 (2)	0 (2)	2	2
Mercury	28	1 (1)	0 (1)	1	1
TRH C_6-C_{10}	28	3 (1)	2 (0)	2	2
TRH >C_{10}-C_{40}	28	3 (0)	2 (0)	2	2
BTEX	28	3 (1)	2 (0)	2	2
PAH	28	3 (0)	2 (0)	2	2

Numbers in brackets refer the tests undertaken on samples not from this project but within the same laboratory batch.

Examination of the above table reveals that ALS has undertaken laboratory quality assurance testing in accordance with the ASC NEPM (Ref [4]).

With regards to other internal quality assurance:

- Recoveries of Surrogates were within acceptance criteria of 70-130%.
- Holding Times were within laboratory specified time frames.
- Recoveries of laboratory control samples were within the acceptance criteria of 70-130%.
- Recoveries of Spikes were within acceptance criteria of 70-130%.
- Relative Percentage Differences for duplicates were within acceptance criteria as defined for intralaboratory duplicates further in this **Appendix**.
- No Laboratory Blank result was detected above the practical quantification limit (PQL).

It is therefore considered that the data obtained from this testing is accurate and reliable in as far as it can be ascertained.

Quality Assurance Type	Primary PQL	Intralaboratory Duplicate		RPD %	Intralaboratory Duplicate		RPD %	Trip Spike		RPD %	Trip Blank
Sample Identification		SP1	QA3		V1	QA4		TRIP SPIKE	TSC		Sample
Sample Depth (m)		NA			1			--			--
Date		9/2/21			9/2/21			8/2/21			8/2/21
Sample Profile		Sand			Sandy Clay			Sand			Sand
Sample Purpose		Waste Classification			Validation			Quality Assurance			Quality Assurance
Sample collected by		RCA-ZL/RJL			RCA-ZL/RJL			Laboratory			Laboratory
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)											
Benzene	0.2	0.1	0.1	*0.0*	0.1	0.1	*0.0*	0.1	0.2	*66.7*	<0.2
Toluene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	11.4	12.6	*10.0*	<0.5
Ethylbenzene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	1.7	1.8	*5.7*	<0.5
meta- and para-Xylene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	9.2	9.8	*6.3*	<0.5
ortho-Xylene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	3.7	4	*7.8*	<0.5
Total Xylenes	1	0.5	0.5	*0.0*	0.5	0.5	*0.0*	12.9	13.8	*6.7*	--
Polycyclic Aromatic Hydrocarbons (PAH)											
Naphthalene	1	0.5	0.5	*0.0*	0.5	0.5	*0.0*	0.5	0.5	*0.0*	<1
Total Recoverable Hydrocarbons (TRH)											
TRH C_6-C_{10}	10	5	5	*0.0*	5	5	*0.0*	--	--	--	<10
TRH >C_{10}-C_{16}	50	25	25	*0.0*	25	25	*0.0*	--	--	--	**--**
TRH >C_{16}-C_{34}	100	50	50	*0.0*	50	50	*0.0*	--	--	--	**--**
TRH >C_{34}-C_{40}	100	50	50	*0.0*	50	50	*0.0*	--	--	--	**--**
F1	10	5	5	*0.0*	5	5	*0.0*	--	--	--	--
F2	50	25	25	*0.0*	25	25	*0.0*	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAH)											
Naphthalene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	--	--	--	**--**
Acenaphthylene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	--	--	--	**--**
Acenaphthene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	--	--	--	**--**
Fluorene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	--	--	--	**--**
Phenanthrene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	--	--	--	**--**
Anthracene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	--	--	--	**--**
Fluoranthene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	--	--	--	**--**
Pyrene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	--	--	--	**--**
Benz(a)anthracene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	--	--	--	**--**
Chrysene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	--	--	--	**--**
Benzo(b)&(j)fluoranthene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	--	--	--	**--**
Benzo(k)fluoranthene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	--	--	--	**--**
Benzo(a) pyrene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	--	--	--	**--**
Indeno(1,2,3-c,d)pyrene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	--	--	--	**--**
Dibenz(a,h)anthracene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	--	--	--	**--**
Benzo(g,h,i)perylene	0.5	0.25	0.25	*0.0*	0.25	0.25	*0.0*	--	--	--	**--**
Carcinogenic PAH (B(a)P equivalent)	1.21	0.605	0.605	*0.0*	0.605	0.605	*0.0*	--	--	--	--
Sum of reported PAH	8	4	4	*0.0*	4	4	*0.0*	--	--	--	--
Metals											
Lead	5	19	19	*0.0*	12	18	*40.0*	--	--	--	**--**

All units in mg/kg

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

Results underlined were not detected and are reported as half the detection limit for statistical purpose.

BOLD identifies where RPD results

intralaboratory

>50	*where sample results are >10 x PQL*
>75	*where sample results are > 5 to ≤10 x PQL*
>100	*where sample results are >2 to ≤5 x PQL*
*AD>2.5 * PQL*	*where sample results are ≤2 x PQL*

Where results are within two of the above ranges the most conservative criteria have been used to assess duplicate performance

***BOLD identified where** blanks >PQL*

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2104141**	Page	: 1 of 18
Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Contact	: Grace White
Address	: PO BOX 175 CARRINGTON NSW, AUSTRALIA 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 4902 9200	Telephone	: +61 2 8784 8555
Project	: 14817	Date Samples Received	: 09-Feb-2021 09:00
Order number	: ----	Date Analysis Commenced	: 09-Feb-2021
C-O-C number	: ----	Issue Date	: 11-Feb-2021 09:06
Sampler	: Richie Lamont, ZAC LAUGHLAN		
Site	: Toongabbie		
Quote number	: SYBQ/400/18		
No. of samples received	: 29		
No. of samples analysed	: 29		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- 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*
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS 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) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EP080: The trip spike and its control have been analysed for volatile TPH and BTEXN only. The trip spike and control were prepared in the lab using reagent grade sand spiked with petrol. The spike was dispatched from the lab and the control retained.
- EP075(SIM): Particular samples required dilution due to sample matrix . LOR values have been adjusted accordingly.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	V1	V2	V3	V4	V5
			Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit	ES2104141-001	ES2104141-002	ES2104141-003	ES2104141-004	ES2104141-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	21.8	23.9	26.2	22.2	21.7
EG005(ED093)T: Total Metals by ICP-AES								
Lead	7439-92-1	5	mg/kg	12	13	13	12	20
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	V1	V2	V3	V4	V5
				Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit		ES2104141-001	ES2104141-002	ES2104141-003	ES2104141-004	ES2104141-005
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		<50	<50	<50	<50	<50
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**91.1**	**96.2**	**96.3**	**94.3**	**96.1**
2-Chlorophenol-D4	93951-73-6	0.5	%		**83.3**	**94.7**	**101**	**96.7**	**92.1**
2.4.6-Tribromophenol	118-79-6	0.5	%		**69.8**	**70.2**	**69.4**	**71.9**	**57.7**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**90.1**	**105**	**95.7**	**98.7**	**102**
Anthracene-d10	1719-06-8	0.5	%		**100**	**97.2**	**101**	**95.3**	**100.0**
4-Terphenyl-d14	1718-51-0	0.5	%		**84.3**	**86.2**	**88.2**	**88.9**	**88.4**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**87.0**	**88.1**	**73.1**	**91.8**	**83.1**
Toluene-D8	2037-26-5	0.2	%		**99.8**	**101**	**77.9**	**103**	**93.6**
4-Bromofluorobenzene	460-00-4	0.2	%		**97.8**	**98.2**	**85.2**	**102**	**91.9**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	V6	V7	V8	V9	V10
			Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit	ES2104141-006	ES2104141-007	ES2104141-008	ES2104141-009	ES2104141-010
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	31.8	23.6	23.0	21.8	23.0
EG005(ED093)T: Total Metals by ICP-AES								
Lead	7439-92-1	5	mg/kg	13	25	44	16	38
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	V6	V7	V8	V9	V10
				Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit		ES2104141-006	ES2104141-007	ES2104141-008	ES2104141-009	ES2104141-010
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		<50	<50	<50	<50	<50
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**95.8**	**105**	**104**	**104**	**105**
2-Chlorophenol-D4	93951-73-6	0.5	%		**95.2**	**100**	**97.8**	**94.7**	**98.0**
2.4.6-Tribromophenol	118-79-6	0.5	%		**68.4**	**62.3**	**65.6**	**58.5**	**57.3**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**96.2**	**103**	**96.2**	**102**	**93.8**
Anthracene-d10	1719-06-8	0.5	%		**96.4**	**93.8**	**94.8**	**97.8**	**106**
4-Terphenyl-d14	1718-51-0	0.5	%		**81.3**	**84.4**	**87.0**	**83.1**	**82.1**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**88.2**	**97.8**	**104**	**98.2**	**103**
Toluene-D8	2037-26-5	0.2	%		**97.8**	**104**	**112**	**106**	**108**
4-Bromofluorobenzene	460-00-4	0.2	%		**96.3**	**95.6**	**105**	**98.1**	**99.8**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	V11	V12	V13	V14	QA3
			Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit	ES2104141-011	ES2104141-012	ES2104141-013	ES2104141-014	ES2104141-015
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**23.4**	**19.4**	**17.7**	**19.3**	**7.2**
EG005(ED093)T: Total Metals by ICP-AES								
Lead	7439-92-1	5	mg/kg	**16**	**15**	**17**	**13**	**19**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	**70**	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	**340**	**120**	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	**410**	**120**	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	V11	V12	V13	V14	QA3
				Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit		ES2104141-011	ES2104141-012	ES2104141-013	ES2104141-014	ES2104141-015
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C10 - C16 Fraction	----	50	mg/kg		**210**	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		**210**	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		**420**	<50	<50	<50	<50
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		**210**	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**98.5**	**104**	**83.1**	**87.5**	**85.4**
2-Chlorophenol-D4	93951-73-6	0.5	%		**92.0**	**96.4**	**83.7**	**87.3**	**85.4**
2.4.6-Tribromophenol	118-79-6	0.5	%		**58.7**	**56.6**	**80.5**	**80.3**	**73.0**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**102**	**102**	**98.9**	**97.0**	**102**
Anthracene-d10	1719-06-8	0.5	%		**94.1**	**96.1**	**99.2**	**105**	**102**
4-Terphenyl-d14	1718-51-0	0.5	%		**84.8**	**87.0**	**89.6**	**93.6**	**90.5**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**106**	**102**	**101**	**99.5**	**109**
Toluene-D8	2037-26-5	0.2	%		**113**	**114**	**108**	**107**	**115**
4-Bromofluorobenzene	460-00-4	0.2	%		**103**	**111**	**107**	**108**	**112**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SP1	SP2	SP3	SP4	QA4
			Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit	ES2104141-016	ES2104141-017	ES2104141-018	ES2104141-019	ES2104141-020
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	8.5	8.0	9.0	4.8	25.9
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	8	14	9
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	3	4	54	47	18
Copper	7440-50-8	5	mg/kg	<5	<5	32	47	11
Lead	7439-92-1	5	mg/kg	19	12	35	47	18
Nickel	7440-02-0	2	mg/kg	3	4	72	65	2
Zinc	7440-66-6	5	mg/kg	74	67	82	117	10
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<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	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SP1	SP2	SP3	SP4	QA4
				Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit		ES2104141-016	ES2104141-017	ES2104141-018	ES2104141-019	ES2104141-020
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	<50	380	120	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	3440	1820	150
C29 - C36 Fraction	----	100	mg/kg		<100	<100	570	450	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	4390	2390	150
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	12	15	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	12	15	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	1040	340	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	3290	2020	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	170	150	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	4500	2510	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	1040	340	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		81.4	104	102	86.0	95.5
2-Chlorophenol-D4	93951-73-6	0.5	%		82.1	99.8	93.2	85.6	93.2
2.4.6-Tribromophenol	118-79-6	0.5	%		68.3	57.2	63.5	79.2	86.8
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		97.3	104	101	102	100
Anthracene-d10	1719-06-8	0.5	%		99.8	99.1	94.0	99.8	105
4-Terphenyl-d14	1718-51-0	0.5	%		88.0	85.2	80.2	89.2	87.7
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		109	100	112	106	99.1
Toluene-D8	2037-26-5	0.2	%		115	99.1	109	110	98.8

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SP1	SP2	SP3	SP4	QA4
				Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit		ES2104141-016	ES2104141-017	ES2104141-018	ES2104141-019	ES2104141-020
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		**115**	**98.8**	**104**	**107**	**103**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SP5	SP6	SP7	SP8	SP9
			Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit	ES2104141-021	ES2104141-022	ES2104141-023	ES2104141-024	ES2104141-025
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	16.2	20.8	9.2	8.4	16.6
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	9	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	3	21	2	<2	3
Copper	7440-50-8	5	mg/kg	12	12	<5	<5	6
Lead	7439-92-1	5	mg/kg	11	14	13	11	24
Nickel	7440-02-0	2	mg/kg	<2	4	2	3	<2
Zinc	7440-66-6	5	mg/kg	<5	13	21	19	<5
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	21.2	19.2	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<4.0	<4.0	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<4.0	<4.0	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	13.4	12.4	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	16.2	16.4	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<4.0	<4.0	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<4.0	<4.0	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<4.0	<4.0	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<4.0	<4.0	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<4.0	<4.0	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<4.0	<4.0	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<4.0	<4.0	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<4.0	<4.0	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<4.0	<4.0	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<4.0	<4.0	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<4.0	<4.0	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	50.8	48.0	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<1.0	<1.0	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	4.8	4.8	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	9.7	9.7	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	140	135	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SP5	SP6	SP7	SP8	SP9
				Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit		ES2104141-021	ES2104141-022	ES2104141-023	ES2104141-024	ES2104141-025
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	<50	4520	4150	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	13600	12800	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	18100	17000	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	13	197	207	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	13	197	207	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	10400	9660	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	7860	7470	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	18300	17100	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	10400	9630	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	24	34	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		99.5	94.7	74.3	72.5	94.2
2-Chlorophenol-D4	93951-73-6	0.5	%		96.6	90.9	72.6	72.6	94.3
2.4.6-Tribromophenol	118-79-6	0.5	%		82.5	74.4	49.7	47.7	73.6
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		106	102	90.9	89.4	104
Anthracene-d10	1719-06-8	0.5	%		114	110	89.8	85.8	111
4-Terphenyl-d14	1718-51-0	0.5	%		93.1	90.0	80.8	79.9	90.2
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		75.3	81.4	82.3	93.6	79.5
Toluene-D8	2037-26-5	0.2	%		103	113	77.2	109	112

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SP5	SP6	SP7	SP8	SP9
				Sampling date / time	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00	09-Feb-2021 00:00
Compound	CAS Number	LOR	Unit		ES2104141-021	ES2104141-022	ES2104141-023	ES2104141-024	ES2104141-025
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		**106**	**109**	**72.0**	**104**	**111**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SP10	TRIP BLANK	TRIP SPIKE	TSC	----
				Sampling date / time	09-Feb-2021 00:00	08-Feb-2021 00:00	08-Feb-2021 00:00	08-Feb-2021 00:00	----
Compound	CAS Number	LOR	Unit		ES2104141-026	ES2104141-027	ES2104141-028	ES2104141-029	--------
					Result	Result	Result	Result	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		----	2.5	----	----	----
Moisture Content	----	1.0	%		14.8	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg		3	----	----	----	----
Copper	7440-50-8	5	mg/kg		5	----	----	----	----
Lead	7439-92-1	5	mg/kg		63	----	----	----	----
Nickel	7440-02-0	2	mg/kg		<2	----	----	----	----
Zinc	7440-66-6	5	mg/kg		<5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SP10	TRIP BLANK	TRIP SPIKE	TSC	----
				Sampling date / time	09-Feb-2021 00:00	08-Feb-2021 00:00	08-Feb-2021 00:00	08-Feb-2021 00:00	----
Compound	CAS Number	LOR	Unit		ES2104141-026	ES2104141-027	ES2104141-028	ES2104141-029	--------
					Result	Result	Result	Result	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	**0.2**	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	**11.4**	**12.6**	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	**1.7**	**1.8**	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	**9.2**	**9.8**	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	**3.7**	**4.0**	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	**26.0**	**28.4**	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	**12.9**	**13.8**	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**92.4**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**90.4**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**71.0**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**100**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		**108**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**87.4**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**76.9**	**81.4**	**102**	**103**	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	SP10	TRIP BLANK	TRIP SPIKE	TSC	----
				Sampling date / time	09-Feb-2021 00:00	08-Feb-2021 00:00	08-Feb-2021 00:00	08-Feb-2021 00:00	----
Compound	CAS Number	LOR	Unit		ES2104141-026	ES2104141-027	ES2104141-028	ES2104141-029	--------
					Result	Result	Result	Result	----
EP080S: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	0.2	%		**109**	**113**	**107**	**108**	**----**
4-Bromofluorobenzene	460-00-4	0.2	%		**108**	**113**	**96.2**	**97.7**	**----**

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) 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

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2104141**	Page	: 1 of 11
Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Contact	: Grace White
Address	: PO BOX 175 CARRINGTON NSW, AUSTRALIA 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 4902 9200	Telephone	: +61 2 8784 8555
Project	: 14817	Date Samples Received	: 09-Feb-2021
Order number	: ----	Date Analysis Commenced	: 09-Feb-2021
C-O-C number	: ----	Issue Date	: 11-Feb-2021
Sampler	: Richie Lamont, ZAC LAUGHLAN		
Site	: Toongabbie		
Quote number	: SYBQ/400/18		
No. of samples received	: 29		
No. of samples analysed	: 29		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Inorganics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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 Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3502292)									
ES2104141-006	V6	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	7	7	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	4	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	9	46.4	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	7	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	13	12	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	30	39	27.1	No Limit
ES2103822-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	5	4	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	22	20	9.96	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	338	304	10.7	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	131	118	10.6	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3502293)									
ES2104141-021	SP5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	3	3	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	12	14	16.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	11	11	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
ES2104244-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	10	12	15.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	6	7	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3502293) - continued									
ES2104244-001	Anonymous	EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	7	8	15.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	11	15.3	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	14	17	15.7	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3502295)									
ES2103927-039	Anonymous	EA055: Moisture Content	----	0.1	%	20.9	20.0	4.32	0% - 20%
ES2104141-009	V9	EA055: Moisture Content	----	0.1	%	21.8	22.2	1.38	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3502296)									
ES2104141-017	SP2	EA055: Moisture Content	----	0.1	%	8.0	8.4	4.77	No Limit
ES2104230-001	Anonymous	EA055: Moisture Content	----	0.1	%	23.0	25.3	9.66	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3502320)									
ES2103797-020	Anonymous	EA055: Moisture Content	----	0.1	%	13.2	12.7	4.25	0% - 20%
ES2104061-001	Anonymous	EA055: Moisture Content	----	0.1	%	7.1	6.8	4.50	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3502290)									
ES2103822-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2104141-021	SP5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3502325)									
ES2104141-001	V1	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
		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 hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES2104141-011	V11	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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3502325) - continued									
ES2104141-011	V11	EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		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 hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3502328)									
ES2104141-021	SP5	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
		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 hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3502269)									

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3502269) - continued									
ES2104141-001	V1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES2104141-011	V11	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3502326)									
ES2104141-001	V1	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
ES2104141-011	V11	EP071: C15 - C28 Fraction	----	100	mg/kg	340	320	4.23	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	70	60	18.1	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3502327)									
ES2104141-021	SP5	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 Petroleum Hydrocarbons (QC Lot: 3502874)									
ES2104141-021	SP5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES2104326-011	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3502269)									
ES2104141-001	V1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES2104141-011	V11	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: 3502326)									
ES2104141-001	V1	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
ES2104141-011	V11	EP071: >C16 - C34 Fraction	----	100	mg/kg	210	220	6.68	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	210	170	21.4	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3502327)									
ES2104141-021	SP5	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 Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3502874)									
ES2104141-021	SP5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES2104326-011	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 3502269)									
ES2104141-001	V1	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080: BTEXN (QC Lot: 3502269) - continued									
ES2104141-001	V1	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
ES2104141-011	V11	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		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
EP080: BTEXN (QC Lot: 3502874)									
ES2104141-021	SP5	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		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
ES2104326-011	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		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

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) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3502292)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	96.8	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	95.1	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	95.8	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	99.1	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.1 mg/kg	92.7	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	94.5	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	77.1	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3502293)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	98.8	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	100	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	96.7	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	106	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.1 mg/kg	95.2	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	96.0	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	77.5	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3502290)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.073 mg/kg	98.0	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3502325)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	95.8	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	92.4	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	100	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	102	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	99.6	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	100	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	99.8	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	95.8	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	92.4	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	96.6	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	91.5	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	97.2	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	96.1	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	89.6	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	95.6	62.0	118

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3502325) - continued								
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	101	63.0	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3502328)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	112	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	108	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	107	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	109	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	111	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	117	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	111	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	115	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	93.0	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	104	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	91.5	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	107	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	103	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	105	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	107	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	94.5	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3502269)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	90.2	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3502326)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	113	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	103	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	99.6	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3502327)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	97.6	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	92.1	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	90.7	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3502874)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	92.1	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3502269)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	87.7	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3502326)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	107	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	102	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	89.6	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3502327)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3502327) - continued								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	93.9	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	92.2	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	81.7	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3502874)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	90.2	68.4	128
EP080: BTEXN (QCLot: 3502269)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	85.1	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	85.8	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	83.6	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	83.2	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	87.7	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	94.5	63.0	119
EP080: BTEXN (QCLot: 3502874)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	83.7	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	92.7	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	89.0	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	87.2	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	91.4	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	87.1	63.0	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**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3502292)							
ES2103822-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	94.0	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.6	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	86.0	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	92.5	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	96.5	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	90.7	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	94.7	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3502293)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3502293) - continued							
ES2104244-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	95.1	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.0	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	87.0	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	93.2	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	95.1	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	95.3	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	94.7	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3502290)							
ES2103822-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	82.5	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3502325)							
ES2104141-001	V1	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	90.7	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	88.0	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3502328)							
ES2104141-021	SP5	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	92.7	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	92.1	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3502269)							
ES2104141-001	V1	EP080: C6 - C9 Fraction	----	32.5 mg/kg	115	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3502326)							
ES2104141-001	V1	EP071: C10 - C14 Fraction	----	523 mg/kg	95.8	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	111	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	114	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3502327)							
ES2104141-021	SP5	EP071: C10 - C14 Fraction	----	523 mg/kg	83.1	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	95.4	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	102	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3502874)							
ES2104141-021	SP5	EP080: C6 - C9 Fraction	----	32.5 mg/kg	100	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3502269)							
ES2104141-001	V1	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	116	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3502326)							
ES2104141-001	V1	EP071: >C10 - C16 Fraction	----	860 mg/kg	108	73.0	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	109	53.0	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	108	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3502327)							
ES2104141-021	SP5	EP071: >C10 - C16 Fraction	----	860 mg/kg	93.8	73.0	137

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3502327) - continued							
ES2104141-021	SP5	EP071: >C16 - C34 Fraction	----	3223 mg/kg	94.5	53.0	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	108	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3502874)							
ES2104141-021	SP5	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	99.0	70.0	130
EP080: BTEXN (QCLot: 3502269)							
ES2104141-001	V1	EP080: Benzene	71-43-2	2.5 mg/kg	114	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	117	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	121	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	118	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	119	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	119	70.0	130
EP080: BTEXN (QCLot: 3502874)							
ES2104141-021	SP5	EP080: Benzene	71-43-2	2.5 mg/kg	102	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	102	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	102	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	101	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	106	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	102	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2104141**	Page	: 1 of 8
Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Telephone	: +61 2 8784 8555
Project	: 14817	Date Samples Received	: 09-Feb-2021
Site	: Toongabbie	Issue Date	: 11-Feb-2021
Sampler	: Richie Lamont, ZAC LAUGHLAN	No. of samples received	: 29
Order number	: ----	No. of samples analysed	: 29

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.**

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
TRIP BLANK	**08-Feb-2021**	**----**	----	----	**09-Feb-2021**	22-Feb-2021	✓
Soil Glass Jar - Unpreserved (EA055)							
V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, QA3, SP1, SP2, SP3, SP4, QA4, SP5, SP6, SP7, SP8, SP9, SP10	**09-Feb-2021**	**----**	----	----	**09-Feb-2021**	23-Feb-2021	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, QA3, SP1, SP2, SP3, SP4, QA4, SP5, SP6, SP7, SP8, SP9, SP10	**09-Feb-2021**	**09-Feb-2021**	08-Aug-2021	✓	**10-Feb-2021**	08-Aug-2021	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
SP1, SP2, SP3, SP4, QA4, SP5, SP6, SP7, SP8, SP9, SP10	**09-Feb-2021**	**09-Feb-2021**	09-Mar-2021	✓	**10-Feb-2021**	09-Mar-2021	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, QA3, SP1, SP2, SP3, SP4, QA4, SP5, SP6, SP7, SP8, SP9, SP10	**09-Feb-2021**	**09-Feb-2021**	23-Feb-2021	✓	**10-Feb-2021**	21-Mar-2021	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
TRIP BLANK	**08-Feb-2021**	**09-Feb-2021**	22-Feb-2021	✓	**09-Feb-2021**	22-Feb-2021	✓
Soil Glass Jar - Unpreserved (EP080)							
V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, QA3, SP1, SP2, SP3, SP4, QA4, SP5, SP6, SP7, SP8, SP9, SP10	**09-Feb-2021**	**09-Feb-2021**	23-Feb-2021	✓	**09-Feb-2021**	23-Feb-2021	✓
Soil Glass Jar - Unpreserved (EP071)							
V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, QA3, SP1, SP2, SP3, SP4, QA4, SP5, SP6, SP7, SP8, SP9, SP10	**09-Feb-2021**	**09-Feb-2021**	23-Feb-2021	✓	**10-Feb-2021**	21-Mar-2021	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
TRIP BLANK	**08-Feb-2021**	**09-Feb-2021**	22-Feb-2021	✓	**09-Feb-2021**	22-Feb-2021	✓
Soil Glass Jar - Unpreserved (EP080)							
V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, QA3, SP1, SP2, SP3, SP4, QA4, SP5, SP6, SP7, SP8, SP9, SP10	**09-Feb-2021**	**09-Feb-2021**	23-Feb-2021	✓	**09-Feb-2021**	23-Feb-2021	✓
Soil Glass Jar - Unpreserved (EP071)							
V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, QA3, SP1, SP2, SP3, SP4, QA4, SP5, SP6, SP7, SP8, SP9, SP10	**09-Feb-2021**	**09-Feb-2021**	23-Feb-2021	✓	**10-Feb-2021**	21-Mar-2021	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080)								
TRIP BLANK,	TRIP SPIKE,	**08-Feb-2021**	**09-Feb-2021**	22-Feb-2021	✓	**09-Feb-2021**	22-Feb-2021	✓
TSC								
Soil Glass Jar - Unpreserved (EP080)								
V1,	V2,	**09-Feb-2021**	**09-Feb-2021**	23-Feb-2021	✓	**09-Feb-2021**	23-Feb-2021	✓
V3,	V4,							
V5,	V6,							
V7,	V8,							
V9,	V10,							
V11,	V12,							
V13,	V14,							
QA3,	SP1,							
SP2,	SP3,							
SP4,	QA4,							
SP5,	SP6,							
SP7,	SP8,							
SP9,	SP10							

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	6	58	**10.34**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	3	26	**11.54**	**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	4	39	**10.26**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	3	26	**11.54**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	35	**11.43**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	2	26	**7.69**	**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	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	26	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	35	**5.71**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	2	26	**7.69**	**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	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	26	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	35	**5.71**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	2	26	**7.69**	**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	2	39	**5.13**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	26	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	35	**5.71**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.

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

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2176 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ Brisbane: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E:townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
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☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT:	RCA Australia	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date): ☑ Non Standard or urgent TAT (List due date): 10/2/21
OFFICE:	92 Hill Street, Carrington		
RCA Ref No:	14817	ALS QUOTE NO.:	SYBQ_400_17
Toongabbie		COC SEQUENCE NUMBER (Circle)	COC: ① 2 3 4 5 6 7 / OF: 1 ② 3 4 5 6 7
PROJECT MANAGER: F Brooker	CONTACT PH: 0408 687 529		
SAMPLER: R Lamont / Z Laughlan	SAMPLER MOBILE: 0401 002 912		
COC Emailed to ALS? (YES / NO)	EDD FORMAT (or default):		
Email Reports to: administrator@rca.com.au + enviro@rca.com.au			
Email Invoice to: as above			

FOR LABORATORY USE ONLY [illegible]

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
RLam	W Salen VS		
DATE/TIME: 9/2/21	DATE/TIME: 9/2/21 1500	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	S-20 (TRH, BTEX, PAH, Metals)	S-21 (TRH, BTEX, PAH, Lead)	S-18	BTEX	Asbestos presence/absence	S-12 OCP/OPP			Additional Information: Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	V1	9/02/2021	S				x							Workorder ES2104141
2	V2	9/02/2021	S				x							
3	V3	9/02/2021	S				x							
4	V4	9/02/2021	S				x							
5	V5	9/02/2021	S				x							
6	V6	9/02/2021	S				x							
7	V7	9/02/2021	S				x							
8	V8	9/02/2021	S				x							
9	V9	9/02/2021	S				x							
10	V10	9/02/2021	S				x							
11	V11	9/02/2021	S				x							
12	V12	9/02/2021	S				x							
				TOTAL										

Environmental Division
Sydney
Work Order Reference
ES2104141

Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic, F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle, ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

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☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
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☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT:	RCA Australia	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date): ☑ Non Standard or urgent TAT (List due date): 10/2/21
OFFICE:	82 Hill Street, Carrington		
RCA Ref No:	14817	**ALS QUOTE NO.:**	SYBQ_400_17
Toongabbie			
PROJECT MANAGER: F Brooker		**CONTACT PH: 0408 687 529**	
SAMPLER: R Lamont / Z Laughlan		**SAMPLER MOBILE: 0401 902 912**	
COC Emailed to ALS? (YES / NO)		**EDD FORMAT (or default):**	
Email Reports to: administrator@rca.com.au + enviro@rca.com.au			
Email Invoice to: as above			

COC SEQUENCE NUMBER (Circle)

COC: 1 (2) 3 4 5 6 7

OF: 1 (2) 3 4 5 6 7

LABORATORY USE ONLY

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
R Lamont	W-SAUER		
DATE/TIME: 8/2/21	DATE/TIME: 9/2/21 @ 1500	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL BOTTLES	S-26 (TRH, BTEX, PAH, Metals)	S-21 (TRH, BTEX, PAH, Lead)	S-18	BTEX	Asbestos presence/absence	S-12 OCP/OPP			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
13	V13	9/02/2021	S				X							
14	V14	9/02/2021	S				X							
15	~~DUP~~ QA3	9/02/2021	S				X							
16	SP1	9/02/2021	S			X								
17	SP2	9/02/2021	S			X								
18	SP3	9/02/2021	S			X								
19	SP4	9/02/2021	S			X								
20	~~DUP~~ QA4	9/02/2021	S			X								
21	SP5	〃	S			X								
22	SP6	〃	S			X								
23	SP7	〃	S			X								
24	SP8	〃	S			X								
					TOTAL									

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ~~ORC~~ = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

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☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-4 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT:	RCA Australia	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date): ☑ Non Standard or urgent TAT (List due date): 10/2/21
OFFICE:	92 Hill Street, Carrington		
RCA Ref No:	14817	**ALS QUOTE NO.:**	SYBQ_400_17
Toongabbie			
PROJECT MANAGER:	F Brooker	**CONTACT PH:**	0408 687 529
SAMPLER:	R Lamont / Z Laughlan	**SAMPLER MOBILE:**	0401 002 912
COC Emailed to ALS?	(YES / NO)	**EDD FORMAT (or default):**	
Email Reports to:	administrator@rca.com.au + enviro@rca.com.au		
Email Invoice to:	as above		

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7

OF: 1 2 3 4 5 6 7

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
R Lam	W-SALEH		
DATE/TIME: 9/2/21	DATE/TIME: 9/2/21 1500	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	S-26 (TRH, BTEX, PAH, Metals)	S-21 (TRH, BTEX, PAH, Lead)	S-19	BTEX	Asbestos presence/absence	S-12 OCP/OPP			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
25	SP9	9/2/21	S			X								
26	SP10	9/2/21	S			X								
27	TRIP Blank	8/2/21	S					X						
28	TRIP SPIKE	"	S						X					
29	TSC	"	S						✓					
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2104141**

Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Contact	: Grace White
Address	: PO BOX 175 CARRINGTON NSW, AUSTRALIA 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: fionab@rca.com.au	E-mail	: Grace.White@ALSGlobal.com
Telephone	: +61 02 4902 9200	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 4902 9299	Facsimile	: +61-2-8784 8500
Project	: 14817	Page	: 1 of 3
Order number	: ----	Quote number	: ES2017ROBCAR0004 (SYBQ/400/18)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: Toongabbie		
Sampler	: Richie Lamont, ZAC LAUGHLAN		

Dates

Date Samples Received	: 09-Feb-2021 09:00	Issue Date	: 09-Feb-2021
Client Requested Due Date	: 10-Feb-2021	Scheduled Reporting Date	: **10-Feb-2021**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: ----
Receipt Detail	:	No. of samples received / analysed	: 29 / 29

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.**
- 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 (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

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 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP080 BTEXN	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-21 TRH/BTEXN/PAH + Pb	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2104141-001	09-Feb-2021 00:00	V1	✓			✓	
ES2104141-002	09-Feb-2021 00:00	V2	✓			✓	
ES2104141-003	09-Feb-2021 00:00	V3	✓			✓	
ES2104141-004	09-Feb-2021 00:00	V4	✓			✓	
ES2104141-005	09-Feb-2021 00:00	V5	✓			✓	
ES2104141-006	09-Feb-2021 00:00	V6	✓			✓	
ES2104141-007	09-Feb-2021 00:00	V7	✓			✓	
ES2104141-008	09-Feb-2021 00:00	V8	✓			✓	
ES2104141-009	09-Feb-2021 00:00	V9	✓			✓	
ES2104141-010	09-Feb-2021 00:00	V10	✓			✓	
ES2104141-011	09-Feb-2021 00:00	V11	✓			✓	
ES2104141-012	09-Feb-2021 00:00	V12	✓			✓	
ES2104141-013	09-Feb-2021 00:00	V13	✓			✓	
ES2104141-014	09-Feb-2021 00:00	V14	✓			✓	
ES2104141-015	09-Feb-2021 00:00	QA3	✓			✓	
ES2104141-016	09-Feb-2021 00:00	SP1	✓				✓
ES2104141-017	09-Feb-2021 00:00	SP2	✓				✓
ES2104141-018	09-Feb-2021 00:00	SP3	✓				✓
ES2104141-019	09-Feb-2021 00:00	SP4	✓				✓
ES2104141-020	09-Feb-2021 00:00	QA4	✓				✓
ES2104141-021	09-Feb-2021 00:00	SP5	✓				✓
ES2104141-022	09-Feb-2021 00:00	SP6	✓				✓
ES2104141-023	09-Feb-2021 00:00	SP7	✓				✓
ES2104141-024	09-Feb-2021 00:00	SP8	✓				✓
ES2104141-025	09-Feb-2021 00:00	SP9	✓				✓
ES2104141-026	09-Feb-2021 00:00	SP10	✓				✓
ES2104141-027	08-Feb-2021 00:00	TRIP BLANK	✓		✓		
ES2104141-028	08-Feb-2021 00:00	TRIP SPIKE		✓			
ES2104141-029	08-Feb-2021 00:00	TSC		✓			

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL INVOICES

- *AU Certificate of Analysis - NATA (COA)	Email	administrator@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	administrator@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	administrator@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	administrator@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	administrator@rca.com.au
- Chain of Custody (CoC) (COC)	Email	administrator@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	administrator@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	administrator@rca.com.au
- EDI Format - XTab (XTAB)	Email	administrator@rca.com.au

ENVIRO

- *AU Certificate of Analysis - NATA (COA)	Email	enviro@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	enviro@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	enviro@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	enviro@rca.com.au
- A4 - AU Tax Invoice (INV)	Email	enviro@rca.com.au
- Chain of Custody (CoC) (COC)	Email	enviro@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	enviro@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	enviro@rca.com.au
- EDI Format - XTab (XTAB)	Email	enviro@rca.com.au

FIONA BROOKER

- *AU Certificate of Analysis - NATA (COA)	Email	fionab@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	fionab@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	fionab@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	fionab@rca.com.au
- Chain of Custody (CoC) (COC)	Email	fionab@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	fionab@rca.com.au
- EDI Format - ESDAT (ESDAT)	Email	fionab@rca.com.au
- EDI Format - XTab (XTAB)	Email	fionab@rca.com.au

Appendix D

Site Photographs

PHOTOGRAPH 1 *Tank 3 located adjacent to Tank 1 facing east to west.*

PHOTOGRAPH 2 *Black staining on northern wall adjacent Tank 3.*

PHOTOGRAPH 3 *Concrete and asphalt layer above Tank 3, looking east.*

PHOTOGRAPH 4 *Excavation of backfill sand material at base of Tank 2 pit.*

PHOTOGRAPH 5 *Example of natural clay material encountered at site.*

PHOTOGRAPH 6 *Groundwater encountered at base of pit excavations.*

PHOTOGRAPH 7 *Condition of removed Tanks 1 & 2.*

PHOTOGRAPH 8 *Location of small open drainage channel along northern boundary.*

PHOTOGRAPH 9 *Removal of backfill sand material by AIS from beneath Tank 2.*

PHOTOGRAPH 10 *Placement of clean backfill material within pit excavation by AIS.*

Appendix E

Tank Destruction Certificate and Material Documentation

Action Installations & Services

ABN: 79 127 091 534
Phone: 1300 785 425 FAX:(02)9724 4616
Address: Unit 30 85-115 Alfred Road
Chipping Norton NSW 2170

9th February 2021

LETTER OF DESTRUCTION

To Whom It May Concern

Please be advised Action Installations & Services Pty Ltd of the above address have removed 1 x 10,000ltr, 2 x 16,000ltr underground storage tank from the site 57 Station Rd, Toongabbie on Petrochemical Demolition Licence No. AD210675.

We hereby advise the tanks were destroyed in an approved manner and will be used for metal reclamation only and rendered unusable for the original intended purpose.

Thanking you and please do not hesitate to contact myself if further information is required.

Regards,

Nicholas Mintilakis
Project Co-Ordinator

brandown
Quarry, Waste, & Recycling Services Proprietary Limited
ABN 30 003 830 304

Postal Address: PO Box 141 Kemps Creek NSW 2178 **Site Address:** 90 Range Road, Cecil Park NSW 2178
Telephone: 02 9826 1256 **Facsimile:** 02 9826 1622 **Email:** info@brandown.com.au

WEIGHBRIDGE DOCKET / TAX INVOICE

SOR-1967814

Docket No.	SOR-1967814	Vehicle Registration	04SAID	Trailer	
Date	8/02/2021	Gross	18.66	Capacity	9.66
Customer Name	ACTION INSTALLATION	Tare	11.38	% Load	
Customer Code	ACTI04	Net	7.28	This Load	
Customer Address	& SERVICES			Density	
	UNIT 30 85-115 ALFRED RD			Density Band	
	CHIPPING NORTON 2170				
Customer Reference No.		Delivery Address	ACTION INSTALLATION		
Customer PO No.	TOONGABBIE		& SERVICES		
Docket Entered by			UNIT 30 85-115 ALFRED RD		
Location	C AREA WASTE IN		CHIPPING NORTON 2170		

Signature Carrier _____ Signature Customer _____

We hereby confirm that we accept the conditions overleaf

Code	Product	Quantity	Unit of Measure	Rate	Amount
CON1	Concrete Category 1 Light	7.28			

CUSTOMER COPY TIME IN 4:50:55 PM TIME OUT 5:06:55 PM

brandown
Quarry, Waste, & Recycling Services Proprietary Limited
ABN 30 003 830 304

Postal Address: PO Box 141 Kemps Creek NSW 2178 **Site Address:** 90 Range Road, Cecil Park NSW 2178
Telephone: 02 9826 1256 **Facsimile:** 02 9826 1622 **Email:** info@brandown.com.au

WEIGHBRIDGE DOCKET / TAX INVOICE

SOR-1969118

Docket No.	SOR-1969118	Vehicle Registration	04SAID	Trailer	U- 20369
Date	15/02/2021	Gross	41.86	Capacity	
Customer Name	ACTION INSTALLATION	Tare	18.82	% Load	
Customer Code	ACTI04	Net	23.04	This Load	
Customer Address	& SERVICES			Density	
	UNIT 30 85-115 ALFRED RD			Density Band	
	CHIPPING NORTON 2170				
Customer Reference No.		Delivery Address	ACTION INSTALLATION		
Customer PO No.	TOONGABBIE		& SERVICES		
Docket Entered by			UNIT 30 85-115 ALFRED RD		
Location	F AREA WASTE IN		CHIPPING NORTON 2170		

Signature Carrier _____ Signature Customer _____

We hereby confirm that we accept the conditions overleaf

Code	Product	Quantity	Unit of Measure	Rate	Amount
FMIXBD1	General Solid Waste	23.04			
	General Solid Waste				

CUSTOMER COPY TIME IN 4:32:04 PM TIME OUT 4:58:26 PM

brandown
Quarry, Waste, & Recycling Services Proprietary Limited
ABN 30 003 830 304

Postal Address: PO Box 141 Kemps Creek NSW 2178 **Site Address:** 90 Range Road, Cecil Park NSW 2178
Telephone: 02 9826 1256 **Facsimile:** 02 9826 1622 **Email:** info@brandown.com.au

WEIGHBRIDGE DOCKET / TAX INVOICE

SOR-1969121

Docket No.	SOR-1969121	Vehicle Registration	04SAID	Trailer	U- 20369
Date	15/02/2021	Gross	35.22	Capacity	
Customer Name	ACTION INSTALLATION	Tare	18.82	% Load	
Customer Code	ACTI04	Net	16.40	This Load	
Customer Address	& SERVICES			Density	
	UNIT 30 85-115 ALFRED RD			Density Band	
	CHIPPING NORTON 2170				
Customer Reference No.	TOONGABBIE	Delivery Address	ACTION INSTALLATION		
Customer PO No.	STATION RD		& SERVICES		
Docket Entered by			UNIT 30 85-115 ALFRED RD		
Location	C AREA WASTE IN		CHIPPING NORTON 2170		

Signature Carrier _____ Signature Customer _____

We hereby confirm that we accept the conditions overleaf

Code	Product	Quantity	Unit of Measure	Rate	Amount
CON2	Concrete Category 2 Medium	16.4			
	CUSTOMER COPY	TIME IN	4:59:07 PM	TIME OUT	5:15:07 PM

brandown
Quarry, Waste, & Recycling Services Proprietary Limited
ABN 30 003 830 304

Postal Address: PO Box 141 Kemps Creek NSW 2178 **Site Address:** 90 Range Road, Cecil Park NSW 2178
Telephone: 02 9826 1256 **Facsimile:** 02 9826 1622 **Email:** info@brandown.com.au

WEIGHBRIDGE DOCKET / TAX INVOICE

SOR-1969198

Docket No.	SOR-1969198	Vehicle Registration	04SAID	Trailer	U- 20369
Date	16/02/2021	Gross	44.10	Capacity	
Customer Name	ACTION INSTALLATION	Tare	18.82	% Load	
Customer Code	ACTI04	Net	25.28	This Load	
Customer Address	& SERVICES			Density	
	UNIT 30 85-115 ALFRED RD			Density Band	
	CHIPPING NORTON 2170				
Customer Reference No.	TOONGABBIE	Delivery Address	ACTION INSTALLATION		
Customer PO No.	STATION ST		& SERVICES		
Docket Entered by	A D		UNIT 30 85-115 ALFRED RD		
Location	F AREA WASTE IN		CHIPPING NORTON 2170		

Signature Carrier _____ Signature Customer _____

We hereby confirm that we accept the conditions overleaf

Code	Product	Quantity	Unit of Measure	Rate	Amount
FMIXBD1	General Solid Waste	25.28			
	General Solid Waste				

CUSTOMER COPY TIME IN 9:38:31 AM TIME OUT 9:54:31 AM

brandown
Quarry, Waste, & Recycling Services Proprietary Limited
ABN 30 003 830 304

Postal Address: PO Box 141 Kemps Creek NSW 2178 **Site Address:** 90 Range Road, Cecil Park NSW 2178
Telephone: 02 9826 1256 **Facsimile:** 02 9826 1622 **Email:** info@brandown.com.au

WEIGHBRIDGE DOCKET / TAX INVOICE

SOR-1969332

Docket No.	SOR-1969332	Vehicle Registration	04SAID	Trailer	U- 20369
Date	16/02/2021	Gross	43.62	Capacity	
Customer Name	ACTION INSTALLATION	Tare	18.82	% Load	
Customer Code	ACTI04	Net	24.80	This Load	
Customer Address	& SERVICES			Density	
	UNIT 30 85-115 ALFRED RD			Density Band	
	CHIPPING NORTON 2170				
Customer Reference No.		Delivery Address	ACTION INSTALLATION		
Customer PO No.	TOONGABBIE		& SERVICES		
Docket Entered by			UNIT 30 85-115 ALFRED RD		
Location	F AREA WASTE IN		CHIPPING NORTON 2170		

Signature Carrier _____ Signature Customer _____

We hereby confirm that we accept the conditions overleaf

Code	Product	Quantity	Unit of Measure	Rate	Amount
FMIXBD1	General Solid Waste	24.8			
	General Solid Waste				

CUSTOMER COPY

TIME IN 4:29:56 PM TIME OUT 4:45:56 PM

brandown
Quarry, Waste, & Recycling Services Proprietary Limited
ABN 30 003 830 304

Postal Address: PO Box 141 Kemps Creek NSW 2178 **Site Address:** 90 Range Road, Cecil Park NSW 2178
Telephone: 02 9826 1256 **Facsimile:** 02 9826 1622 **Email:** info@brandown.com.au

WEIGHBRIDGE DOCKET / TAX INVOICE SOR-1969369

Docket No.	SOR-1969369	Vehicle Registration	04SAID	Trailer	U- 20369
Date	17/02/2021	Gross	45.38	Capacity	
Customer Name	ACTION INSTALLATION	Tare	18.82	% Load	
Customer Code	ACTI04	Net	26.56	This Load	
Customer Address	& SERVICES			Density	
	UNIT 30 85-115 ALFRED RD			Density Band	
	CHIPPING NORTON 2170				
Customer Reference No.	TOONGABBIE	Delivery Address	ACTION INSTALLATION		
Customer PO No.	STATION ST		& SERVICES		
Docket Entered by	A D		UNIT 30 85-115 ALFRED RD		
Location	F AREA WASTE IN		CHIPPING NORTON 2170		

Signature Carrier _____ Signature Customer _____

We hereby confirm that we accept the conditions overleaf

Code	Product	Quantity	Unit of Measure	Rate	Amount
FMIXBD1	General Solid Waste	26.56			
	General Solid Waste				

CUSTOMER COPY TIME IN 7:42:07 AM TIME OUT 7:58:07 AM

brandown
Quarry, Waste, & Recycling Services Proprietary Limited
ABN 30 003 830 304

Postal Address: PO Box 141 Kemps Creek NSW 2178 **Site Address:** 90 Range Road, Cecil Park NSW 2178
Telephone: 02 9826 1256 **Facsimile:** 02 9826 1622 **Email:** info@brandown.com.au

WEIGHBRIDGE DOCKET / TAX INVOICE SOR-1969442

Docket No.	SOR-1969442	Vehicle Registration	04SAID	Trailer	U- 20369
Date	17/02/2021	Gross	42.82	Capacity	
Customer Name	ACTION INSTALLATION	Tare	18.82	% Load	
Customer Code	ACTI04	Net	24.00	This Load	
Customer Address	& SERVICES			Density	
	UNIT 30 85-115 ALFRED RD			Density Band	
	CHIPPING NORTON 2170				
Customer Reference No.		Delivery Address	ACTION INSTALLATION		
Customer PO No.	TOONGABBIE		& SERVICES		
Docket Entered by			UNIT 30 85-115 ALFRED RD		
Location	F AREA WASTE IN		CHIPPING NORTON 2170		

Signature Carrier _____ Signature Customer _____

We hereby confirm that we accept the conditions overleaf

Code	Product	Quantity	Unit of Measure	Rate	Amount
FMIXBD1	General Solid Waste	24			
	General Solid Waste				

CUSTOMER COPY TIME IN 11:07:49 AM TIME OUT 11:23:49 AM

brandown
Quarry, Waste, & Recycling Services Proprietary Limited
ABN 30 003 830 304

Postal Address: PO Box 141 Kemps Creek NSW 2178 **Site Address:** 90 Range Road, Cecil Park NSW 2178
Telephone: 02 9826 1256 **Facsimile:** 02 9826 1622 **Email:** info@brandown.com.au

WEIGHBRIDGE DOCKET / TAX INVOICE

SOR-1969544

Docket No.	SOR-1969544	Vehicle Registration	04SAID	Trailer	U- 20369
Date	17/02/2021	Gross	45.34	Capacity	
Customer Name	ACTION INSTALLATION	Tare	18.82	% Load	
Customer Code	ACTI04	Net	26.52	This Load	
Customer Address	& SERVICES			Density	
	UNIT 30 85-115 ALFRED RD			Density Band	
	CHIPPING NORTON 2170				
Customer Reference No.		Delivery Address	ACTION INSTALLATION		
Customer PO No.	TOONGABBIE		& SERVICES		
Docket Entered by			UNIT 30 85-115 ALFRED RD		
Location	F AREA WASTE IN		CHIPPING NORTON 2170		

Signature Carrier _____ Signature Customer _____

We hereby confirm that we accept the conditions overleaf

Code	Product	Quantity	Unit of Measure	Rate	Amount
FMIXBD1	General Solid Waste	26.52			
	General Solid Waste				

CUSTOMER COPY

TIME IN 3:37:48 PM TIME OUT 3:53:48 PM

SUEZ Recycling & Recovery Pty Ltd
Elizabeth Drive Waste Management Centre
1725 Elizabeth Drive
Kemps Creek NSW 2178

Phone: 1300 651 116
ABN: 70 002 902 650

Delivery Docket
REPRINT

Ticket No: **ED170067421.0**
Time In: 18/02/2021 7:36:16 AM
Time Out: 18/02/2021 8:06:05 AM
Vehicle Rego: **04SAID**
Vehicle Config: 3 Axle Truck & 3 Axle Dog Trailer

Client: 700640 - ACTION INSTALLATIONS & SERVICES PTY LTD
Carrier:
Trans Ref:
Order No: 172835

Restricted Soil
24.32t @

Source: External
Dest: Elizabeth Drive Restricted Waste

GROSS: 43.26t
TARE: 18.94t
NET Weight: 24.32t

Chargeable Weight: 24.32t
Each Item Weight: 0.00t

Total (ex GST):
GST :

Total Price:

-------- Payment Details ----------

==========
Total Price:
==========

Total Amount Tendered:
Change Given:

Driver:

Operator: WOCMF

SUEZ Recycling & Recovery Pty Ltd
Elizabeth Drive Waste Management Centre
1725 Elizabeth Drive
Kemps Creek NSW 2178

Phone: 1300 651 116
ABN: 70 002 902 650

Delivery Docket
REPRINT

Ticket No: **ED170067515.0**
Time In: 18/02/2021 11:23:21 AM
Time Out: 18/02/2021 11:49:26 AM
Vehicle Rego: **04SAID**
Vehicle Config: 3 Axle Truck & 3 Axle Dog Trailer

Client: 700640 - ACTION INSTALLATIONS & SERVICES PTY LTD
Carrier:
Trans Ref:
Order No: 172835

Restricted Soil
18.16t @

Source: External
Dest: Elizabeth Drive Restricted Waste

GROSS: 37.28t
TARE: 19.12t
NET Weight: 18.16t

Chargeable Weight: 18.16t
Each Item Weight: 0.00t

Total (ex GST):
GST :

Total Price:

-------- Payment Details ----------

==========
Total Price:
==========

Total Amount Tendered:
Change Given:

Driver:

Operator: WOCMF

Report Selection Criteria

Created Date	Start Date	State	Parent Customer	Customer
Between 18/02/2021 and 18/02/2021	Between 18/02/2021 and 18/02/2021	All	All	700640 - ACTION INSTALLATIONS & SERVICES PTY LTD

Location	From \ To	Business Line	Ticket code	Ticket version	Direction	Stored tare?	Start timestamp	End timestamp	Customer Number
Elizabeth Drive Restricted Waste	External	Disposal	ED170067421	0	IN	N	18/02/2021 7:36:16 AM	18/02/2021 8:06:05 AM	700640
Elizabeth Drive Restricted Waste	External	Disposal	ED170067515	0	IN	N	18/02/2021 11:23:21 AM	18/02/2021 11:49:26 AM	700640

Mandalay Detailed Ticket List Report

Product	Location	Other Location	Docket	Invoice
All	All	All	All	All

Customer	Registration	Customer invoice reference	Product Code	Product	Gross (t)	Tare (t)	Net (t)	Unit Of Measure	Charged units
700640 - ACTION INSTALLATIONS & SERVICES PTY LTD	04SAID	172835	8094	Restricted Soil	43.26	18.94	24.32	Metric tonnes	24.32
700640 - ACTION INSTALLATIONS & SERVICES PTY LTD	04SAID	172835	8094	Restricted Soil	37.28	19.12	18.16	Metric tonnes	18.16
				Grand Total:	**80.54**	**38.06**	**42.48**		

Invoice Reference	Vehicle Registration	Direction	Ticket Status	Material Class
All	All	All	All	All

Amount ex gst ($)	GST ($)	Amount ($)	Seal	Container	Created timestamp
					18/02/2021 7:36:04 AM
					18/02/2021 11:23:00 AM

22/02/2021 - 7:01:55 AM

5997754

HANSON CONSTRUCTION MATERIALS PTY LTD

ABN 90 009 679 734

TAX INVOICE

Hanson HEIDELBERGCEMENT Group

FETY
VICE
TION

1. Wet concrete can be harmful to skin and eyes. Avoid contact by using proper clothing or personal protective equipment which complies with Australian standards. Wash exposed skin areas thoroughly with cool water for ten minutes.
2. Silica dust may be released when working with quarry products or when quarry or concrete products are cut, drilled, sawn, routed, broken up or ground. Repeated or continuous long term exposure may lead to lung disease. Always use adequate dust prevention and extraction methods, protective clothing and dust masks that conform to Australian standards.
For more information contact Hanson for a Material Safety Data Sheet and refer to the relevant Australian Standard.

Serial No. J 3652623

ery No. 135997754 CUSTOMER SERVICE CENTRE PH 133666 Pg: 1

ate	Truck	Distance	Map Ref	Job/Order No.	Plant	Customer No.	Customer Purchase O/N.
2.21	DCA2282	78	189 M4	T102703696	3575	154038	STATION RD

ner Name: ACTION INSTALLATION & SERVICES
ry Address: 9 STATION RD TOONGABBIE 57 STATION RD TOONGABBIE NSW 2146
ST CROSS RD: MCCOY ST

WARNING: Addition of water or additives may void product guarantee.

Water Added on Site: Yes ☐ No ☐
Est.Litres: L
Est.Final Slump: mm

	Gross	Net/Load	UoM	Class/MPa.	Agg	Nominal Slump	Prog Total	Total Order	Ex-Plant	Arrive	Finished	W/Time
4	48.08	32.94 t		NA	20		165.54	165.54	13:34			min

10037383 20MM SCALPS

ed By: SHELTONS

Sub Total inc. GST	$
Extra Charges inc. GST	$
Carried Fwd inc. GST	$
TOTAL inc. GST	$

Amt Received	Cash	Chq	CR
$			

Driver Signs for Payment

Plant Signs for Payment

OR ON BEHALF OF THE CUSTOMER ACCEPTING THE PRODUCTS AND SERVICES DETAILED ABOVE AND HANSON'S FULL TERMS AND CONDITIONS OF SALE FOUND ON OUR WEB SITE WWW.HANSON.COM.AU. MS AND CONDITIONS ARE SHOWN OVERLEAF BUT ALL WILL APPLY AND MAY AFFECT YOUR RIGHTS AND HANSON'S LIABILITY. I HAVE READ THE SAFETY WARNING CAUTION ABOVE.

AME ..... CUSTOMER SIGNATURE ..... ABN: 79127091534

6 78 KM

WHITE:HEAD OFFICE BLUE:CUSTOMER PINK:DRIVER YELLOW:PLANT STEVE 0412594220

HAN 008 (AUS)

DOC20/174111

Mr Jason Kuchel
State Director
Cement Concrete & Aggregates Australia
PO Box 124,
Mascot NSW 1460

Email: Jason.Kuchel@ccaa.com.au

Dear Mr Kuchel

Thank you for your email of 6 December 2019 and 6 February 2020 advising of an issue affecting the quarrying industry regarding customers requesting a Virgin Excavated Natural Material (VENM) certificate for material which has been extracted and sold from a quarry.

As you are aware, the *Protection of the Environment Operations (POEO) Act, 1997* establishes a regulatory framework that regulates the transport, processing and disposal a range of waste materials in NSW.

For a material to be regulated under this framework, the material firstly needs to be assessed and determined to be waste under the definition of waste detailed in the POEO Act, in particular:

waste" *includes--*
(a) any substance (whether solid, liquid or gaseous) that is discharged, emitted or deposited in the environment in such volume, constituency or manner as to cause an alteration in the environment, or
(b) any discarded, rejected, unwanted, surplus or abandoned substance, or
(c) any otherwise discarded, rejected, unwanted, surplus or abandoned substance intended for sale or for recycling, processing, recovery or purification by a separate operation from that which produced the substance, or
(d) any processed, recycled, re-used or recovered substance produced wholly or partly from waste that is applied to land, or used as fuel, but only in the circumstances prescribed by the regulations, or
(e) any substance prescribed by the regulations to be waste.

Generally, quarried materials would not meet the definition of waste, as the quarried material is purchased by a customer and would not be considered as being discarded, rejected, unwanted, surplus or an abandoned substance in this circumstance.

As the material would not be considered as a waste, other provisions of the waste regulatory framework would not apply, such as the requirement to classify waste material and prepare a waste classification report or a VENM Certificate.

To address the issue you have raised, the EPA will consider placing a clarifying statement on the EPA's VENM web page to advise that commercially quarried material is not considered a waste material and therefore would not be required to be classified under the waste classification process or require a VENM certificate.

Cement Concrete and Aggregates Australia may also need to consider if an alternative certification process may be required to provide assurance to customers that the quarried material they are purchasing meets the customers quality requirements and expectations.

Thank you for bringing this issue to the EPA's attention and if you require any further clarification please contact the EPA's Director Major Compliance and Investigations, Greg Sheehy on 9995 6860 or greg.sheehy@epa.nsw.gov.au

Yours sincerely

CARMEN DWYER
Executive Director Regional Operations
Environment Protection Authority

6-3-2020

enviro
waste services group

TAX INVOICE

AIS
Unit 30/85-115 Alfred Road
Chipping Norton NSW 2170
Australia

Toongabbie.

Invoice No.: 00023300
Date: 10/02/2021
Due Date: 17/02/2021
Reference:

DATE	QTY/ UNITS	NOTES	RATE	TOTAL(ex-GST)	TAX CODE
9/02/2021	4.000	Pump out of Grade B J120 Waste 28110			GST
9/02/2021	4,000	Levy / Testing Charge			FRE
9/02/2021	4	Transport of Liquid Waste & Service Fee			GST

RECEIVED
19 FEB 2021
BY: .....

ENTERED
19 FEB 2021
BY: .....

Site Address
AIS - Challenger Auto Parts

Subtotal:	
GST:	
Total(inc-GST):	
Paid to Date:	
Balance Due:	

We appreciate your business.

How to Pay

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by credit card

To pay via MasterCard, VISA or Amex
Call: 1300 141 315

Amex Incurs 1.65% Charge

EFT
St George Bank
Enviro Waste Services Group Pty Ltd
BSB# 112-879 Acc# 477 108 254

by mail

Detach this section and mail your cheque to...

Enviro Waste Services Group Pty Ltd
PO Box 4392 , North Rocks NSW 2151

Invoice No: **00023300** Amount Due:

(creditor)watch member

enviro
ABN 66 613 987 438
Address: PO Box 4392 North Rocks NSW 2151
1300 141 315 Email: accounts@envirowaste.com.au
Website: www.envirowaste.com.au

Appendix F

Summary of Results

Sample Identification	PQL	Guideline [A]							V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14
Sample Depth (m) [B]		HSL 'D'				ESL C&I	Non-sensitive ML	DC D	1	1	1	1	3.5	3.5	1	1	1	1	3.5	3.5	3.5	3.5
Date		SAND 0-<1m	SAND 1-<2m	SAND 2-<4m	SAND >4m	Coarse	Coarse		9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21
Sample Profile									Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay
Dominant Stratum [C]									Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand
PID (ppm)									0	0.3	0	0.6	0	0	0.6	0.5	0.7	3.2	5.2	5.2	0.6	0.8
Sample Purpose									Validation (Wall)	Validation (Wall)	Validation (Wall)	Validation (Wall)	Validation (Base)	Validation (Base)	Validation (Wall)	Validation (Wall)	Validation (Wall)	Validation (Wall)	Validation (Base)	Validation (Base)	Validation (Base)	Validation (Base)
Sample collected by									RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)																						
Benzene	0.2	3	3	3	3	75		430	<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
Toluene	0.5	NL	NL	NL	NL	135		99000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5	NL	NL	NL	NL	165		27000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
meta- and para-Xylene	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	1	230	NL	NL	NL	180		81000	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Polycyclic Aromatic Hydrocarbons (PAH)																						
Naphthalene		NL	NL	NL	NL	370		11000	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Recoverable Hydrocarbons (TRH)																						
TRH C_6-C_{10}	10						700	26000	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
TRH >C_{10}-C_{16}	50					170	1000	20000	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	210	<50	<50	<50
TRH >C_{16}-C_{34}	100					1700	3500	27000	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	210	<100	<100	<100
TRH >C_{34}-C_{40}	100					3300	10000	38000	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
F1	10	260	370	630	NL	215			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2	50	NL	NL	NL	NL				<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	210	<50	<50	<50

All results are in units of mg/kg.

Blank Cell indicates no criterion available

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

F1 = TRH C_6-C_{10} minus BTEX. F1 PQL deemed equal TRH C_6-C_{10}.

F2 = TRH >C_{10}-C_{16} minus naphthalene. F2 PQL deemed = TRH >C_{10}-C_{16}.

[A] ASC NEPM 1999 (amended April 2013) Vapour Based Health Screening Levels (HSL) 'D' (Commercial/Industrial)

[A] ASC NEPM 1999 (amended April 2013) Ecological Screening Levels (ESL) C&I (Commercial and Industrial)

[A] ASC NEPM 1999 (amended April 2013) Management Limits (ML) Non-Sensitive Sites (Commercial and Industrial)

[A] CRC Care Technical Report 10, September 2011 Direct Contact (DC) Health Screening Levels 'D' (Commercial/Industrial)

[B] Start of sample, generally over a 0.1m interval

[C] Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented, most conservative criterion used

NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than the solubility capacity for that compound based on a petroleum mixture. Vapour is therefore not a risk for this compound.

Results for TRH have been compared to TPH guidelines.

Presented ESL for naphthalene is an Ecological Investigation Level

ESL are applicable for material at less than 2m depths below finished surface/ground level

For the purpose of the Tier 1 ESL/EIL assessment, all background concentrations are assumed to be zero

ESL for TRH >C_{16}-C_{34} and >C_{34}-C_{40} are low reliability

Results shown in **BOLD** are in excess of the vapour based HSL

Results shown in shading are >250% of the vapour based HSL

Results shown in underline are in excess of the ESL

Results shown in *italics* are in excess of the management limit

Results shown in patterned cells are in excess of the direct contact HSL

Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline [A]		V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14
Sample Depth (m) [B]		HIL 'D'	EIL C&I	1	1	1	1	3.5	3.5	1	1	1	1	3.5	3.5	3.5	3.5
Date				9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21	9/2/21
Sample Profile				Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay
Sample Purpose				Validation (Wall)	Validation (Wall)	Validation (Wall)	Validation (Wall)	Validation (Base)	Validation (Base)	Validation (Wall)	Validation (Wall)	Validation (Wall)	Validation (Wall)	Validation (Base)	Validation (Base)	Validation (Base)	Validation (Base)
Sample collected by				RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL	RCA - RJL/ZL
Polycyclic Aromatic Hydrocarbons (PAH)																	
Naphthalene	0.5		370	<0.5	<0.5	<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	0.5			<0.5	<0.5	<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	0.5			<0.5	<0.5	<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	0.5			<0.5	<0.5	<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	0.5			<0.5	<0.5	<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	0.5			<0.5	<0.5	<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	0.5			<0.5	<0.5	<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	0.5			<0.5	<0.5	<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	0.5			<0.5	<0.5	<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	0.5			<0.5	<0.5	<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(b)&(j)fluoranthene	0.5			<0.5	<0.5	<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	0.5			<0.5	<0.5	<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	0.5		1.4	<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
Indeno(1,2,3-c,d)pyrene	0.5			<0.5	<0.5	<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	0.5			<0.5	<0.5	<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	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carcinogenic PAH (B(a)P equivalent)	1.21	40		0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605
Sum of reported PAH	8	4000		4	4	4	4	4	4	4	4	4	4	4	4	4	4
Metals																	
Arsenic	5	3000	160	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	1	900		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	2	3600	310	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	5	240000	400	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.1	730		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	5	1500	1800	12	13	13	12	20	13	25	44	16	38	16	15	17	13
Nickel	2	6000	55	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	5	400000	360	--	--	--	--	--	--	--	--	--	--	--	--	--	--

All results are in units of mg/kg, except for asbestos.
Blank Cell indicates no criterion available
PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory
[A] ASC NEPM 1999 (amended April 2013) Health Investigation Levels (HIL) 'D' (Commercial/Industrial).
[A] ASC NEPM 1999 (amended April 2013) Ecological Investigation Levels (EIL) C&I (Commercial and Industrial).
[B] Start of sample, generally over a 0.1m interval
The Carcinogenic PAH value is calculated by multiplying the concentration of each of the 8 carcinogenic PAH compounds by its B(a)P toxic equivalence factor and summing these products.
HIL for Chromium are for Chromium VI
Presented ecological value for benzo(a)pyrene is a low reliability Ecological Screening Level
ESL are applicable for material at less than 2m depths below finished surface/ground level
For the purpose of the Tier 1 ESL/EIL assessment, all background concentrations are assumed to be zero
EIL for Naphthalene are for fresh (<2years) Naphthalene
EIL for Arsenic are for aged (>2years) Arsenic
EIL for Chromium are the added contaminant limit for aged (>2years) Chromium III in soils of 1% clay, the most conservative of the criteria.
EIL for Copper are the added contaminant limit for aged (>2years) Copper in soils of pH 6.5.
EIL for Lead are the added contaminant limit for aged (>2years) Lead.
EIL for Nickel are the added contaminant limit for aged (>2years) Nickel in soils of 5% CEC the most conservative of the criteria.
EIL for Zinc are the added contaminant limit for aged (>2years) Zinc in soils of 5% CEC and pH of 6.5, the most conservative of the criteria at pH 6.5.
Results shown in **BOLD** are in excess of the HIL
Results shown in shading are >250% of the HIL
Results shown in underline are in excess of EIL
Where summation required (PAH) calculation includes components reported as non detected as 1/2 PQL.