



# Limited Groundwater Assessment

Project  
**Ausgrid Underground Cable Project  
Alexandria to Kingsford**

Prepared for  
**Ausgrid**

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## Document Control

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# 1 Introduction

## 1.1 Background

Alliance Geotechnical Pty Ltd (Alliance) was engaged by Ausgrid (the client) to undertake a limited groundwater assessment at sampling point location BH01 located on the road reserve adjacent to 46 Burrows Road, Alexandria NSW (refer **Figure 1**).

## 1.2 Objectives

The objectives of this project were:

- Installation of one groundwater well at BH01 and subsequent sampling; and
- Factual presentation of the limited groundwater sample test results against ANZG (2018) criteria.

## 1.3 Scope of Work

The following scope of works was undertaken to address the project objectives:

- Installation of one groundwater monitoring well and subsequent sampling;
- Laboratory analysis of client nominated analytes; and
- Assessment of data and reporting.

## 2 Data Quality Objectives

### 2.1 Step 1: State the problem

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

The objective of this project is set out in **Section 1.2** of this report.

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

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

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

### 2.2 Step 2: Identify the decision / goal of the study

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

- Do the detected concentrations of contaminants in groundwater exceed the nominated criteria?

### 2.3 Step 3: Identify the information inputs

The information inputs required to make the decisions for the project set out in **Section 2.2**, include:

- Data obtained during the intrusive investigation and laboratory analysis;
- Identification of sample media that needs to be collected, as set out in **Section 2.7**;
- Parameters that will be measured in each relevant sample, as set out in **Section 2.7**;
- The analytical methods required for client nominated COPCs. These are set out in **Section 2.7** of this report; and
- The site criteria for the media of concern. These criteria are set out in **Table 2.3** and will be adopted based on the proposed land use scenario<sup>1</sup>, identified receptors, and site-specific groundwater conditions (where relevant).

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<sup>1</sup> The land use scenarios in Section 2.2 of NEPC (2013a) will be considered when adopting human health assessment criteria. The land use scenarios in Section 2.5 of NEPC (2013a) will be considered when adopting ecological assessment criteria.

Table 2.3 Adopted Tier 1 Site Assessment Screening Criteria

Exposure Pathway	Land Use Scenario <sup>2</sup>	Criteria Reference
Groundwater	Aquatic (freshwater) <sup>3</sup> The creeks proximate to the site are highly disturbed, on the basis that the aquatic ecosystem is measurably degraded and of lower ecological value due to them being surrounded by residential, commercial land use and therefore likely receiving road and stormwater runoff and runoff from intensive commercial activities.	ANZG (2018) 80% to 90% protection values for highly disturbed freshwater systems ( <a href="https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/search">https://www.waterquality.gov.au/anz-guidelines/guideline-values/default/water-quality-toxicants/search</a> ). <i>For contaminants that bioaccumulate, the protection value (with the exception of 99%) should be increased to the value to that 'one up' from the site-specific disturbance level e.g. a 95% protection value should be adopted for a bioaccumulating contaminant in a highly disturbed system).</i>
		The laboratory limit of reporting (LOR) has been adopted as the criteria for analytes which do not have a specific criteria.
	Disposal to wastewater	Sydney Water Industrial customers - Acceptance standards and charging rates for 2020-21 guideline (TWA)  <i>For assessment of suitability to dispose of water to wastewater system.</i>
	Irrigation (Short-term)	ANZECC (2000) Short-term irrigation trigger values outlined in Table 4.2.10
	Irrigation (domestic spray irrigation)	NZ Ministry for the Environment (2011) - for the assessment of petroleum hydrocarbons in Table 5.7
Recreational	ANZECC (2000) Recreational guideline values for secondary contact in Table 5.2.2	

## 2.4 Step 4: Define the boundaries of the study

The spatial extent of the project will be limited to:

- The boundaries of the site are limited to groundwater at MW1/BH01, as shown in **Figure 1**; and

<sup>2</sup> Consideration will be given to soil type, soil texture, soil depth, groundwater depth and appropriate species protection levels.

<sup>3</sup> Adopted guidelines values for select metals in freshwater ecosystems should be adjusted to reflect site specific hardness (refer Table 3.4.4 in ANZECC (2000))

- Physical constraints or infrastructure on site or on land adjacent to the site, which prevents safe and reasonable access for project team members and/or typical and readily available equipment used for projects of this nature.

The scale of the decisions required (as set out in **Section 2.2**) will be based on the boundaries of the site set out above.

The vertical and lateral extents of investigation will be limited to groundwater at monitoring well location MW1/BH01.

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

The temporal boundaries of the project will include:

- Availability of project team members (including subcontractors and subconsultants) to collect and assess relevant project data;
- The availability of site access to undertake fieldwork; and
- Meteorological conditions including heat, cold, wind, rain and snow, which may constrain undertaking of fieldwork, or may affect the quality of the data being collected.

## **2.5 Step 5: Develop the analytical approach**

### **2.5.1 Field Duplicates and Triplicates**

A minimum of one set of field duplicates and triplicates will be collected for each set of 20 samples collected (an equivalent of 5%), excluding asbestos samples.

Field duplicate and triplicate samples will be collected by splitting one bulk sample across three separate sample containers.

Analysis of the duplicate samples and triplicate samples will be scheduled based on at least one of the analytes that the relevant parent sample is being analysed for.

The relative percent difference (RPD) of the detected concentrations in the parent and duplicate, and the parent and triplicate, will be calculated, and the result compared to the relevant data quality indicator (DQI), as set out in **Section 2.5.6**.

### **2.5.2 Trip Spikes and Trip Blanks**

One trip spike and one trip blank will be used for each day of sampling<sup>4</sup>.

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<sup>4</sup> When samples are being collected on that day, that will be analysed for BTEX and/or TRH C<sub>6</sub>-C<sub>10</sub>.



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

### 2.5.3 Equipment Rinsate Blanks

One rinsate blank will be used for each day of sampling<sup>5</sup>.

A minimum of one rinsate blank will be scheduled for analysis for at least one of the COPC, during the project, provided sample collection and equipment decontamination procedures are the same for each day of sampling.

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

### 2.5.4 Field Blanks

One field blank will be used for each day of sampling<sup>6</sup>.

### 2.5.5 Analytical Laboratory Quality Assurance and Quality Control

The primary analytical laboratory will:

- be NATA accredited for the methods used; and
- use a quality assurance and quality control (QA/QC) program that will typically include analysis of method blanks, matrix spikes, surrogate spikes, laboratory control samples and laboratory duplicates.

The primary analytical laboratory will report on whether the analytical results of the QA/QC program are within the criteria set out in the laboratory's adopted data quality objectives.

### 2.5.6 Data Quality Indicators

A set of data quality indicators (DQI) will be adopted for assessing the completeness, comparability, representativeness, precision and bias (accuracy) of data collected during fieldwork, the analytical data produced by the laboratory. Each of these DQI, and associated target criteria are set out in **Table 2.5.6**.

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<sup>5</sup> Only where non-disposable sampling equipment is being used on that day.

<sup>6</sup> When samples are being collected on that day, that will be analysed for PFAS.

Table 2.5.6. Data Quality Indicators and Target Criteria

<b>Completeness</b>			
<b>Field Considerations</b>	<b>Target Criteria</b>	<b>Laboratory Considerations</b>	<b>Target Criteria</b>
Experienced sampling team used	Yes	Complete sample receipt advice and chain of custody attached	Yes
Sampling devices and equipment set out in sampling plan were used	Yes	Critical samples identified in sampling plan, analysed	Yes
Critical locations in sampling plan, sampled	Yes	Analysis undertaken addresses client nominated COPC in sampling plan	Yes
Critical samples in sampling plan, collected	Yes	Analytical methods reported in laboratory documentation and appropriate limit of reporting used	Yes
Completed field and calibration logs attached	Yes	Sample holding times met	Yes
Completed chain of custody attached	Yes		
<b>Comparability</b>			
<b>Field Considerations</b>	<b>Target Criteria</b>	<b>Laboratory Considerations</b>	<b>Target Criteria</b>
Same sampling team used for all work.	Yes	Same laboratory used for all analysis	Yes
Weather conditions suitable for sampling.	Yes	Comparable methods if different laboratories used	Yes
Same sample types collected and preserved in same way	Yes	Comparable limits of reporting if different laboratories used.	Yes
Relevant samples stored in insulated containers and chilled	Yes	Comparable units of measure if different laboratories have been used	Yes

<b>Representativeness</b>			
<b>Field Considerations</b>	<b>Target Criteria</b>	<b>Laboratory Considerations</b>	<b>Target Criteria</b>
Media identified in sampling plan, sampled	Yes	Samples identified in sampling plan, analysed.	Yes
Samples required by sampling plan, collected	Yes	-	-

<b>Precision</b>			
<b>Field Considerations</b>	<b>Target Criteria</b>	<b>Laboratory Considerations</b>	<b>Target Criteria</b>
Minimum 5% duplicates and triplicates collected and analysed	Yes	All laboratory duplicate RPDs within laboratory acceptance criteria	Yes
Minimum 10% duplicates and triplicates collected and analysed where PFAS is a contaminant of concern	N/A	-	-
RPD unlimited where detected concentrations are <10 times the limit of reporting.	Yes	-	-
RPD within 50% where detected concentrations are 10-20 times the limit of reporting.	Yes	-	-
RPD within 30% where detected concentrations are >20 times the limit of reporting.	Yes	-	-

<b>Bias (Accuracy)</b>			
<b>Field Considerations</b>	<b>Target Criteria</b>	<b>Laboratory Considerations</b>	<b>Target Criteria</b>
Trip blank analyte results less than limit of reporting	Yes	Laboratory method blank results within laboratory acceptance limits	Yes
Trip spike analyte results less between 60% and 140%	Yes	Laboratory control sample results within laboratory acceptance limits	Yes
Rinsate blank analyte results less than limit of reporting	Yes	Laboratory spike sample results within laboratory acceptance limits.	Yes
Field (PFAS) blank analyte results less than limit of reporting	N/A	-	-

### 2.5.7 If / Then Statements

If the field and laboratory analytical dataset meets the DQI target assessment criteria, then the data may be considered adequately complete, comparable, representative, precise and unbiased, for the purpose of addressing the decisions / goals of this project as set out in **Section 2.2**.

If the field and laboratory analytical dataset does not meet the DQI target assessment criteria, then additional data may need to be collected to address gaps identified in the data.

## 2.6 Step 6: Performance and Acceptance Criteria

### 2.6.1 If / Then Decisions

There are two types of decision error:

- Sampling errors – these occur when the sampling program does not adequately detect variability of a contaminant from point to point across a site. That is, the samples collected are not representative of site conditions (e.g. an appropriate number of representative samples have not been collected from each stratum, to account for estimated variability in that contaminant); and
- Measurement errors - these occur during sample collection, preparation, analysis and reduction of data.

During land contamination assessment, these errors can result in either:

- a Type I error, where land contamination human health and/or ecological exposure risks are considered to be acceptable, when they are not acceptable; or
- a Type II error, where land contamination human health and/or ecological exposure risks are considered to be unacceptable, when they are acceptable.

For decision rules to be sound, they should be designed to mitigate risk of decision errors occurring. The risk of decision error on this project will be mitigated by:

- Ensuring fieldwork is undertaken by suitably experienced field staff and sub-contractors, with reference to the DQO adopted for this project;
- Ensuring laboratory analysis is undertaken by NATA accredited laboratories; and
- Ensuring assessment of field and laboratory analytical data is undertaken by suitably experienced environmental consultants and/or outsourcing assessment to technical experts (if warranted).

## 2.7 Step 7: Develop the plan for obtaining data

### 2.7.1 Sampling Point Densities and Locations

One groundwater well will be installed along the proposed alignment.

### 2.7.2 Groundwater Sampling Methods

Groundwater monitoring well MW1/BH01 will be established onsite, at the location nominated in **Figure 1**.

The bore will be drilled to a target depth of 4.0 m below ground surface, or 2.0 m below the inferred standing water level (SWL), whichever occurs first, using a drilling rig fitted with solid stem augers. Target depths will also consider changes in lithology and geological formations to avoid creating pathways between separate groundwater features (e.g., confining or semi confining layers).

A monitoring well will be constructed in each bore using 50 mm Class 18 uPVC machine slotted screen and casing, with a gravel pack extending from the base of the well to approximately 0.5 m above the top of the slotted screen section, followed by approximately 0.5 m of hydrated bentonite, then grout to the surface and installation of a gatic cover.

Monitoring well development will occur following installation, and groundwater will then be allowed to equilibrate before sampling (preferably 5 days later).

At the start of the groundwater monitoring event (GME), the depth to standing water level (SWL) in MW1/BH01 will be gauged using a water level meter. The groundwater will be purged using a peristaltic pump, until field groundwater quality parameters stabilise (including dissolved oxygen, electrical conductivity, oxidation-reduction potential, pH and temperature). These parameters will be measured using a calibrated water quality meter and flow cell. Observations will also be made of colour, clarity, odour and sheen in the purged water. Field water quality parameter measurements and observations will be recorded on a GME field sheet.

New, dedicated pump tubing, etc., will be used for purging and sampling of the monitoring well.

Samples for volatile analysis will be collected before semi volatile samples. Headspace in sample containers will be avoided. Relevant samples will be field filtered to 0.45µm.

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

### 2.7.3 Decontamination

Non-disposable sampling equipment will be decontaminated between prior to sampling to mitigate potential cross contamination. Decontamination will include the following procedure:

- Washing off the non-disposable sampling equipment with a solution of potable water and phosphate free detergent (e.g. Decon 90), noting that Decon 90 will not be used on equipment used for collection of samples that will be analysed for PFAS compounds;
- Rinsing the washed equipment with distilled or de-ionised water; and
- Air drying of the rinsed equipment.

### 2.7.4 Sample Identification, Handling, Storage and Transport

Groundwater samples will be identified using the relevant Alliance project number, the sampling point identification number (e.g. MW1) and date the sample was collected.

Samples will be placed in laboratory prepared containers (containing preservatives as appropriate). Samples will be stored in insulated containers with ice.

Samples will be transported to the relevant analytical laboratory by Alliance or a third-party courier, using chain of custody (COC) documentation.

### **2.7.5 Selection of Laboratory**

The analytical laboratories used for this project will be reputable industry recognised environmental laboratories, which are NATA accredited for the analytical methods used.

### **2.7.6 Scheduling of Laboratory Analysis**

Collected samples will be scheduled for laboratory analysis based on:

- Client nominated contaminants of potential concern (COPC);
- Observations made of the sample when collected (including sheen and odour); and
- The need for specific qualitative or quantitative data to inform assessment of risk associated with other laboratory analytical data.

The client nominated laboratory analytical schedule (including upper limiting sample quantities) adopted for this project includes:

- pH, EC, TSS, Turbidity, BOD, MBAS, Chloride, Fluoride, Sulfate, Nitrate/Nitrite, ammonia, TRH, BTEX, PAH, OCP, OPP, PCB, Phenols, 17 Metals, Thermotolerant faecal coliforms (F.Coliforms), Enterococci and asbestos in water.

### **2.7.7 Analytical Methods, Limits of Reporting and Holding Times**

The analytical methods, limits of reporting and sample holding times adopted for this project, are set out in **Table 2.7.7**

Table 2.7.7 Analytical Methods, Limits of Reporting and Holding Times

Analyte	Method	Limit of Reporting (µg/L)	Holding Time
BTEX and TRH C <sub>6</sub> -C <sub>10</sub>	USEPA 5030, 8260B and 8020	1-2 and 50	14 days
TRH C <sub>10</sub> -C <sub>40</sub>	USEPA 8015B & C	50-500	14 days
PAH	USEPA 8270	0.5-10	14 days
PCB	USEPA 8270	-	14 days
OCP/OPP	USEPA 8081	-	14 days
Metals	USEPA 6010, 6020	0.0002-0.05	6 months
Metals (Hg and Cr <sup>vi</sup> )	USEPA 8015B & C	0.1-5	6 months (28 days)
pH	APHA 4500 pH	0.1 pH unit	24 hours (up to 7 days allowed)
Nitrogens (speciated including Ammonia)	APHA 4500-NH <sub>3</sub> , APHA 4500-NO <sub>3</sub> 4500-NO <sub>2</sub> 4500-NO <sub>x</sub> 4500-TKN 4500-Organic N	0.01-0.2 mg/L	2-28 days
Phenols	USEPA 8270, NEPM Schedule B3	0.05	7 days
Surfactants (MBAS)	APHA 5540	0.2 mg/L	2 days
Turbidity	APHA 2130	1 NTU	2 days
Biochemical Oxygen Demand (BOD <sub>5day</sub> )	APHA 5210	5 mg/L	2 days
Enterococci	AS 4276.9:2007	1 cfu/mL	1 day
Coliforms Total	AS 4276.5:2007	1 cfu/mL	1 day

### 3 Fieldwork

#### 3.1 Groundwater

##### 3.1.1 Installation of Groundwater Monitoring Wells

Groundwater monitoring well installation works were undertaken on 23 June 2022 under the supervision of an Alliance consultant Aaron Hong. The well was constructed using 50 mm Class 18 uPVC machine slotted screen and casing, gravel pack, bentonite seal, grout, and finished at the ground surface with a gatic cover. Groundwater monitoring well construction details were as follows:

- Slotted screen PVC pipe and sand from 3.5m to 1m depth below ground level (bgl);
- PVC casing from 1m to surface; and
- Bentonite from 1m to 0.5m bgl.

The monitoring well was developed on 22 July 2022 using a foot valve following installation.

##### 3.1.2 Groundwater Monitoring Event

Standing water level in groundwater monitoring well, MW1/BH01, was gauged on 27 July 2022 by suitably experienced Alliance environmental consultant, Samuel Inameti, and the results obtained were recorded (refer copy of field groundwater quality parameter forms presented in **Appendix G**). The standing water level in MW1/ BH01 was 0.3 m below top of casing (mBTOC). Survey of the well location and elevation by a registered surveyor was not within the scope of this assessment.

The groundwater monitoring well was then purged using a peristaltic pump, fitted to dedicated silicon and polyethylene tubing, until water quality parameters stabilised. The purge results were recorded (refer copy of field groundwater quality parameter forms presented in **Appendix G**).

A summary of field measured groundwater parameters is presented in **Table 3.1.2**.



Table 3.1.2. Summary of field measured groundwater parameters.

Groundwater Parameter	Observation Summary
Sheen	Visual evidence of sheen on collected samples was not observed.
LNAPL / DNAPL	Visual evidence of light non aqueous phase liquid (LNAPL) / dense non aqueous phase liquid (DNAPL) on collected samples was not observed.
Odour	Pungent organic odour was detected in the samples collected.
Dissolved oxygen	Readings ranged from 0.03 ppm to 4.78 ppm.
Electrical Conductivity	Readings ranged from 410 $\mu$ S/cm to 434 $\mu$ S/cm.
pH	Readings ranged from pH 7.01 to pH 7.05.
Reduction oxygen (redox) potential	Readings ranged from -49.0 mV to -140.4 mV.

It is noted that water quality measurements were measured on extracted groundwater at the monitoring well. Although care was taken to minimise disturbance of groundwater (using low flow sampling methods and a flow cell), the results presented in this report (particularly dissolved oxygen) may not be representative of actual sub-surface groundwater conditions.

The same peristaltic pump and dedicated polyethylene and silicon tubing was used to collect a low flow sample from each monitoring well. Collected samples were placed in suitable laboratory prepared containers and labelled. The samples collected for metal analysis were filtered in the field during collection, using disposable 0.45  $\mu$ m filters.

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

## 4 Laboratory Analysis

The collected samples were transported to the analytical laboratory using chain of custody (COC) protocols. A selection of those samples were scheduled for laboratory analysis, taking into consideration the laboratory analytical schedule presented in **Table 2.7.6**, observations made in the field, and the results of field and headspace screening.

A copy of the COC, sample receipts and certificates of analysis, is presented in **Appendix B**.

The relevant laboratory analytical results were tabulated and presented in the attached **Table LR1** and **Table LR2**, to allow comparison with assessment criteria adopted for this project.

## 5 Data Quality Indicator (DQI) Assessment

In order to assess the quality of the field and laboratory analytical data collected for this project, that data was compared against the data quality indicators (DQI) established for this project (refer **Section 2.5.6**).

The results of that comparison is presented in **Appendix C**.

The DQI comparison results indicate that the field and laboratory data are adequately complete, comparable, representative, precise and unbiased (accurate), with in the context and objectives of this project.

## 6 Results and Discussion

### 6.1 Aquatic Ecosystem Protection

The following considerations have been made when assessing aquatic ecosystem protection assessment criteria:

- A default groundwater hardness ( $\text{CaCO}_3$ ) value of 30 mg/L; and
- The criteria for the analytes benzo(a)pyrene and certain OCPs and PCBs were less than the laboratory limit of reporting (LOR). However, PAHs, OCPs and PCBs were not detected in the groundwater samples analysed. Therefore, the risk of benzo(a)pyrene, OCPs and PCBs in groundwater at concentrations greater than the criteria is considered low.

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

- Detected concentration of copper of 3  $\mu\text{g/L}$  for MW01/BH01 (criterion of 2.5  $\mu\text{g/L}$ );

### 6.2 Irrigation

The detected concentrations of the relevant COPC in the groundwater samples analysed, were less than the ANZECC (2000) irrigation criteria for metals.

Petroleum hydrocarbons were detected above the limit of reporting in sample MW1 and QAQC1. However, the concentrations detected were less than the New Zealand Ministry for the Environment (2011) irrigation criteria for petroleum hydrocarbons. The petroleum hydrocarbon criteria are based on spray irrigation.

Furthermore, no sheen or odour were observed in the samples collected.

### 6.3 Trade Waste

The detected concentrations of the client nominated COPCs in the groundwater samples analysed, were less than the adopted Sydney Water trade waste criteria.

### 6.4 Recreational Waters – Secondary Contact in Freshwater

The detected concentration of Total Coliforms (>240000 cfu/100mL) in the groundwater sample analysed exceeded the water quality guidelines criteria for secondary contact in freshwater (1000cfu/100mL).

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

## 7 References

ANZECC 2000, 'Australian and New Zealand Guidelines for Fresh and Marine Water Quality' dated October 2000

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## FIGURES







Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N. Robinson, NCEAS, NLS, OS, NMA, Geodastystreisen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

**Legend**

-  Borehole
-  A2K Cable Project Route

Client Name:	Ausgrid
Project Name:	Underground Cable Projects
Project Location:	Alexandria NSW 1515 to Kingsford NSW 2032

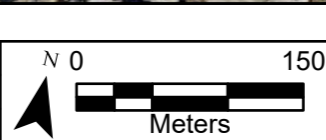


Figure Number:	1
Figure/Drawing Date:	24/08/2022
Report Number:	14777-ER-2-2



**TABLES**



Table LR1  
A2K - Burrows Road  
Groundwater Analytical Results & Adopted Site Criteria  
14777-ER-2-1

			Sydney Water (2021-2022)	ANZG (2018)	ANZECC 2000	ANZECC 2000	NZ Ministry for the Environment (2011)	MW1 / BH1	QAQC1	TRIP SPIKE	TRIP BLANK
Analytes	Units	LOR		Fresh Waters 80% (Hardness Modified Values)	Irrigation (short-term trigger values)	WQG for recreational Waters - Freshwaters/ Secondary Contact					
<b>Microbiological</b>											
Enterococci	cfu/100mL	1	-	-	-	-	-	30	-	-	-
Total Coliforms	cfu/100mL	1	-	-	-	1000	-	>240000	-	-	-
<b>Metals/Metalloids</b>											
Aluminium, Al	µg/L	1	100000	55	20	-	-	<50	<50	-	-
Arsenic, As	µg/L	1	1000	140	2000	-	-	9	9	-	-
Barium, Ba	µg/L	1	5000	-	-	-	-	<20	<20	-	-
Beryllium, Be	µg/L	1	-	-	500.0	-	-	<1	<1	-	-
Boron, B	µg/L	50	100000	2500	refer to guideline	-	-	120	120	-	-
Cadmium, Cd	µg/L	0.2	1000	0.8	50.00	-	-	<0.2	<0.2	-	-
Chromium, Cr	µg/L	1	3000	3.3	1000	-	-	<1	<1	-	-
Cobalt, Co	µg/L	1	5000	1.4	100	-	-	<1	<1	-	-
Copper, Cu	µg/L	1	5000	2.5	5000	-	-	3	2	-	-
Iron, Fe	µg/L	5	50000	-	-	-	-	9200	-	-	-
Lead, Pb	µg/L	1	2000	9.4	5000	-	-	<1	<1	-	-
Manganese, Mn	µg/L	5	10000	3600	10000	-	-	120	120	-	-
Mercury (Total), Hg	µg/L	0.1	30	5.4	2	-	-	<0.1	<0.1	-	-
Molybdenum	µg/L	1	100000	-	-	-	-	7	7	-	-
Nickel, Ni	µg/L	1	3000	17.0	2000	-	-	2	2	-	-
Selenium (Total), Se	µg/L	1	5000	34	50	-	-	<1	<1	-	-
Uranium	µg/L	5	10000	-	-	-	-	<5	<5	-	-
Vanadium	µg/L	5	-	-	-	-	-	7	<5	-	-
Zinc, Zn	µg/L	5	5000	31	5000	-	-	6	<5	-	-
<b>Polycyclic Aromatic Hydrocarbons</b>											
Acenaphthene	µg/L	1	-	-	-	-	-	<1	<1	-	-
Acenaphthylene	µg/L	1	-	-	-	-	-	<1	<1	-	-
Anthracene	µg/L	1	-	7	-	-	-	<1	<1	-	-
Benzo(a)anthracene	µg/L	1	-	-	-	-	-	<1	<1	-	-
Benzo(a)pyrene	µg/L	1	-	0.7	-	-	-	<1	<1	-	-
Benzo(b&j)fluoranthene	µg/L	1	-	-	-	-	-	<1	<1	-	-
Benzo(ghi)perylene	µg/L	1	-	-	-	-	-	<1	<1	-	-
Benzo(k)fluoranthene	µg/L	1	-	-	-	-	-	<1	<1	-	-
Chrysene	µg/L	1	-	-	-	-	-	<1	<1	-	-
Dibenzo(ah)anthracene	µg/L	1	-	-	-	-	-	<1	<1	-	-
Fluoranthene	µg/L	1	-	2	-	-	-	<1	<1	-	-
Fluorene	µg/L	1	-	-	-	-	-	<1	<1	-	-
Indeno(1,2,3-cd)pyrene	µg/L	1	-	-	-	-	-	<1	<1	-	-
Naphthalene	µg/L	1	-	85	-	-	-	<1	<1	-	-
Phenanthrene	µg/L	1	-	8	-	-	-	<1	<1	-	-
Pyrene	µg/L	1	-	-	-	-	-	<1	<1	-	-
Total PAH	µg/L	1	5000	-	-	-	-	<1	<1	-	-
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>											
TRH C10-C36 Total	µg/L	100000	-	-	-	-	>solubility ^	1160	-	-	-
TRH C10-C14	µg/L	50000	-	-	-	-	1800 ^	160	-	-	-
TRH C15-C28	µg/L	100000	-	-	-	-	-	700	-	-	-
TRH C29-C36	µg/L	100000	-	-	-	-	-	300	-	-	-
TRH C6-C9	µg/L	20000	-	-	-	-	>solubility ^	40	-	110	<20000
Naphthalene	µg/L	5000	-	-	-	-	-	<10	-	110	<5000
TRH >C10-C16 (F2)	µg/L	50000	-	-	-	-	-	220	-	-	-
TRH >C10-C16 (F2) minus Naphthalene	µg/L	50000	-	-	-	-	-	220	-	-	-
TRH >C10-C40 Total (F bands)	µg/L	100000	-	-	-	-	-	1020	-	-	-
TRH >C16-C34 (F3)	µg/L	100000	-	-	-	-	-	800	-	-	-
TRH >C34-C40 (F4)	µg/L	100000	-	-	-	-	-	<100	-	-	-
TRH C6-C10	µg/L	20000	-	-	-	-	-	90	-	110	<20000
TRH C6-C10 minus BTEX (F1)	µg/L	20000	-	-	-	-	-	70	-	-	<20000
<b>Organochlorine Pesticides</b>											
4,4 - DDD	µg/L	0.2	-	-	-	-	-	<0.2	-	-	-
4,4 - DDE	µg/L	0.2	-	-	-	-	-	<0.2	-	-	-
4,4 - DDT	µg/L	0.2	-	-	-	-	-	<0.2	-	-	-
β - BHC	µg/L	0.2	-	-	-	-	-	<0.2	-	-	-
Aldrin	µg/L	0.2	-	0.001	-	-	-	<0.2	-	-	-
Aldrin + Dieldrin (total)	µg/L	0.2	-	-	-	-	-	<0.2	-	-	-
γ - BHC	µg/L	0.2	-	-	-	-	-	<0.2	-	-	-
Chlordanes (total)	µg/L	2	-	0.27	-	-	-	<2	-	-	-
δ - BHC	µg/L	0.2	-	-	-	-	-	<0.2	-	-	-
DDT + DDE + DDD (total)	µg/L	0.2	-	0.04	-	-	-	<0.2	-	-	-
Dieldrin	µg/L	0.2	-	-	-	-	-	<0.2	-	-	-
Endosulfan 1	µg/L	0.2	-	-	-	-	-	<0.2	-	-	-
Endosulfan 2	µg/L	0.2	-	-	-	-	-	<0.2	-	-	-
Endosulfan sulphate	µg/L	0.2	-	-	-	-	-	<0.2	-	-	-
Endrin	µg/L	0.2	-	0.06	-	-	-	<0.2	-	-	-
Endrin Aldehyde	µg/L	0.2	-	-	-	-	-	<0.2	-	-	-
Endrin Ketone	µg/L	0.2	-	-	-	-	-	<0.2	-	-	-
γ-BHC (Lindane)	µg/L	0.2	-	1	-	-	-	<0.2	-	-	-
Heptachlor	µg/L	0.2	-	0.7	-	-	-	<0.2	-	-	-
Heptachlor epoxide	µg/L	0.2	-	-	-	-	-	<0.2	-	-	-
Hexachlorobenzene	µg/L	0.2	-	-	-	-	-	<0.2	-	-	-
Methoxychlor	µg/L	0.2	-	-	-	-	-	<0.2	-	-	-
Toxaphene	µg/L	5	-	0.5	-	-	-	<5	-	-	-
Vic EPA IWRG 621 OCP 9total	µg/L	2	-	-	-	-	-	<0.2	-	-	-
Vic EPA IWRG 621 Other OCP (total)	µg/L	2	-	-	-	-	-	<0.2	-	-	-
<b>Organophosphorus Pesticides</b>											
Azinphos-methyl	µg/L	2	-	-	-	-	-	<2	-	-	-
Bolstar	µg/L	2	-	-	-	-	-	<2	-	-	-
Chlorfenvinphos	µg/L	20	-	-	-	-	-	<20	-	-	-
Chlorpyrifos	µg/L	2	-	0.11	-	-	-	<2	-	-	-
Chlorpyrifos-methyl	µg/L	2	-	-	-	-	-	<2	-	-	-
Coumaphos	µg/L	20	-	-	-	-	-	<20	-	-	-
Demeton-O	µg/L	2	-	-	-	-	-	<2	-	-	-
Demeton-S	µg/L	2	-	-	-	-	-	<2	-	-	-
Diazinon	µg/L	2	-	0.2	-	-	-	<2	-	-	-
Dichlorvos	µg/L	2	-	-	-	-	-	<2	-	-	-
Dimethoate	µg/L	2	-	0.2	-	-	-	<2	-	-	-
Disulfoton	µg/L	2	-	-	-	-	-	<2	-	-	-
EPN	µg/L	2	-	-	-	-	-	<2	-	-	-
Ethion	µg/L	2	-	-	-	-	-	<2	-	-	-
Ethoprop	µg/L	2	-	-	-	-	-	<2	-	-	-
Ethyl parathion	µg/L	2	-	-	-	-	-	<2	-	-	-
Fenitrothion	µg/L	2	-	0.3	-	-	-	<2	-	-	-
Fensulfathion	µg/L	2	-	-	-	-	-	<2	-	-	-
Fenthion	µg/L	2	-	-	-	-	-	<2	-	-	-
Malathion	µg/L	2	-	-	-	-	-	<2	-	-	-
Merphos	µg/L	2	-	-	-	-	-	<2	-	-	-
Methyl parathion	µg/L	2	-	-	-	-	-	<2	-	-	-
Mevinphos	µg/L	2	-	-	-	-	-	<2	-	-	-
Monocrotophos	µg/L	2	-	-	-	-	-	<2	-	-	-
Naled	µg/L	2	-	-	-	-	-	<2	-	-	-
Omethoate	µg/L	20	-	-	-	-	-	<20	-	-	-
Phorate	µg/L	2	-	-	-	-	-	<2	-	-	-
Pirimiphos-methyl	µg/L	20	-	-	-	-	-	<20	-	-	-
Pyrazophos	µg/L	2	-	-	-	-	-	<2	-	-	-
Ronnel	µg/L	2	-	-	-	-	-	<2	-	-	-
Terbufos	µg/L	2	-	-	-	-	-	<2	-	-	-
Tetrachlorvinphos	µg/L	2	-	-	-	-	-	<2	-	-	-
Tokuthion	µg/L	2	-	-	-	-	-	<2	-	-	-
Trichloronate	µg/L	2	-	-	-	-	-	<2	-	-	-

Table LR1  
 A2K - Burrows Road  
 Groundwater Analytical Results & Adopted Site Criteria  
 14777-ER-2-1

			Sydney Water (2021-2022)	ANZG (2018)	ANZECC 2000	ANZECC 2000	NZ Ministry for the Environment (2011)	MW1 / BH1	QAQC1	TRIP SPIKE	TRIP BLANK
Analytes	Units	LOR		Fresh Waters 80% (Hardness Modified Values)	Irrigation (short- term trigger values)	WQG for recreational Waters Freshwaters/ Secondary Contact					
<b>Volatile Organics</b>											
Benzene	µg/L	100	100	2000	-	-	-	<100	<100	100	<100
Ethylbenzene	µg/L	100	1000	160	-	-	-	<100	<100	110	<100
m&p-Xylenes	µg/L	200	-	150	-	-	-	<200	<200	110	<200
o-Xylenes	µg/L	100	-	640	-	-	-	<100	<100	110	<100
Toluene	µg/L	100	500	330	-	-	-	<100	<100	110	<100
Xylenes - Total	µg/L	300	1000	-	-	-	-	<300	<300	110	<300
<b>Polychlorinated Biphenyls</b>											
Aroclor-1016	µg/L	5	-	-	-	-	-	<5	<5	-	-
Aroclor-1221	µg/L	5	-	-	-	-	-	<5	<5	-	-
Aroclor-1232	µg/L	5	-	-	-	-	-	<5	<5	-	-
Aroclor-1242	µg/L	5	-	1.7	-	-	-	<5	<5	-	-
Aroclor-1248	µg/L	5	-	-	-	-	-	<5	<5	-	-
Aroclor-1254	µg/L	5	-	0.20	-	-	-	<5	<5	-	-
Aroclor-1260	µg/L	5	-	-	-	-	-	<5	<5	-	-
Total PCB*	µg/L	5	-	-	-	-	-	<5	<5	-	-
<b>Phenolic compounds</b>											
Phenolic compounds (non-chlorinated)	mg/L	0.1	1	-	-	-	-	<0.1	-	-	-
Phenolic compounds (chlorinated)	mg/L	0.05	5	-	-	-	-	<0.05	-	-	-
<b>Physiochemical</b>											
Ammonia (as N)	mg/L	0.01	100	-	-	-	-	18	-	-	-
Biochemical Oxygen Demand (BOD-5 Day)	mg/L	5	230	-	-	-	-	38	-	-	-
Nitrate (as N)	mg/L	0.02	-	-	-	-	-	< 0.02	-	-	-
Nitrite (as N)	mg/L	0.02	-	-	-	-	-	< 0.02	-	-	-
Sulphate (as SO4)	mg/L	2	2000	-	-	-	-	5	-	-	-
Chloride	mg/L	1	-	-	-	-	-	3.4	-	-	-
Conductivity (at 25 degree celcius)	uS/cm	10	-	-	-	-	-	370	-	-	-
MBAS Calculated as MW: 288	mg/L	0.2	-	-	-	-	-	0.6	-	-	-
pH	pH Units	0.1	-	-	-	-	-	7.4	-	-	-
Turbidity	NTU	1	-	-	-	-	-	160	-	-	-
Total Suspended Solids Dried at 103°C–105°C	mg/L	5	600	-	-	-	-	150	-	-	-

N/A – Not Analysed.

\* Results in brackets are after silica gel clean-up

^ Criteria are for total petroleum hydrocarbon fractions C7 to C9, C9 to C14 and C15 to C36 which differ slightly from the fractions presented in the results

**Table LR2**  
**A2K - Burrows Road**  
**RPD Summary**  
**14777-ER-2-1**

			Sample ID	MW1 / BH1	QAQC1	RPD (%)
			Reference	S22-JI0057060	S22-JI0057063	
			Date Sampled	27/7/2022	27/7/2022	
			Sample Matrix	Water	Water	
Group	Analyte	Units	LOR			
Metals	Aluminium, Al	µg/L	<50	<50	<50	0
	Arsenic, As	µg/L	<1	9	9	0
	Barium, Ba	µg/L	<20	<20	<20	0
	Beryllium, Be	µg/L	<1	<1	<1	0
	Boron, B	µg/L	<50	120	120	0
	Cadmium, Cd	µg/L	<0.2	<0.2	<0.2	0
	Chromium, Cr	µg/L	<1	<1	<1	0
	Cobalt, Co	µg/L	<1	<1	<1	0
	Copper, Cu	µg/L	<1	3	2	40
	Iron, Fe	µg/L	<50	9200	-	-
	Lead, Pb	µg/L	<1	<1	<1	0
	Manganese, Mn	µg/L	<5	120	120	0
	Mercury (Total), Hg	µg/L	<0.1	<0.1	<0.1	0
	Molybdenum	µg/L	<5	7	7	0
	Nickel, Ni	µg/L	<1	2	2	0
	Selenium (Total), Se	µg/L	<1	<1	<1	0
	Uranium	µg/L	<5	<5	<5	0
	Vanadium	µg/L	<5	7	<5	33
Zinc, Zn	µg/L	<5	6	<5	18	
PAH	Acenaphthene	µg/L	<1	<1	<1	0
	Acenaphthylene	µg/L	<1	<1	<1	0
	Anthracene	µg/L	<1	<1	<1	0
	Benzo(a)anthracene	µg/L	<1	<1	<1	0
	Benzo(a)pyrene	µg/L	<1	<1	<1	0
	Benzo(b&j)fluoranthene	µg/L	<1	<1	<1	0
	Benzo(ghi)perylene	µg/L	<1	<1	<1	0
	Benzo(k)fluoranthene	µg/L	<1	<1	<1	0
	Chrysene	µg/L	<1	<1	<1	0
	Dibenzo(ah)anthracene	µg/L	<1	<1	<1	0
	Fluoranthene	µg/L	<1	<1	<1	0
	Fluorene	µg/L	<1	<1	<1	0
	Indeno(1,2,3-cd)pyrene	µg/L	<1	<1	<1	0
	Naphthalene	µg/L	<1	<1	<1	0
	Phenanthrene	µg/L	<1	<1	<1	0
	Pyrene	µg/L	<1	<1	<1	0
	Total PAH (18)	µg/L	<1	<1	<1	0

LEGEND	
	RPD not exceeding criteria by <10 times LOR
	RPD not exceeding criteria by 10-20 times LOR (50%)
	RPD not exceeding criteria by >20 times LOR (30%)
	RPD exceeding criteria
	Not Analysed

## APPENDIX A – Logs

# Borehole Log

<b>Client:</b> Ausgrid	<b>Started:</b> 23/06/2022
<b>Project:</b> Ausgrid Cable Project	<b>Finished:</b> 23/06/2022
<b>Location:</b> 53 Burrows Rd, St Peter	<b>Hole Location:</b> Refer to drawing 14777-GR-1-1-A
<b>Rig Type:</b> TDLR690	<b>Borehole Size:</b> 250 mm
<b>Hole Coordinates:</b> 332340E, 6245731N	<b>Driller:</b> CC
<b>Contractor:</b> Alliance Geotechnical	<b>Logged:</b> AH
<b>RL Surface:</b> 2.59m	<b>Bearing:</b> ---
	<b>Checked:</b> AS

Method	Water	Well Details	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	DCP per 150mm	Samples Tests Remarks	Moisture Condition	Consistency	Density Index	Additional Observations
DT			2.5	2.5		-	Asphaltic CONCRETE, 120mm.	2 4 9 18		-	-	-	PAVEMENT
ADT				0.5		-	FILL: Sandy GRAVEL, medium sub-angular igneous gravel, grey, fine to medium grained sand, poorly graded, appears well compacted.			D	-	-	FILL
				0.5		-	FILL: Gravelly SAND, medium grained, brown, fine to medium sub-rounded sandstone gravel, well graded, with boulders, trace clay and silt (crushed sandstone)		ES	M	-	-	
				2.0		-	FILL: SAND, medium grained, dark brown, with silt.		ES	M	-	-	
				1.0		CL-CI	Clayey SAND, fine to medium grained, dark grey, low to medium plasticity.		ES	W	VL	-	COASTAL DEPOSITS
				1.5					TR				
				1.5						M			
				2.0					SPT 0, 1, 0 N=1				
				2.0					PSD				
				2.5									
				3.0					TR				
				3.5					SPT 0, 1, 0 N=1				
			-1.0	3.5			Target Depth Borehole A2K-BH01 terminated at 3.5m						
			-1.5	4.0									
			-2.0	4.5									
				5.0									

A. AUGERED BOREHOLE + LOCATION CHANGE 14777.GPJ GINT STD AUSTRALIA GDT 23/8/22

GW @ 0.9m

## **APPENDIX B – Laboratory Documentation**

**Alliance Geotechnical**  
**10 Welder Road**  
**Seven Hills**  
**NSW 2147**



**NATA Accredited**  
**Accreditation Number 1261**  
**Site Number 18217**

Accredited for compliance with ISO/IEC 17025 – Testing  
 NATA is a signatory to the ILAC Mutual Recognition  
 Arrangement for the mutual recognition of the  
 equivalence of testing, medical testing, calibration,  
 inspection, proficiency testing scheme providers and  
 reference materials producers reports and certificates.

**Attention:** **Thalia Park-Ross**

**Report** **909467-W**  
 Project name **ALEXANDRIA NSW**  
 Project ID **14777**  
 Received Date **Jul 28, 2022**

Client Sample ID			<b>BH1</b>	<b>QAQC1</b>
Sample Matrix			<b>Water</b>	<b>Water</b>
Eurofins Sample No.			<b>S22-JI0057060</b>	<b>S22-JI0057063</b>
Date Sampled			<b>Jul 27, 2022</b>	<b>Jul 27, 2022</b>
Test/Reference	LOR	Unit		
<b>BTEX</b>				
Benzene	0.001	mg/L	< 0.001	-
Toluene	0.001	mg/L	< 0.001	-
Ethylbenzene	0.001	mg/L	0.004	-
m&p-Xylenes	0.002	mg/L	0.008	-
o-Xylene	0.001	mg/L	0.007	-
Xylenes - Total*	0.003	mg/L	0.015	-
4-Bromofluorobenzene (surr.)	1	%	84	-
<b>Total Recoverable Hydrocarbons</b>				
TRH C6-C9	0.02	mg/L	0.04	-
TRH C10-C14	0.05	mg/L	0.16	-
TRH C15-C28	0.1	mg/L	0.7	-
TRH C29-C36	0.1	mg/L	0.3	-
TRH C10-C36 (Total)	0.1	mg/L	1.16	-
Naphthalene <sup>N02</sup>	0.01	mg/L	< 0.01	-
TRH C6-C10	0.02	mg/L	0.09	-
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	0.02	mg/L	0.07	-
TRH >C10-C16	0.05	mg/L	0.22	-
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	0.05	mg/L	0.22	-
TRH >C16-C34	0.1	mg/L	0.8	-
TRH >C34-C40	0.1	mg/L	< 0.1	-
TRH >C10-C40 (total)*	0.1	mg/L	1.02	-
<b>Polycyclic Aromatic Hydrocarbons</b>				
Acenaphthene	0.001	mg/L	< 0.001	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001
Anthracene	0.001	mg/L	< 0.001	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001
Benzo(b&j)fluoranthene <sup>N07</sup>	0.001	mg/L	< 0.001	< 0.001
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001
Chrysene	0.001	mg/L	< 0.001	< 0.001
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001	< 0.001
Fluoranthene	0.001	mg/L	< 0.001	< 0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001

Client Sample ID			<b>BH1</b>	<b>QAQC1</b>
Sample Matrix			<b>Water</b>	<b>Water</b>
Eurofins Sample No.			<b>S22-JI0057060</b>	<b>S22-JI0057063</b>
Date Sampled			<b>Jul 27, 2022</b>	<b>Jul 27, 2022</b>
Test/Reference	LOR	Unit		
<b>Polycyclic Aromatic Hydrocarbons</b>				
Naphthalene	0.001	mg/L	< 0.001	< 0.001
Phenanthrene	0.001	mg/L	< 0.001	< 0.001
Pyrene	0.001	mg/L	< 0.001	< 0.001
Total PAH*	0.001	mg/L	< 0.001	< 0.001
2-Fluorobiphenyl (surr.)	1	%	110	70
p-Terphenyl-d14 (surr.)	1	%	INT	144
<b>Organochlorine Pesticides</b>				
Chlordanes - Total	0.002	mg/L	< 0.002	-
4,4'-DDD	0.0002	mg/L	< 0.0002	-
4,4'-DDE	0.0002	mg/L	< 0.0002	-
4,4'-DDT	0.0002	mg/L	< 0.0002	-
a-HCH	0.0002	mg/L	< 0.0002	-
Aldrin	0.0002	mg/L	< 0.0002	-
b-HCH	0.0002	mg/L	< 0.0002	-
d-HCH	0.0002	mg/L	< 0.0002	-
Dieldrin	0.0002	mg/L	< 0.0002	-
Endosulfan I	0.0002	mg/L	< 0.0002	-
Endosulfan II	0.0002	mg/L	< 0.0002	-
Endosulfan sulphate	0.0002	mg/L	< 0.0002	-
Endrin	0.0002	mg/L	< 0.0002	-
Endrin aldehyde	0.0002	mg/L	< 0.0002	-
Endrin ketone	0.0002	mg/L	< 0.0002	-
g-HCH (Lindane)	0.0002	mg/L	< 0.0002	-
Heptachlor	0.0002	mg/L	< 0.0002	-
Heptachlor epoxide	0.0002	mg/L	< 0.0002	-
Hexachlorobenzene	0.0002	mg/L	< 0.0002	-
Methoxychlor	0.0002	mg/L	< 0.0002	-
Toxaphene	0.005	mg/L	< 0.005	-
Aldrin and Dieldrin (Total)*	0.0002	mg/L	< 0.0002	-
DDT + DDE + DDD (Total)*	0.0002	mg/L	< 0.0002	-
Vic EPA IWRG 621 OCP (Total)*	0.002	mg/L	< 0.002	-
Vic EPA IWRG 621 Other OCP (Total)*	0.002	mg/L	< 0.002	-
Dibutylchloroendate (surr.)	1	%	<sup>Q09</sup> INT	-
Tetrachloro-m-xylene (surr.)	1	%	<sup>Q09</sup> INT	-
<b>Organophosphorus Pesticides</b>				
Azinphos-methyl	0.002	mg/L	< 0.002	-
Bolstar	0.002	mg/L	< 0.002	-
Chlorfenvinphos	0.02	mg/L	< 0.02	-
Chlorpyrifos	0.002	mg/L	< 0.002	-
Chlorpyrifos-methyl	0.002	mg/L	< 0.002	-
Coumaphos	0.02	mg/L	< 0.02	-
Demeton-S	0.002	mg/L	< 0.002	-
Demeton-O	0.002	mg/L	< 0.002	-
Diazinon	0.002	mg/L	< 0.002	-
Dichlorvos	0.002	mg/L	< 0.002	-
Dimethoate	0.002	mg/L	< 0.002	-
Disulfoton	0.002	mg/L	< 0.002	-
EPN	0.002	mg/L	< 0.002	-
Ethion	0.002	mg/L	< 0.002	-



Client Sample ID			<b>BH1</b>	<b>QAQC1</b>
Sample Matrix			<b>Water</b>	<b>Water</b>
Eurofins Sample No.			<b>S22-JI0057060</b>	<b>S22-JI0057063</b>
Date Sampled			<b>Jul 27, 2022</b>	<b>Jul 27, 2022</b>
Test/Reference	LOR	Unit		
<b>Organophosphorus Pesticides</b>				
Ethoprop	0.002	mg/L	< 0.002	-
Ethyl parathion	0.002	mg/L	< 0.002	-
Fenitrothion	0.002	mg/L	< 0.002	-
Fensulfothion	0.002	mg/L	< 0.002	-
Fenthion	0.002	mg/L	< 0.002	-
Malathion	0.002	mg/L	< 0.002	-
Merphos	0.002	mg/L	< 0.002	-
Methyl parathion	0.002	mg/L	< 0.002	-
Mevinphos	0.002	mg/L	< 0.002	-
Monocrotophos	0.002	mg/L	< 0.002	-
Naled	0.002	mg/L	< 0.002	-
Omethoate	0.02	mg/L	< 0.02	-
Phorate	0.002	mg/L	< 0.002	-
Pirimiphos-methyl	0.02	mg/L	< 0.02	-
Pyrazophos	0.002	mg/L	< 0.002	-
Ronnel	0.002	mg/L	< 0.002	-
Terbufos	0.002	mg/L	< 0.002	-
Tetrachlorvinphos	0.002	mg/L	< 0.002	-
Tokuthion	0.002	mg/L	< 0.002	-
Trichloronate	0.002	mg/L	< 0.002	-
Triphenylphosphate (surr.)	1	%	<sup>Q09</sup> INT	-
<b>Polychlorinated Biphenyls</b>				
Aroclor-1016	0.005	mg/L	< 0.005	-
Aroclor-1221	0.005	mg/L	< 0.005	-
Aroclor-1232	0.005	mg/L	< 0.005	-
Aroclor-1242	0.005	mg/L	< 0.005	-
Aroclor-1248	0.005	mg/L	< 0.005	-
Aroclor-1254	0.005	mg/L	< 0.005	-
Aroclor-1260	0.005	mg/L	< 0.005	-
Total PCB*	0.005	mg/L	< 0.005	-
Dibutylchloroendate (surr.)	1	%	<sup>Q09</sup> INT	-
Tetrachloro-m-xylene (surr.)	1	%	<sup>Q09</sup> INT	-
<b>Phenols (Halogenated)</b>				
2-Chlorophenol	0.003	mg/L	< 0.003	-
2,4-Dichlorophenol	0.003	mg/L	< 0.003	-
2,4,5-Trichlorophenol	0.01	mg/L	< 0.01	-
2,4,6-Trichlorophenol	0.01	mg/L	< 0.01	-
2,6-Dichlorophenol	0.003	mg/L	< 0.003	-
4-Chloro-3-methylphenol	0.01	mg/L	< 0.01	-
Pentachlorophenol	0.01	mg/L	< 0.01	-
Tetrachlorophenols - Total	0.03	mg/L	< 0.03	-
Total Halogenated Phenol*	0.01	mg/L	< 0.01	-
<b>Phenols (non-Halogenated)</b>				
2-Cyclohexyl-4,6-dinitrophenol	0.1	mg/L	< 0.1	-
2-Methyl-4,6-dinitrophenol	0.03	mg/L	< 0.03	-
2-Nitrophenol	0.01	mg/L	< 0.01	-
2,4-Dimethylphenol	0.003	mg/L	< 0.003	-
2,4-Dinitrophenol	0.03	mg/L	< 0.03	-
2-Methylphenol (o-Cresol)	0.003	mg/L	< 0.003	-

Client Sample ID			<b>BH1</b>	<b>QAQC1</b>
Sample Matrix			<b>Water</b>	<b>Water</b>
Eurofins Sample No.			<b>S22-JI0057060</b>	<b>S22-JI0057063</b>
Date Sampled			<b>Jul 27, 2022</b>	<b>Jul 27, 2022</b>
Test/Reference	LOR	Unit		
<b>Phenols (non-Halogenated)</b>				
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	< 0.006	-
Total cresols*	0.01	mg/L	< 0.01	-
4-Nitrophenol	0.03	mg/L	< 0.03	-
Dinoseb	0.1	mg/L	< 0.1	-
Phenol	0.003	mg/L	< 0.003	-
Phenol-d6 (surr.)	1	%	121	-
Total Non-Halogenated Phenol*	0.1	mg/L	< 0.1	-
<b>Ammonia (as N)</b>				
Ammonia (as N)	0.01	mg/L	18	-
<b>Biochemical Oxygen Demand (BOD-5 Day)</b>				
Biochemical Oxygen Demand (BOD-5 Day)	5	mg/L	38	-
<b>Chloride</b>				
Chloride	1	mg/L	3.4	-
<b>Conductivity (at 25 °C)</b>				
Conductivity (at 25 °C)	10	uS/cm	370	-
<b>Fluoride (Total)</b>				
Fluoride (Total)	0.5	mg/L	0.7	-
<b>MBAS Calculated as MW: 288</b>				
MBAS Calculated as MW: 288	0.2	mg/L	0.6	-
<b>Nitrate (as N)</b>				
Nitrate (as N)	0.02	mg/L	< 0.02	-
<b>Nitrite (as N)</b>				
Nitrite (as N)	0.02	mg/L	< 0.02	-
<b>pH (at 25 °C)</b>				
pH (at 25 °C)	0.1	pH Units	7.4	-
<b>Sulphate (as SO4)</b>				
Sulphate (as SO4)	2	mg/L	5.0	-
<b>Total Suspended Solids Dried at 103 °C to 105 °C</b>				
Total Suspended Solids Dried at 103 °C to 105 °C	5	mg/L	150	-
<b>Turbidity</b>				
Turbidity	1	NTU	160	-
<b>Heavy Metals</b>				
Aluminium (filtered)	0.05	mg/L	< 0.05	< 0.05
Arsenic (filtered)	0.001	mg/L	0.009	0.009
Barium (filtered)	0.02	mg/L	< 0.02	< 0.02
Beryllium (filtered)	0.001	mg/L	< 0.001	< 0.001
Boron (filtered)	0.05	mg/L	0.12	0.12
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	< 0.001	< 0.001
Cobalt (filtered)	0.001	mg/L	< 0.001	< 0.001
Copper (filtered)	0.001	mg/L	0.003	0.002
Iron	0.05	mg/L	9.2	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001
Manganese (filtered)	0.005	mg/L	0.12	0.12
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Molybdenum (filtered)	0.005	mg/L	0.007	0.007
Nickel (filtered)	0.001	mg/L	0.002	0.002
Selenium (filtered)	0.001	mg/L	< 0.001	< 0.001
Uranium (filtered)	0.005	mg/L	< 0.005	< 0.005
Vanadium (filtered)	0.005	mg/L	0.007	< 0.005
Zinc (filtered)	0.005	mg/L	0.006	< 0.005
<b>Pathogens</b>				
Enterococci (MPN)	1	MPN/100mL	see attached	-
Total Coliforms (MPN)	1	MPN/100mL	see attached	-

**Sample History**

Where samples are submitted/analysed over several days, the last date of extraction is reported.

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

<b>Description</b>	<b>Testing Site</b>	<b>Extracted</b>	<b>Holding Time</b>
<b>BTEX</b>	Sydney	Jul 29, 2022	14 Days
- Method: LTM-ORG-2010 BTEX and Volatile TRH			
<b>Total Recoverable Hydrocarbons</b>	Sydney	Jul 29, 2022	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>	Sydney	Jul 29, 2022	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
<b>Eurofins Suite B1</b>			
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>	Sydney	Jul 29, 2022	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>	Sydney	Jul 29, 2022	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
<b>Polycyclic Aromatic Hydrocarbons</b>	Sydney	Jul 29, 2022	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
<b>Ammonia (as N)</b>	Melbourne	Jul 29, 2022	28 Days
- Method: APHA 4500-NH3 Ammonia Nitrogen by FIA			
<b>Biochemical Oxygen Demand (BOD-5 Day)</b>	Melbourne	Jul 29, 2022	2 Days
- Method: LTM-INO-4010 Biochemical Oxygen Demand (BOD5) in Water			
<b>Chloride</b>	Sydney	Jul 29, 2022	28 Days
- Method: LTM-INO-4270 Anions by Ion Chromatography			
<b>Conductivity (at 25 °C)</b>	Sydney	Jul 29, 2022	28 Days
- Method: LTM-INO-4030 Conductivity			
<b>Fluoride (Total)</b>	Melbourne	Jul 29, 2022	28 Days
- Method: APHA 4500 F-C Fluoride by Ion Selective Electrode			
<b>MBAS Calculated as MW: 288</b>	Melbourne	Jul 29, 2022	2 Days
- Method: LTM-INO-4080 MBAS as MW: 288 (filtered)			
<b>Nitrate (as N)</b>	Melbourne	Jul 29, 2022	28 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
<b>Nitrite (as N)</b>	Melbourne	Jul 29, 2022	2 Days
- Method: LTM-INO-4120 Analysis of NOx NO2 NH3 by FIA			
<b>pH (at 25 °C)</b>	Sydney	Jul 29, 2022	0 Hour
- Method: LTM-GEN-7090 pH in water by ISE			
<b>Sulphate (as SO4)</b>	Sydney	Jul 29, 2022	28 Days
- Method: In-house method LTM-INO-4270 Sulphate by Ion Chromatograph			
<b>Total Suspended Solids Dried at 103 °C to 105 °C</b>	Sydney	Jul 29, 2022	7 Days
- Method: LTM-INO-4070 Analysis of Suspended Solids in Water by Gravimetry			
<b>Turbidity</b>	Sydney	Jul 29, 2022	2 Days
- Method: LTM-INO-4140 Turbidity by Nephelometric Method			
<b>Heavy Metals (filtered)</b>	Sydney	Jul 29, 2022	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
<b>Heavy Metals</b>	Melbourne	Jul 29, 2022	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
<b>Mercury (filtered)</b>	Sydney	Jul 29, 2022	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
<b>Eurofins Suite B15</b>			
<b>Organochlorine Pesticides</b>	Sydney	Jul 29, 2022	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
<b>Organophosphorus Pesticides</b>	Sydney	Jul 29, 2022	7 Days
- Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS			
<b>Polychlorinated Biphenyls</b>	Sydney	Jul 29, 2022	7 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
<b>Phenols (Halogenated)</b>	Sydney	Jul 29, 2022	7 Days

**Description**

- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water  
Phenols (non-Halogenated)  
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water

**Testing Site**

Sydney

**Extracted**

Jul 29, 2022

**Holding Time**

7 Days



## Internal Quality Control Review and Glossary

### General

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

### Holding Times

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

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

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

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

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

### Units

<b>mg/kg:</b> milligrams per kilogram	<b>mg/L:</b> milligrams per litre	<b>µg/L:</b> micrograms per litre
<b>ppm:</b> parts per million	<b>ppb:</b> parts per billion	<b>%:</b> Percentage
<b>org/100 mL:</b> Organisms per 100 millilitres	<b>NTU:</b> Nephelometric Turbidity Units	<b>MPN/100 mL:</b> Most Probable Number of organisms per 100 millilitres

### Terms

<b>APHA</b>	American Public Health Association
<b>COC</b>	Chain of Custody
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>CRM</b>	Certified Reference Material (ISO17034) - reported as percent recovery.
<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>LOR</b>	Limit of Reporting.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery.
<b>Method Blank</b>	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
<b>NCP</b>	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>SRA</b>	Sample Receipt Advice
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>TBTO</b>	Tributyltin oxide ( <i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>TEQ</b>	Toxic Equivalency Quotient or Total Equivalence
<b>QSM</b>	US Department of Defense Quality Systems Manual Version 5.4
<b>US EPA</b>	United States Environmental Protection Agency
<b>WA DWER</b>	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

### QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

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

Results <10 times the LOR: No Limit

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

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

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

### QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

**Quality Control Results**

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>							
<b>BTEX</b>							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons</b>							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
<b>Method Blank</b>							
<b>Polycyclic Aromatic Hydrocarbons</b>							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g,h,i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a,h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1,2,3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
<b>Method Blank</b>							
<b>Organochlorine Pesticides</b>							
Chlordanes - Total	mg/L	< 0.002			0.002	Pass	
4,4'-DDD	mg/L	< 0.0002			0.0002	Pass	
4,4'-DDE	mg/L	< 0.0002			0.0002	Pass	
4,4'-DDT	mg/L	< 0.0002			0.0002	Pass	
a-HCH	mg/L	< 0.0002			0.0002	Pass	
Aldrin	mg/L	< 0.0002			0.0002	Pass	
b-HCH	mg/L	< 0.0002			0.0002	Pass	
d-HCH	mg/L	< 0.0002			0.0002	Pass	
Dieldrin	mg/L	< 0.0002			0.0002	Pass	
Endosulfan I	mg/L	< 0.0002			0.0002	Pass	
Endosulfan II	mg/L	< 0.0002			0.0002	Pass	
Endosulfan sulphate	mg/L	< 0.0002			0.0002	Pass	
Endrin	mg/L	< 0.0002			0.0002	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin aldehyde	mg/L	< 0.0002			0.0002	Pass	
Endrin ketone	mg/L	< 0.0002			0.0002	Pass	
g-HCH (Lindane)	mg/L	< 0.0002			0.0002	Pass	
Heptachlor	mg/L	< 0.0002			0.0002	Pass	
Heptachlor epoxide	mg/L	< 0.0002			0.0002	Pass	
Hexachlorobenzene	mg/L	< 0.0002			0.0002	Pass	
Methoxychlor	mg/L	< 0.0002			0.0002	Pass	
Toxaphene	mg/L	< 0.005			0.005	Pass	
<b>Method Blank</b>							
<b>Organophosphorus Pesticides</b>							
Azinphos-methyl	mg/L	< 0.002			0.002	Pass	
Bolstar	mg/L	< 0.002			0.002	Pass	
Chlorfenvinphos	mg/L	< 0.02			0.02	Pass	
Chlorpyrifos	mg/L	< 0.002			0.002	Pass	
Chlorpyrifos-methyl	mg/L	< 0.002			0.002	Pass	
Coumaphos	mg/L	< 0.02			0.02	Pass	
Demeton-S	mg/L	< 0.002			0.002	Pass	
Demeton-O	mg/L	< 0.002			0.002	Pass	
Diazinon	mg/L	< 0.002			0.002	Pass	
Dichlorvos	mg/L	< 0.002			0.002	Pass	
Dimethoate	mg/L	< 0.002			0.002	Pass	
Disulfoton	mg/L	< 0.002			0.002	Pass	
EPN	mg/L	< 0.002			0.002	Pass	
Ethion	mg/L	< 0.002			0.002	Pass	
Ethoprop	mg/L	< 0.002			0.002	Pass	
Ethyl parathion	mg/L	< 0.002			0.002	Pass	
Fenitrothion	mg/L	< 0.002			0.002	Pass	
Fensulfothion	mg/L	< 0.002			0.002	Pass	
Fenthion	mg/L	< 0.002			0.002	Pass	
Malathion	mg/L	< 0.002			0.002	Pass	
Merphos	mg/L	< 0.002			0.002	Pass	
Methyl parathion	mg/L	< 0.002			0.002	Pass	
Mevinphos	mg/L	< 0.002			0.002	Pass	
Monocrotophos	mg/L	< 0.002			0.002	Pass	
Naled	mg/L	< 0.002			0.002	Pass	
Omethoate	mg/L	< 0.02			0.02	Pass	
Phorate	mg/L	< 0.002			0.002	Pass	
Pirimiphos-methyl	mg/L	< 0.02			0.02	Pass	
Pyrazophos	mg/L	< 0.002			0.002	Pass	
Ronnel	mg/L	< 0.002			0.002	Pass	
Terbufos	mg/L	< 0.002			0.002	Pass	
Tetrachlorvinphos	mg/L	< 0.002			0.002	Pass	
Tokuthion	mg/L	< 0.002			0.002	Pass	
Trichloronate	mg/L	< 0.002			0.002	Pass	
<b>Method Blank</b>							
<b>Polychlorinated Biphenyls</b>							
Aroclor-1016	mg/L	< 0.005			0.005	Pass	
Aroclor-1221	mg/L	< 0.005			0.005	Pass	
Aroclor-1232	mg/L	< 0.005			0.005	Pass	
Aroclor-1242	mg/L	< 0.005			0.005	Pass	
Aroclor-1248	mg/L	< 0.005			0.005	Pass	
Aroclor-1254	mg/L	< 0.005			0.005	Pass	
Aroclor-1260	mg/L	< 0.005			0.005	Pass	
Total PCB*	mg/L	< 0.005			0.005	Pass	



Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>							
<b>Phenols (Halogenated)</b>							
2-Chlorophenol	mg/L	< 0.003			0.003	Pass	
2,4-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2,4,5-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2,4,6-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2,6-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
4-Chloro-3-methylphenol	mg/L	< 0.01			0.01	Pass	
Pentachlorophenol	mg/L	< 0.01			0.01	Pass	
Tetrachlorophenols - Total	mg/L	< 0.03			0.03	Pass	
<b>Method Blank</b>							
<b>Phenols (non-Halogenated)</b>							
2-Cyclohexyl-4,6-dinitrophenol	mg/L	< 0.1			0.1	Pass	
2-Methyl-4,6-dinitrophenol	mg/L	< 0.03			0.03	Pass	
2-Nitrophenol	mg/L	< 0.01			0.01	Pass	
2,4-Dimethylphenol	mg/L	< 0.003			0.003	Pass	
2,4-Dinitrophenol	mg/L	< 0.03			0.03	Pass	
2-Methylphenol (o-Cresol)	mg/L	< 0.003			0.003	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/L	< 0.006			0.006	Pass	
4-Nitrophenol	mg/L	< 0.03			0.03	Pass	
Dinoseb	mg/L	< 0.1			0.1	Pass	
Phenol	mg/L	< 0.003			0.003	Pass	
Total Non-Halogenated Phenol*	mg/L	< 0			0.1	Pass	
<b>Method Blank</b>							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Conductivity (at 25 °C)	uS/cm	< 10			10	Pass	
Fluoride (Total)	mg/L	< 0.5			0.5	Pass	
MBAS Calculated as MW: 288	mg/L	< 0.2			0.2	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Sulphate (as SO4)	mg/L	< 2			2	Pass	
Total Suspended Solids Dried at 103 °C to 105 °C	mg/L	< 5			5	Pass	
Turbidity	NTU	< 1			1	Pass	
<b>Method Blank</b>							
<b>Heavy Metals</b>							
Aluminium (filtered)	mg/L	< 0.05			0.05	Pass	
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Barium (filtered)	mg/L	< 0.02			0.02	Pass	
Beryllium (filtered)	mg/L	< 0.001			0.001	Pass	
Boron (filtered)	mg/L	< 0.05			0.05	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Cobalt (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Iron	mg/L	< 0.05			0.05	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Molybdenum (filtered)	mg/L	< 0.005			0.005	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Uranium (filtered)	mg/L	< 0.005			0.005	Pass	
Vanadium (filtered)	mg/L	< 0.005			0.005	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
<b>LCS - % Recovery</b>						
<b>BTEX</b>						
Benzene	%	107		70-130	Pass	
Toluene	%	109		70-130	Pass	
Ethylbenzene	%	115		70-130	Pass	
m&p-Xylenes	%	112		70-130	Pass	
o-Xylene	%	113		70-130	Pass	
Xylenes - Total*	%	112		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Total Recoverable Hydrocarbons</b>						
TRH C6-C9	%	104		70-130	Pass	
TRH C10-C14	%	71		70-130	Pass	
Naphthalene	%	112		70-130	Pass	
TRH C6-C10	%	104		70-130	Pass	
TRH >C10-C16	%	70		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Polycyclic Aromatic Hydrocarbons</b>						
Acenaphthene	%	92		70-130	Pass	
Acenaphthylene	%	80		70-130	Pass	
Anthracene	%	75		70-130	Pass	
Benz(a)anthracene	%	94		70-130	Pass	
Benzo(a)pyrene	%	97		70-130	Pass	
Benzo(b&j)fluoranthene	%	73		70-130	Pass	
Benzo(g,h,i)perylene	%	71		70-130	Pass	
Benzo(k)fluoranthene	%	87		70-130	Pass	
Chrysene	%	114		70-130	Pass	
Dibenz(a,h)anthracene	%	93		70-130	Pass	
Fluoranthene	%	84		70-130	Pass	
Fluorene	%	104		70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	90		70-130	Pass	
Naphthalene	%	70		70-130	Pass	
Phenanthrene	%	77		70-130	Pass	
Pyrene	%	90		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Organochlorine Pesticides</b>						
Chlordanes - Total	%	77		70-130	Pass	
4,4'-DDD	%	94		70-130	Pass	
4,4'-DDE	%	87		70-130	Pass	
4,4'-DDT	%	110		70-130	Pass	
a-HCH	%	77		70-130	Pass	
Aldrin	%	73		70-130	Pass	
b-HCH	%	73		70-130	Pass	
d-HCH	%	94		70-130	Pass	
Dieldrin	%	91		70-130	Pass	
Endosulfan I	%	100		70-130	Pass	
Endosulfan II	%	78		70-130	Pass	
Endosulfan sulphate	%	104		70-130	Pass	
Endrin	%	112		70-130	Pass	
Endrin ketone	%	81		70-130	Pass	
g-HCH (Lindane)	%	107		70-130	Pass	
Heptachlor	%	85		70-130	Pass	
Heptachlor epoxide	%	77		70-130	Pass	
Hexachlorobenzene	%	74		70-130	Pass	
Methoxychlor	%	81		70-130	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
<b>LCS - % Recovery</b>						
<b>Organophosphorus Pesticides</b>						
Diazinon	%	115		70-130	Pass	
Dimethoate	%	71		70-130	Pass	
Ethion	%	96		70-130	Pass	
Fenitrothion	%	81		70-130	Pass	
Methyl parathion	%	96		70-130	Pass	
Mevinphos	%	118		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Polychlorinated Biphenyls</b>						
Aroclor-1016	%	85		70-130	Pass	
Aroclor-1260	%	74		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Phenols (Halogenated)</b>						
2-Chlorophenol	%	57		25-140	Pass	
2,4-Dichlorophenol	%	97		25-140	Pass	
2,4,5-Trichlorophenol	%	69		25-140	Pass	
2,4,6-Trichlorophenol	%	92		25-140	Pass	
2,6-Dichlorophenol	%	84		25-140	Pass	
4-Chloro-3-methylphenol	%	82		25-140	Pass	
Pentachlorophenol	%	87		25-140	Pass	
Tetrachlorophenols - Total	%	87		25-140	Pass	
<b>LCS - % Recovery</b>						
<b>Phenols (non-Halogenated)</b>						
2-Cyclohexyl-4,6-dinitrophenol	%	105		25-140	Pass	
2-Methyl-4,6-dinitrophenol	%	100		25-140	Pass	
2-Nitrophenol	%	92		25-140	Pass	
2,4-Dimethylphenol	%	68		25-140	Pass	
2,4-Dinitrophenol	%	85		25-140	Pass	
2-Methylphenol (o-Cresol)	%	67		25-140	Pass	
3&4-Methylphenol (m&p-Cresol)	%	60		25-140	Pass	
4-Nitrophenol	%	77		25-140	Pass	
Dinoseb	%	110		25-140	Pass	
Phenol	%	44		25-140	Pass	
<b>LCS - % Recovery</b>						
Ammonia (as N)	%	110		70-130	Pass	
Chloride	%	108		70-130	Pass	
Conductivity (at 25 °C)	%	97		70-130	Pass	
Fluoride (Total)	%	117		70-130	Pass	
MBAS Calculated as MW: 288	%	96		70-130	Pass	
Nitrate (as N)	%	108		70-130	Pass	
Nitrite (as N)	%	98		70-130	Pass	
Sulphate (as SO4)	%	108		70-130	Pass	
Total Suspended Solids Dried at 103 °C to 105 °C	%	101		70-130	Pass	
Turbidity	%	99		70-130	Pass	
<b>LCS - % Recovery</b>						
<b>Heavy Metals</b>						
Aluminium (filtered)	%	99		80-120	Pass	
Arsenic (filtered)	%	98		80-120	Pass	
Barium (filtered)	%	96		80-120	Pass	
Beryllium (filtered)	%	94		80-120	Pass	
Boron (filtered)	%	96		80-120	Pass	
Cadmium (filtered)	%	94		80-120	Pass	
Chromium (filtered)	%	98		80-120	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
Cobalt (filtered)	%	98	80-120	Pass			
Copper (filtered)	%	97	80-120	Pass			
Iron	%	103	80-120	Pass			
Lead (filtered)	%	92	80-120	Pass			
Manganese (filtered)	%	96	80-120	Pass			
Mercury (filtered)	%	103	80-120	Pass			
Molybdenum (filtered)	%	98	80-120	Pass			
Nickel (filtered)	%	98	80-120	Pass			
Selenium (filtered)	%	93	80-120	Pass			
Uranium (filtered)	%	97	80-120	Pass			
Vanadium (filtered)	%	100	80-120	Pass			
Zinc (filtered)	%	97	80-120	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>							
<b>BTEX</b>				Result 1			
Benzene	N22-JI0054936	NCP	%	116	70-130	Pass	
Toluene	N22-JI0054936	NCP	%	102	70-130	Pass	
Ethylbenzene	N22-JI0054936	NCP	%	104	70-130	Pass	
m&p-Xylenes	N22-JI0054936	NCP	%	109	70-130	Pass	
o-Xylene	N22-JI0054936	NCP	%	103	70-130	Pass	
Xylenes - Total*	N22-JI0054936	NCP	%	107	70-130	Pass	
<b>Spike - % Recovery</b>							
<b>Total Recoverable Hydrocarbons</b>				Result 1			
TRH C6-C9	N22-JI0054936	NCP	%	110	70-130	Pass	
TRH C10-C14	N22-JI0049024	NCP	%	106	70-130	Pass	
Naphthalene	N22-JI0054936	NCP	%	109	70-130	Pass	
TRH C6-C10	N22-JI0054936	NCP	%	108	70-130	Pass	
TRH >C10-C16	N22-JI0049024	NCP	%	109	70-130	Pass	
<b>Spike - % Recovery</b>							
				Result 1			
Ammonia (as N)	M22-JI0057135	NCP	%	112	70-130	Pass	
Chloride	S22-JI0057060	CP	%	72	70-130	Pass	
Fluoride (Total)	B22-JI0053748	NCP	%	80	70-130	Pass	
MBAS Calculated as MW: 288	S22-JI0057060	CP	%	88	70-130	Pass	
Nitrate (as N)	B22-JI0050300	NCP	%	89	70-130	Pass	
Nitrite (as N)	N22-JI0060173	NCP	%	82	70-130	Pass	
Sulphate (as SO4)	S22-JI0057060	CP	%	100	70-130	Pass	
Total Suspended Solids Dried at 103 °C to 105 °C	S22-JI0055194	NCP	%	96	70-130	Pass	
<b>Spike - % Recovery</b>							
<b>Heavy Metals</b>				Result 1			
Aluminium (filtered)	S22-JI0054986	NCP	%	95	75-125	Pass	
Arsenic (filtered)	S22-JI0054986	NCP	%	94	75-125	Pass	
Barium (filtered)	S22-JI0054986	NCP	%	95	75-125	Pass	
Beryllium (filtered)	S22-JI0054986	NCP	%	92	75-125	Pass	
Boron (filtered)	S22-JI0054986	NCP	%	91	75-125	Pass	
Cadmium (filtered)	S22-JI0054986	NCP	%	94	75-125	Pass	
Chromium (filtered)	S22-JI0054986	NCP	%	95	75-125	Pass	
Cobalt (filtered)	S22-JI0054986	NCP	%	96	75-125	Pass	
Copper (filtered)	S22-JI0054986	NCP	%	95	75-125	Pass	
Iron	M22-JI0059285	NCP	%	83	75-125	Pass	
Lead (filtered)	S22-JI0054986	NCP	%	91	75-125	Pass	
Manganese (filtered)	S22-JI0054986	NCP	%	94	75-125	Pass	
Mercury (filtered)	S22-JI0054986	NCP	%	102	75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Molybdenum (filtered)	S22-JI0054986	NCP	%	95			75-125	Pass	
Nickel (filtered)	S22-JI0054986	NCP	%	95			75-125	Pass	
Selenium (filtered)	S22-JI0054986	NCP	%	92			75-125	Pass	
Uranium (filtered)	S22-JI0054986	NCP	%	96			75-125	Pass	
Vanadium (filtered)	S22-JI0054986	NCP	%	97			75-125	Pass	
Zinc (filtered)	S22-JI0054986	NCP	%	96			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>BTEX</b>				Result 1	Result 2	RPD			
Benzene	N22-JI0054935	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	N22-JI0054935	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	N22-JI0054935	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	N22-JI0054935	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	N22-JI0054935	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	N22-JI0054935	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons</b>				Result 1	Result 2	RPD			
TRH C6-C9	N22-JI0054935	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	R22-JI0056745	NCP	mg/L	0.08	0.16	67	30%	Fail	Q15
TRH C15-C28	R22-JI0056745	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	R22-JI0056745	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Naphthalene	N22-JI0054935	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	N22-JI0054935	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	R22-JI0056745	NCP	mg/L	0.10	0.17	53	30%	Fail	Q15
TRH >C16-C34	R22-JI0056745	NCP	mg/L	0.1	< 0.1	39	30%	Fail	Q15
TRH >C34-C40	R22-JI0056745	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
<b>Duplicate</b>									
<b>Polycyclic Aromatic Hydrocarbons</b>				Result 1	Result 2	RPD			
Acenaphthene	S22-JI0045451	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Acenaphthylene	S22-JI0045451	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Anthracene	S22-JI0045451	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benz(a)anthracene	S22-JI0045451	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(a)pyrene	S22-JI0045451	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(b&j)fluoranthene	S22-JI0045451	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(g,h,i)perylene	S22-JI0045451	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(k)fluoranthene	S22-JI0045451	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chrysene	S22-JI0045451	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibenz(a,h)anthracene	S22-JI0045451	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluoranthene	S22-JI0045451	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluorene	S22-JI0045451	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Indeno(1,2,3-cd)pyrene	S22-JI0045451	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Naphthalene	S22-JI0045451	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Phenanthrene	S22-JI0045451	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Pyrene	S22-JI0045451	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
<b>Duplicate</b>									
<b>Organochlorine Pesticides</b>				Result 1	Result 2	RPD			
Chlordanes - Total	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
4,4'-DDD	S22-JI0057060	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
4,4'-DDE	S22-JI0057060	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
4,4'-DDT	S22-JI0057060	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
a-HCH	S22-JI0057060	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Aldrin	S22-JI0057060	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
b-HCH	S22-JI0057060	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
d-HCH	S22-JI0057060	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	

Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Dieldrin	S22-JI0057060	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Endosulfan I	S22-JI0057060	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Endosulfan II	S22-JI0057060	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Endosulfan sulphate	S22-JI0057060	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Endrin	S22-JI0057060	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Endrin aldehyde	S22-JI0057060	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Endrin ketone	S22-JI0057060	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
g-HCH (Lindane)	S22-JI0057060	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Heptachlor	S22-JI0057060	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Heptachlor epoxide	S22-JI0057060	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Hexachlorobenzene	S22-JI0057060	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Methoxychlor	S22-JI0057060	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Toxaphene	S22-JI0057060	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Azinphos-methyl	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Bolstar	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Chlorfenvinphos	S22-JI0057060	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Chlorpyrifos	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Chlorpyrifos-methyl	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Coumaphos	S22-JI0057060	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Demeton-S	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Demeton-O	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Diazinon	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Dichlorvos	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Dimethoate	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Disulfoton	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
EPN	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Ethion	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Ethoprop	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Ethyl parathion	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Fenitrothion	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Fensulfotthion	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Fenthion	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Malathion	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Merphos	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Methyl parathion	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Mevinphos	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Monocrotophos	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Naled	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Omethoate	S22-JI0057060	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Phorate	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Pirimiphos-methyl	S22-JI0057060	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Pyrazophos	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Ronnel	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Terbufos	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Tetrachlorvinphos	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Tokuthion	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass
Trichloronate	S22-JI0057060	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass



Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	S22-JI0057060	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Aroclor-1221	S22-JI0057060	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Aroclor-1232	S22-JI0057060	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Aroclor-1242	S22-JI0057060	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Aroclor-1248	S22-JI0057060	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Aroclor-1254	S22-JI0057060	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Aroclor-1260	S22-JI0057060	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Total PCB*	S22-JI0057060	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
Phenols (Halogenated)				Result 1	Result 2	RPD		
2-Chlorophenol	S22-JI0057060	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2,4-Dichlorophenol	S22-JI0057060	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2,4,5-Trichlorophenol	S22-JI0057060	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2,4,6-Trichlorophenol	S22-JI0057060	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2,6-Dichlorophenol	S22-JI0057060	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass
4-Chloro-3-methylphenol	S22-JI0057060	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Pentachlorophenol	S22-JI0057060	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Tetrachlorophenols - Total	S22-JI0057060	CP	mg/L	< 0.03	< 0.03	<1	30%	Pass
Duplicate								
Phenols (non-Halogenated)				Result 1	Result 2	RPD		
2-Cyclohexyl-4,6-dinitrophenol	S22-JI0057060	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
2-Methyl-4,6-dinitrophenol	S22-JI0057060	CP	mg/L	< 0.03	< 0.03	<1	30%	Pass
2-Nitrophenol	S22-JI0057060	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2,4-Dimethylphenol	S22-JI0057060	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2,4-Dinitrophenol	S22-JI0057060	CP	mg/L	< 0.03	< 0.03	<1	30%	Pass
2-Methylphenol (o-Cresol)	S22-JI0057060	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass
3&4-Methylphenol (m&p-Cresol)	S22-JI0057060	CP	mg/L	< 0.006	< 0.006	<1	30%	Pass
4-Nitrophenol	S22-JI0057060	CP	mg/L	< 0.03	< 0.03	<1	30%	Pass
Dinoseb	S22-JI0057060	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Phenol	S22-JI0057060	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	S22-JI0057060	CP	mg/L	18	18	<1	30%	Pass
Chloride	S22-JI0057060	CP	mg/L	3.4	3.9	15	30%	Pass
Conductivity (at 25 °C)	S22-JI0055511	NCP	uS/cm	130	130	4.0	30%	Pass
Fluoride (Total)	M22-JI0057234	NCP	mg/L	< 0.5	< 0.5	<1	30%	Pass
MBAS Calculated as MW: 288	M22-Au0001414	NCP	mg/L	0.4	0.3	11	30%	Pass
Nitrate (as N)	S22-JI0057060	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Nitrite (as N)	S22-JI0057060	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Sulphate (as SO4)	S22-JI0057060	CP	mg/L	5.0	5.9	16	30%	Pass
Total Suspended Solids Dried at 103 °C to 105 °C	S22-JI0056706	NCP	mg/L	72	68	5.7	30%	Pass
Turbidity	S22-JI0057684	NCP	NTU	< 1	< 1	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Aluminium (filtered)	N22-JI0054960	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Arsenic (filtered)	N22-JI0054960	NCP	mg/L	0.006	0.006	<1	30%	Pass
Barium (filtered)	N22-JI0054960	NCP	mg/L	0.09	0.09	1.7	30%	Pass
Boron (filtered)	N22-JI0054960	NCP	mg/L	1.1	1.1	<1	30%	Pass
Cadmium (filtered)	N22-JI0054960	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium (filtered)	N22-JI0054960	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cobalt (filtered)	N22-JI0054960	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	N22-JI0054960	NCP	mg/L	0.004	0.004	1.5	30%	Pass
Iron	M22-JI0059285	NCP	mg/L	2.0	2.1	<1	30%	Pass

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Lead (filtered)	N22-JI0054962	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Manganese (filtered)	N22-JI0054960	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury (filtered)	N22-JI0054960	NCP	mg/L	0.0001	0.0001	10	30%	Pass
Molybdenum (filtered)	N22-JI0054960	NCP	mg/L	0.11	0.11	2.0	30%	Pass
Nickel (filtered)	N22-JI0054960	NCP	mg/L	0.004	0.004	2.5	30%	Pass
Selenium (filtered)	N22-JI0054960	NCP	mg/L	0.008	0.006	21	30%	Pass
Uranium (filtered)	N22-JI0054960	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Vanadium (filtered)	N22-JI0054960	NCP	mg/L	0.008	0.009	12	30%	Pass
Zinc (filtered)	N22-JI0054960	NCP	mg/L	0.005	< 0.005	3.7	30%	Pass



## Comments

All micro analysed by; Eurofins Food Testing; accreditation number 20293; report reference AR-22-NV-009894-01

## Sample Integrity

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

## Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q09	The Surrogate recovery is outside of the recommended acceptance criteria due to matrix interference. Acceptance criteria were met for all other QC
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

## Authorised by:

Andrew Black	Analytical Services Manager
Gabriele Cordero	Senior Analyst-Inorganic
Gabriele Cordero	Senior Analyst-Metal
Mary Makarios	Senior Analyst-Metal
Roopesh Rangarajan	Senior Analyst-Organic
Roopesh Rangarajan	Senior Analyst-Volatile
Ryan Phillips	Senior Analyst-Inorganic
Sayeed Abu	Senior Analyst-Asbestos
Scott Beddoes	Senior Analyst-Inorganic



**Glenn Jackson**  
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please [click here](#).

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**Alliance Geotechnical**  
**10 Welder Road**  
**Seven Hills**  
**NSW 2147**



**NATA Accredited**  
**Accreditation Number 1261**  
**Site Number 18217**

Accredited for compliance with ISO/IEC 17025 – Testing  
 NATA is a signatory to the ILAC Mutual Recognition  
 Arrangement for the mutual recognition of the  
 equivalence of testing, medical testing, calibration,  
 inspection, proficiency testing scheme providers and  
 reference materials producers reports and certificates.

**Attention:** **Thalia Park-Ross**

**Report** **909467-S**  
 Project name **ALEXANDRIA NSW**  
 Project ID **14777**  
 Received Date **Jul 28, 2022**

Client Sample ID			TRIP SPIKE	TRIP BLANK
Sample Matrix			Trip Spike (solid)	Trip Blank (solid)
Eurofins Sample No.			S22-JI0057061	S22-JI0057062
Date Sampled			Jul 27, 2022	Jul 27, 2022
Test/Reference	LOR	Unit		
TRH C6-C10	1	%	110	-
<b>Total Recoverable Hydrocarbons</b>				
Naphthalene	1	%	110	-
TRH C6-C9	1	%	110	-
<b>BTEX</b>				
Benzene	1	%	100	-
Ethylbenzene	1	%	110	-
m&p-Xylenes	1	%	110	-
o-Xylene	1	%	110	-
Toluene	1	%	110	-
Xylenes - Total	1	%	110	-
4-Bromofluorobenzene (surr.)	1	%	119	-
<b>Total Recoverable Hydrocarbons</b>				
TRH C6-C9	20	mg/kg	-	< 20
Naphthalene <sup>N02</sup>	0.5	mg/kg	-	< 0.5
TRH C6-C10	20	mg/kg	-	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	-	< 20
<b>BTEX</b>				
Benzene	0.1	mg/kg	-	< 0.1
Toluene	0.1	mg/kg	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	< 0.2
o-Xylene	0.1	mg/kg	-	< 0.1
Xylenes - Total*	0.3	mg/kg	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	98

**Sample History**

Where samples are submitted/analysed over several days, the last date of extraction is reported.

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

<b>Description</b>	<b>Testing Site</b>	<b>Extracted</b>	<b>Holding Time</b>
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Jul 28, 2022	14 Days
Total Recoverable Hydrocarbons - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Jul 28, 2022	14 Days
BTEX - Method: LTM-ORG-2010 BTEX and Volatile TRH	Sydney	Jul 28, 2022	14 Days

web: [www.eurofins.com.au](http://www.eurofins.com.au)  
 email: [EnviroSales@eurofins.com](mailto:EnviroSales@eurofins.com)

**Company Name:** Alliance Geotechnical  
**Address:** 10 Welder Road  
 Seven Hills  
 NSW 2147  
**Project Name:** ALEXANDRIA NSW  
**Project ID:** 14777

**Order No.:**  
**Report #:** 909467  
**Phone:** 1800 288 188  
**Fax:** 02 9675 1888

**Received:** Jul 28, 2022 10:44 AM  
**Due:** Aug 2, 2022  
**Priority:** 3 Day  
**Contact Name:** Thalia Park-Ross

**Eurofins Analytical Services Manager : Andrew Black**

Sample Detail						Analytical Services																																															
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID	Aluminium (filtered)	Ammonia (as N)	Arsenic (filtered)	Asbestos in Water*	Barium (filtered)	Beryllium (filtered)	Biochemical Oxygen Demand (BOD-5 Day)	Boron (filtered)	Cadmium (filtered)	Chloride	Chromium (filtered)	Cobalt (filtered)	Conductivity (at 25 °C)	Copper (filtered)	Enterococci (MPN)	Fluoride (Total)	Iron	Lead (filtered)	Manganese (filtered)	MBAS Calculated as MW: 288	Mercury (filtered)	Molybdenum (filtered)	Nickel (filtered)	Nitrate (as N)	Nitrite (as N)	pH (at 25 °C)	Selenium (filtered)	Sulphate (as SO4)	Total Coliforms (MPN)	Total Suspended Solids Dried at 103 °C to	Turbidity	Uranium (filtered)	Vanadium (filtered)	Zinc (filtered)	Polycyclic Aromatic Hydrocarbons	Phenols (Speciated)	Eurofins Suite B15	BTEXN and Volatile TRH	BTEXN and Volatile TRH									
<b>Melbourne Laboratory - NATA # 1261 Site # 1254</b>						X						X										X	X			X																						X	X				
<b>Sydney Laboratory - NATA # 1261 Site # 18217</b>						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>External Laboratory</b>																					X																X																
1	BH1	Jul 27, 2022		Water	S22-JI0057060	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
2	TRIP SPIKE	Jul 27, 2022		Trip Spike (solid)	S22-JI0057061																																														X		
3	TRIP BLANK	Jul 27, 2022		Trip Blank (solid)	S22-JI0057062																																														X		
4	QAQC1	Jul 27, 2022		Water	S22-JI0057063	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
5	TRIP SPIKE LAB	Jul 27, 2022		Trip Spike (solid)	S22-JI0057404																																														X		
<b>Test Counts</b>						2	1	2	1	2	2	1	2	2	1	2	2	1	2	1	2	1	1	1	1	2	2	1	2	2	2	1	1	1	2	1	1	1	1	2	2	2	2	2	1	1	1	1	1	1	1	2	

## Internal Quality Control Review and Glossary

### General

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

### Holding Times

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

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

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

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

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

### Units

<b>mg/kg:</b> milligrams per kilogram	<b>mg/L:</b> milligrams per litre	<b>µg/L:</b> micrograms per litre
<b>ppm:</b> parts per million	<b>ppb:</b> parts per billion	<b>%:</b> Percentage
<b>org/100 mL:</b> Organisms per 100 millilitres	<b>NTU:</b> Nephelometric Turbidity Units	<b>MPN/100 mL:</b> Most Probable Number of organisms per 100 millilitres

### Terms

<b>APHA</b>	American Public Health Association
<b>COC</b>	Chain of Custody
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>CRM</b>	Certified Reference Material (ISO17034) - reported as percent recovery.
<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>LOR</b>	Limit of Reporting.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery.
<b>Method Blank</b>	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
<b>NCP</b>	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>SRA</b>	Sample Receipt Advice
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>TBTO</b>	Tributyltin oxide ( <i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment however free tributyltin was measured and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>TEQ</b>	Toxic Equivalency Quotient or Total Equivalence
<b>QSM</b>	US Department of Defense Quality Systems Manual Version 5.4
<b>US EPA</b>	United States Environmental Protection Agency
<b>WA DWER</b>	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

### QC - Acceptance Criteria

The acceptance criteria should be used as a guide only and may be different when site specific Sampling Analysis and Quality Plan (SAQP) have been implemented

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

Results <10 times the LOR: No Limit

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

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

NOTE: pH duplicates are reported as a range not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.4 where no positive PFAS results have been reported have been reviewed and no data was affected.

### QC Data General Comments

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

**Quality Control Results**

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>									
<b>Total Recoverable Hydrocarbons</b>									
TRH C6-C9			mg/kg	< 20			20	Pass	
Naphthalene			mg/kg	< 0.5			0.5	Pass	
TRH C6-C10			mg/kg	< 20			20	Pass	
<b>Method Blank</b>									
<b>BTEX</b>									
Benzene			mg/kg	< 0.1			0.1	Pass	
Toluene			mg/kg	< 0.1			0.1	Pass	
Ethylbenzene			mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes			mg/kg	< 0.2			0.2	Pass	
o-Xylene			mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*			mg/kg	< 0.3			0.3	Pass	
<b>LCS - % Recovery</b>									
<b>Total Recoverable Hydrocarbons</b>									
TRH C6-C9			%	89			70-130	Pass	
Naphthalene			%	98			70-130	Pass	
TRH C6-C10			%	89			70-130	Pass	
<b>LCS - % Recovery</b>									
<b>BTEX</b>									
Benzene			%	96			70-130	Pass	
Toluene			%	100			70-130	Pass	
Ethylbenzene			%	95			70-130	Pass	
m&p-Xylenes			%	90			70-130	Pass	
o-Xylene			%	98			70-130	Pass	
Xylenes - Total*			%	93			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>									
<b>Total Recoverable Hydrocarbons</b>									
TRH C6-C9		S22-JI0047492	NCP	%	90		70-130	Pass	
Naphthalene		S22-JI0047492	NCP	%	82		70-130	Pass	
TRH C6-C10		S22-JI0047492	NCP	%	90		70-130	Pass	
<b>Spike - % Recovery</b>									
<b>BTEX</b>									
Benzene		S22-JI0047492	NCP	%	96		70-130	Pass	
Toluene		S22-JI0047492	NCP	%	97		70-130	Pass	
Ethylbenzene		S22-JI0047492	NCP	%	94		70-130	Pass	
m&p-Xylenes		S22-JI0047492	NCP	%	91		70-130	Pass	
o-Xylene		S22-JI0047492	NCP	%	96		70-130	Pass	
Xylenes - Total*		S22-JI0047492	NCP	%	93		70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons</b>									
TRH C6-C9		S22-JI0058255	NCP	mg/kg	< 20	< 20	<1	30%	Pass
Naphthalene		S22-JI0058255	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10		S22-JI0058255	NCP	mg/kg	< 20	< 20	<1	30%	Pass



Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	S22-JI0058255	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	S22-JI0058255	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S22-JI0058255	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	S22-JI0058255	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	S22-JI0058255	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total*	S22-JI0058255	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass

**Comments**
**Sample Integrity**

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

**Qualifier Codes/Comments**

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

**Authorised by:**

Andrew Black	Analytical Services Manager
Roopesh Rangarajan	Senior Analyst-Volatile



**Glenn Jackson**  
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please [click here](#).

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## APPENDIX C – Data Quality Indicator (DQI) Assessment

<b>Completeness DQI</b>			
<i>Field Considerations</i>	<i>Target Criterion</i>	<i>Result</i>	<i>Pass / Fail / Comment</i>
Experienced sampling team used	Yes	Yes	Pass
Sampling devices and equipment set out in sampling plan were used (refer Section 2.7).	Yes	Yes	Pass
Critical locations in sampling plan, sampled (refer Section 2.7).	Yes	Yes	Pass
Critical samples in sampling plan, collected (refer Section 2.7).	Yes	Yes	Pass
Completed field and calibration logs attached	Yes	Yes	Pass
Completed chain of custody attached	Yes	Yes	Pass
<i>Laboratory</i>	<i>Target Criterion</i>	<i>Result</i>	<i>Pass / Fail / Comment</i>
Complete sample receipt advice and chain of custody attached	Yes	Yes	Pass
Critical samples identified in sampling plan, analysed	Yes	Yes	Pass
Analysis undertaken addresses COPC in sampling plan (refer Section 2.7)	Yes	Yes	Pass
Analytical methods reported in laboratory documentation and appropriate limit of reporting used	Yes	Yes	Pass
Sample holding times met (refer Section 2.7)	Yes	Yes	Pass
<b>Comparability</b>			
<i>Laboratory Considerations</i>	<i>Target Criterion</i>	<i>Result</i>	<i>Pass / Fail / Comment</i>
Same sampling team used for all work.	Yes	Yes	Pass
Weather conditions suitable for sampling.	Yes	Yes	Pass
Same sample types collected and preserved in same way (refer Section 2.7).	Yes	Yes	Pass
Relevant samples stored in insulated containers and chilled (refer Section 2.7).	Yes	Yes	Pass
<i>Laboratory Considerations</i>	<i>Target Criterion</i>	<i>Result</i>	<i>Pass / Fail / Comment</i>
Same laboratory used for all analysis (refer Section 2.7).	Yes	Yes	Pass
Comparable methods if different laboratories used Refer Section 2.7).	Not applicable	N/A	N/A
Comparable limits of reporting if different laboratories used.	Not applicable	N/A	N/A
Comparable units of measure if different laboratories have been used (refer Section 2.7).	Not applicable	N/A	N/A

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<b>Representativeness</b>			
<i>Field Considerations</i>	<i>Target Criterion</i>	<i>Result</i>	<i>Pass / Fail / Comment</i>
Media identified in sampling plan, sampled (refer Section 2.7).	Yes	Yes	Pass
Samples required by sampling plan, collected (refer Section 2.7).	Yes	Yes	Pass
<i>Laboratory Considerations</i>	<i>Target Criterion</i>	<i>Result</i>	<i>Pass / Fail / Comment</i>
Samples identified in sampling plan, analysed.	Yes	Yes	Pass

<b>Precision</b>			
<i>Field Considerations</i>	<i>Target Criterion</i>	<i>Result</i>	<i>Pass / Fail / Comment</i>
Minimum 5% duplicates and triplicates collected and analysed (refer Section 2.5).	Yes	Yes	Comment – A duplicate sample was collected; however a triplicate sample was not.  Sampling was undertaken using industry accepted procedures. Laboratory analysis was undertaken by reputable NATA accredited environmental laboratories. Analytical results were within expected ranges based on site history, field observations and experience on comparable projects. Performance against this DQI is considered adequate.
Minimum 10% duplicates and triplicates collected and analysed where PFAS is a contaminant of concern (refer Section 2.5).	N/A	N/A	N/A
RPD unlimited where detected concentrations are <10 times the limit of reporting.	Yes	Yes	Pass for duplicate sample
RPD within 50% where detected concentrations are 10-20 times the limit of reporting.	Yes	Yes	Pass for duplicate sample
RPD within 30% where detected concentrations are >20 times the limit of reporting.	Yes	Yes	Pass for duplicate sample
<i>Laboratory Considerations</i>	<i>Target Criterion</i>	<i>Result</i>	<i>Pass / Fail / Comment</i>
All laboratory duplicate RPDs within laboratory acceptance criteria (refer Section 2.5).	Yes	Yes	Pass
<b>Bias (Accuracy)</b>			
<i>Field Considerations</i>	<i>Target Criterion</i>	<i>Result</i>	<i>Pass / Fail / Comment</i>
Trip blank analyte results less than limit of reporting (refer Section 2.5).	Yes	Yes	Pass
Trip spike analyte results less between 60% and 140% (refer Section 2.5).	Yes	Yes	Pass
Rinsate blank analyte results less than limit of reporting (refer Section 2.5).	Yes	Yes	Pass
Field (PFAS) blank analyte results less than limit of reporting (refer Section 2.5).	N/A	N/A	N/A
<i>Laboratory Considerations</i>	<i>Target Criterion</i>	<i>Result</i>	<i>Pass / Fail / Comment</i>
Laboratory method blank results within laboratory acceptance limits (refer Section 2.5).	Yes	Yes	Pass
Laboratory control sample results within laboratory acceptance limits (refer Section 2.5).	Yes	Yes	Pass

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Laboratory spike sample results within laboratory acceptance limits.	Yes	Yes	Pass
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## APPENDIX D – Calibration Records

## Multi Parameter Water Meter



airmet

Air-Met Scientific Pty Ltd  
1300 137 067Instrument YSI Quatro Pro Plus  
Serial No. 15E101199

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

**Certificate of Calibration**

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

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 7.00		pH 7.00		381241	pH 7.00
2. pH 4.00		pH 4.00		389384	pH 4.00
3. mV		242.2mV		387761/385070	242.2mV
4. EC		2.76mS		385041	2.763mS
5. D.O		0.00%		371864	-0.1%
6. Temp		18.8°C		MultiTherm	19.0°C

Calibrated by:

Lauren Soutar

Calibration date:

20/07/2022

Next calibration due:

19/08/2022

## Oil / Water Interface Meter

Instrument Geotech Interface Meter (30M)  
 Serial No. 4254



**airmet**

Air-Met Scientific Pty Ltd  
 1300 137 067

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

### ***Certificate of Calibration***

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

***Calibrated by:*** \_\_\_\_\_ Dom Ta

***Calibration date:*** 18/07/2022

***Next calibration due:*** 16/09/2022

**APPENDIX E – Field Records (Water)**

## GROUNDWATER FIELD DATA SHEET

<b>Project Number:</b> 14777	<b>Well ID:</b> BH 1
<b>Project Name:</b> Ausgard	<b>Sampler(s):</b> S-I
<b>Address:</b> 46 Burgess Rd, Alexandria	<b>Date:</b> 27/07/22

### Well Status

Monument damaged:	YES <input checked="" type="radio"/> NO <input type="radio"/> N/A	Well ID visible:	YES <input checked="" type="radio"/> NO <input type="radio"/> N/A
Locked well casing:	YES <input checked="" type="radio"/> NO <input type="radio"/> N/A	Cap on PVC casing:	YES <input checked="" type="radio"/> NO <input type="radio"/> N/A
Casing Diameter:		Well Headspace PID (ppm)	
WQM ID		IP ID	
PID ID		Sampling Equipment	Peristaltic Pump
Total well depth:	3.12 mBTOC		
Depth to water before pump install:	0.30 mBTOC		
Depth to water after pump install:	mBTOC		
Pump intake depth:	mBTOC		
Casing above ground:	N/A m BTOC	Weather Conditions:	
		Temperature	15-20 <input checked="" type="checkbox"/> 20-25 <input type="checkbox"/> 25-30 <input type="checkbox"/> >30 <input type="checkbox"/>
		Clear	<input checked="" type="checkbox"/> Partly cloudy <input type="checkbox"/> Overcast <input type="checkbox"/>
		Calm	<input type="checkbox"/> Slight breeze <input checked="" type="checkbox"/> Moderate breeze <input type="checkbox"/> Windy <input type="checkbox"/>
		Fine	<input checked="" type="checkbox"/> Showers <input type="checkbox"/> Rain <input type="checkbox"/>

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

### Water Quality Details:

Time am / pm	Vol (L)	Depth to water (mBTOC)	DO (ppm)	EC ( $\mu\text{S cm}^{-1}$ )	pH	Redox (mV)	Temp ( $^{\circ}\text{C}$ )	Comments (colour, turbidity, sediment, odour, sheen, thickness)
	Well purge & stabilisation acceptance criteria		$\pm 10\%$	$\pm 3\%$	$\pm 0.1$	$\pm 10\%$	$\pm 10\%$	
			4.78					
09:47	-	-	<del>4.78</del>	433.9	7.01	-49.0	14.6	Brown, turbid,
+2	0.5	-	1.24	430.5	7.03	-98.8	14.8	Faint organic
+4	1.0	-	0.28	424.1	7.05	-119.2	14.9	odour, patches
+6	1.5	-	0.03	420.3	7.05	-129.6	15.0	of suspended solids
+8	2.0	-	-	411.4	7.04	-137.6	14.9	
+10	2.5	0.60	-	410.5	7.04	-140.4	14.9	Sample taken

Sample ID: BH1      Dup. Sample ID: QAQC 1      Trip Sample ID: —

Metals Sample Field Filtered:  yes /  no