



Our ref: 00045970 Summary of Parks and Road Verge Results

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By Email Only

Dear Greg and Joanna

## **Interim Summary of Results for Orica Mercury Independent Review: Stage 2 Environmental Testing Regime**

### **1 INTRODUCTION**

#### **1.1 BACKGROUND**

WSP were engaged by the NSW Environment Protection Authority (EPA) to conduct Stage 2 of the Orica Mercury Independent Review. The Stage 2 works pertain to the testing of public and private lands within a 1.5km radius of the Orica plant for potential contamination. Following appointment, we prepared a Sampling and Analysis Quality Plan (SAQP) in January 2015 in accordance with our accepted scope of work. The investigations were conducted during February and March 2015 in accordance with that SAQP (WSP, 2015), which was approved and accepted by EPA and Steering Committee.

During initial planning for the Stage 2 assessment, the Steering Committee recommended a stepwise approach to the investigation, rather than immediately proceeding with all works approved in the tender. It was recommended that the testing of public lands (including parks, road verges and public waterways) should occur first and the information be used in discussions with the community regarding the subsequent testing of private properties.

This letter report presents the initial findings from the public land testing program. The report compares the obtained results with the adopted criteria presented in the SAQP (WSP, 2015).

Figure 1 in **Attachment A** shows the study area and key features mentioned in the report, with subsequent figures presenting test locations and results for specific aspects of the program. Tables of collated results are presented in **Attachment B**.

#### **1.2 OBJECTIVES AND SCOPE OF WORKS**

The project has been commissioned for the purposes of providing information and data that will enable the NSW EPA to:

- Determine if there is a significant public health risk and if so, the level of such health risk to the community associated with potential mercury, polychlorinated biphenyls (PCB), polyaromatic hydrocarbons (PAH), lead and/or chromium release;
- Determine if there are any instances of community exposure to mercury that are not currently being managed and controlled, and assess if there are communities and/or individuals at risk; and
- Assist in reassuring the community that appropriate actions are or have been taken through past and present projects managed by Orica and regulated by the EPA.

The objective of this letter is to provide an interim summary of results received to date (public lands testing), and inform future planning for assessments of private properties.

## 2 GUIDELINES ADOPTED

Selection of appropriate criteria was documented in the accepted SAQP (WSP, 2015). Guidelines were adopted for all media subject to assessment (soil, vapour, sediment, biota). The following tables summarises those thresholds for reference purposes in this letter report.

**Table 2.1: Criteria for soil assessment (mg/kg)**

Contaminant	NEPC, 2013	
	Health Based Investigation Levels – Standard Residential	Health Based Investigation Levels – Public Open Spaces
<b>Landuse Scenario</b>		
<b>Metals and Inorganics</b>		
Chromium (VI)	100	300
Lead	300	600
Mercury (inorganic)	40	80
Methyl Mercury	10	13
<b>Organics</b>		
Naphthalene	3*	Non limiting
Carcinogenic PAHs (BaP TEQ)	3	3
Total PAHs	300	300
Polychlorinated Biphenyls (PCBs)	1	1

**Note:** \* Conservative screening value for vapour intrusion that may be adjusted based on location specific soil texture and/or depth.

**Table 2.2: Criteria adopted for vapour screening ( $\mu\text{g}/\text{m}^3$ )**

Contaminant	WHO, 2000	WHO, 2003
<b>Guideline context</b>	<b>Annual average</b>	<b>Tolerable concentration for long term inhalation</b>
Mercury Vapour	1	0.2

**Table 2.3: Criteria adopted for sediment samples (mg/kg)**

Contaminant	NEPC, 2013	ANZECC, 2000
<b>Scenario</b>	<b>Health Based Investigation Levels for Public Open Spaces</b>	<b>Interim Sediment Quality Guidelines</b>
Mercury (inorganic)	80	0.15 (Low) to 1.0 (High)
Methyl Mercury	13	-

**Table 2.4: Criteria adopted for biota samples (mg/kg)**

Contaminant	ANZFA 2011	
<b>Type of fish</b>	<b>Fish</b>	<b>Predatory fish <sup>^</sup></b>
Mercury	0.5 <sup>#</sup>	1.0 <sup>#</sup>

**Notes:**

- <sup>^</sup> Predatory fish include gemfish, billfish (including marlin), southern bluefin tuna, barramundi, ling, orange roughly, rays and all species of shark (ANZFA, 2011)
- <sup>#</sup> Assume total mercury

### 3 SOIL INVESTIGATIONS

#### 3.1 PROGRAM OF WORKS

The soil drilling program was carried out from 10 to 27 February 2015. In total 148 soil boreholes (prefixed "BH") were drilled by hand auger across public parks within the investigation area in accordance with the strategy outlined in the SAQP (WSP, 2015).

At all locations a surface sample was collected from the upper 5 cm (0-0.05m) of soil. Generally boreholes were drilled to 0.5 metres depth (below ground level, bgl) with a second sample collected from 0.4 to 0.5m bgl (the target total depth).

Occasionally hand auger refusal occurred, due to the presence of rubble or due to borehole collapse in dry sand before 0.5m bgl could be reached. On these occasions, the second sample was collected from the bottom 10cm of soil extracted (e.g. 0.3-0.4m). On one occasion (BH116) a second sample was not collected as the hole could only be extended to 0.2m bgl.

At each sampling location a description of the soil was recorded and the planned samples collected in accordance with the SAQP (WSP, 2015). Samples were taken from the auger using a new pair of nitrile gloves and placed into laboratory prepared glass jars that were then stored on ice for transport to the laboratory. Primary sample analysis was conducted at ALS Environmental who is NATA accredited for the test methods and analytes required for this project. To demonstrate robustness and integrity with the sampling program, blind field duplicates were analysed at a second NATA accredited laboratory, Envirolab, in accordance with the requirements of the SAQP (WSP, 2015). Further details on sample quality assurance/quality control (QA/QC) are presented in Section 7.

The soil test locations are presented on Figures 2a, 2b and 2C in **Attachment A**.

Tabulated laboratory results from soil testing are presented as Table B1 and Table B2 in **Attachment B**.

Bore logs (descriptions of the soil materials encountered) are presented in **Attachment C** while the laboratory transcripts are available in **Attachment D**.

#### 3.2 RESULTS OF SOIL TESTING

##### 3.2.1 Stratigraphy encountered

In the shallow depths assessed during this study the soil layers typically comprised a loose grey brown topsoil with organic matter, leaf litter and grass roots, grading to a loose medium grained light grey sand or occasionally a yellow sand. This is consistent with natural soils of the Botany, Pagewood, Eastgardens and Matraville suburbs that are characterised by deep coarse to fine sand dominated soil profiles.

The majority of soil testing locations comprised a thin layer (0.1 to 0.2m) of fill material or disturbed natural soil likely associated with local road construction or levelling, overlying natural soils. Where foreign materials were observed in the soil profile (e.g. blue metal gravel, brick, plastic, bitumen, ash, coke or clinker) we described the layer as "Fill". Thus frequently the uppermost soil sample was described as "Fill", while the depth sample was often described as "Natural".

Various parks have been subjected to more substantial backfilling or landscaping in their construction (including Barwon Park, Pioneer Park, parts of Sir Joseph Banks Park, parts of Heffron Park, Garnet Jackson Reserve, Mutch Park and Rhodes Street Reserve). Frequently on these reserves the target depth of drilling (0.5m) did not extend beyond the fill material and so no natural soil was encountered. Specific observations made during the drilling program are provided in the soil borelogs (**Attachment C**).

### 3.2.2 Mercury concentrations in soil

Laboratory results for total mercury are presented in Table B1 (**Attachment B**), with laboratory transcripts provided in **Attachment D**. Figure 2a and 2b (**Attachment A**) present the locations of the mercury testing in soil and compare the laboratory results with the adopted criteria.

In summary, mercury concentrations in soil ranged from non-detect (<0.1mg/kg) to 4.7mg/kg in the surface soils, and non-detect (<0.1mg/kg) to 2.7 in the samples collected at depth. The arithmetic average of surface samples was 0.24mg/kg while the average of subsurface samples was 0.14mg/kg. All results were an order of magnitude less than the adopted health-based criteria for “standard residential landuse” (40mg/kg), and were also less than the health-based criteria for “public open spaces” (80 mg/kg). The laboratory results are summarised in **Table 3.1**.

**Table 3.1: Summary statistics of total mercury results**

Chemical		Number of Results	Minimum (mg/kg)	Maximum (mg/kg)	Average (mg/kg)	95% UCL (mg/kg)
Total Mercury	Surface 0-0.05m	148	<0.1	4.7	0.24	0.35
	Depth 0.4-0.5m <sup>#</sup>	147	<0.1	2.7	0.14	0.23
	Criteria	-	40 <sup>*</sup> /80 <sup>^</sup>			

**Notes:**

1. \* Criteria for Standard Residential
2. ^ Criteria for Public Open Spaces
3. # 0.4-0.5m was the intended depth. On occasions this depth could not be reached due to hole collapse or refusal in fill materials. Where this occurred the lowest 10cm of soil was tested instead. All such samples are included in these summary statistics.
4. 95% UCL = 95% upper confidence limit of the arithmetic average concentration.

### 3.2.3 Lead, Chromium, PAH and PCB concentrations

A secondary objective of the study was to assess the concentration of various other chemicals of concern in the vicinity of Dennison Street (south of Grace Campbell Reserve and north of Beauchamp Road) Grace Campbell Crescent and Nilson Avenue, west of Rhodes Street, and in the Rhodes Street Reserve.

The program involved testing of surface soils (0-0.05m) from 17 of the borehole locations for total lead, total chromium, PAHs and PCBs, in addition to mercury, as outlined in the SAQP (WSP, 2015). The locations of these tests are shown of Figure 2c (**Attachment A**).

Results for this additional analysis are presented in Table B2 (**Attachment B**), with laboratory transcripts provided in **Attachment D**.

In summary all respective results were less than the adopted health-based criteria for “standard residential landuse”, and were also less than the adopted health-based criteria for “public open spaces”. Summary statistics are presented in Table 3.2 (following page).

**Table 3.2: Summary statistics of lead, chromium, PAH and PCB results**

Chemical		Number of Results	Minimum (mg/kg)	Maximum (mg/kg)	Average (mg/kg)	95% UCL
Total Lead	Results	17	21	209	74	96
	Criteria	-	300*/600^			
Total Chromium	Results	17	2	12	5.6	6.7
	Criteria	-	100*/300^			
Naphthalene	Results	17	<0.5	<0.5	ID	ID
	Criteria	-	3*/NL^			
BaP TEQ	Results	17	<0.5	2.6	0.51	ID
	Criteria	-	3*/3^			
Total PAHs	Results	17	<0.5	19.9	2.8	ID
	Criteria	-	300*/300^			
Total PCBs	Results	17	<0.1	<0.1	ID	ID
	Criteria	-	1*/1^			

**Notes:**

1. \* Criteria for Standard Residential
2. ^ Criteria for Public Open Spaces
3. 95% UCL = 95% upper confidence limit of the arithmetic average concentration.
4. ID Insufficient detectable data for meaningful statistic to be calculated
5. NL non limiting

## 4 MERCURY VAPOUR ASSESSMENT

### 4.1 PROGRAM OF WORKS

Mercury vapour concentrations were assessed using a hand-held field mercury vapour analyser (Lumex RA-915). The meter has a lower detection limit of 2ng/m<sup>3</sup> (equivalent to 0.002 µg/m<sup>3</sup>). This is two orders of magnitude less than the adopted WHO criteria of 0.2µg/m<sup>3</sup>. The calibration certificate for the mercury analyser is provided in **Attachment E**.

A program of testing of stormwater drains down-gradient of the FCAP was implemented. Vapour concentrations were recorded by holding the hand-held vapour analyser probe at the sample point for 30 seconds until the reading stabilised. This included testing from within the accessible drains at approximately 0.5m below the drain entrance to screen if significantly elevated mercury readings were being generated in the drainage network. The drain screening program also included recording readings at the stormwater drain opening, and at 1m elevation above the entrance to the drain. These additional tests were undertaken to provide a baseline comparison with the mercury vapour concentrations in the pit and to assess the potential risk of elevated mercury vapour being present in the breathing zone in the vicinity of stormwater pits/openings.

Mercury vapour concentrations were also screened at each soil test location (Section 3) to provide a wide range of air sampling results from across the surrounding suburbs, and during a range of atmospheric conditions. Tests were carried out at 1m above the surface and at the soil surface immediately above each borehole. This testing was conducted between 10 and 27 February 2015 in conjunction with the soil sampling program.

The drain sampling program was undertaken on 5 February 2015 and screening locations are presented on Figure 3a to 3c, **Attachment A**. Tests undertaken at or within stormwater drains are prefixed "Pit" while tests undertaken as part of the soil sampling program are prefixed "BH". A number of the pits that were identified in the SAQP (WSP, 2015) as potential locations for testing were unable to be opened during the fieldwork or were located behind fences and therefore couldn't be accessed.

Where this occurred it is shown on the figures (white dots). At each of these inaccessible locations the 1m high sample was collected as close as possible to the proposed sampling point to ensure the objectives of documenting vapour conditions across the study area was not compromised.

## 4.2 MERCURY VAPOUR RESULTS

Mercury screening results are provided in Table B3, **Attachment B**. The mercury vapour results for within pits, at pit entrances or the ground surface, and at 1m elevation above pits and boreholes were all below the adopted site criteria. Summary statistics of the vapour results are presented in Table 4.1.

**Table 4.1: Summary statistics of total mercury results**

Chemical		Number of Results	Minimum ( $\mu\text{g}/\text{m}^3$ )	Maximum ( $\mu\text{g}/\text{m}^3$ )	Average ( $\mu\text{g}/\text{m}^3$ )	95% UCL ( $\mu\text{g}/\text{m}^3$ )
Mercury Vapour	Inside accessible stormwater drains	19	0.007	0.034	0.020	0.024
	Drain Entrances or soil surface	172	ND	0.074	0.024	0.031
	1m above drains or surface soil	176	ND	0.076	0.023	0.039
	Criteria	-	0.2*/1 <sup>^</sup>			

### Notes:

1. ND = Non Detect
2. \* Tolerable concentration for long term inhalation
3. ^ Annual average criteria

## 5 SEDIMENT TESTING

### 5.1 FIELD PROGRAM

Sediment testing within the Penrhyn Estuary occurred on 16 February 2015 and included collection of samples from 20 locations and described in the SAQP (WSP, 2015). The sediment samples were prefixed "Sed". Samples Sed01 to Sed14 were collected using a hand operated dredge from either a dingy or kayak. The dredge collected a grab sample from the upper 5cm (0.05m) of sediment. Sediment samples Sed15 to Sed20 were collected by hand directly from the mudflat at low tide.

Each sample was taken using a new pair of nitrile gloves to reduce the potential for cross contamination, and placed into laboratory prepared glass jars and then into coolers with ice for transport to the laboratory. Primary sample analysis was conducted at ALS Environmental who is NATA accredited for the test methods and analytes. To demonstrate robustness and integrity with the sampling program, blind duplicates were analysed at a second NATA accredited laboratory, Envirolab, in accordance with the SAQP (WSP, 2015).

The sediment testing locations are presented on Figure 4 (**Attachment A**).

### 5.2 RESULTS OF SEDIMENT TESTING

The mercury sediment results are provided in Table B4, **Attachment B**. In summary mercury was detected in 14 of the 20 samples, and nine of these detections exceeded the adopted Interim Sediment Quality Guidelines (ISQG) – Low threshold (0.15mg/kg). Note this threshold is only 0.05 mg/kg higher than the laboratory limit of reporting. None of the results exceeded the ISQG – High threshold (1mg/kg). The average concentration was 0.21mg/kg which also exceeds the ISQG-Low threshold.

These two adopted ISQG criteria are for protection of ecological receptors, and the concentrations are considered to be conservative due to the known bio-accumulative nature of mercury.

The results were also compared against soil criteria for a recreational exposure scenario (refer Table 3.1), on the assumption that if no exclusion existed, people may access the sediments of the estuary at low tide. All results were well below these human health criteria for recreational exposure.

In accordance with the SAQP the two most elevated sediment samples were also analysed for methyl-mercury as this is a more toxic form of mercury and can develop in anoxic conditions such as estuaries. The results for methyl-mercury in the two samples was found to be less than the laboratory's limit of reporting (0.1mg/kg).

Summary statistics of the sediment results are presented in Table 4.1.

**Table 5.1: Summary statistics of total mercury results**

Chemical		Number of Results	Minimum (mg/kg)	Maximum (mg/kg)	Average (mg/kg)	95% UCL (mg/kg)
Total Mercury	Results	20	<0.1	0.9	0.21	0.3
	Criteria	-	0.15*/1 <sup>^</sup> /80 <sup>#</sup>			
Methyl Mercury	Results	2	<0.1	<0.1	ID	ID
	Criteria	-	13 <sup>#</sup>			

**Notes:**

1. \* Interim Sediment Quality Guidelines (Low) - ecological threshold.
2. ^ Interim Sediment Quality Guidelines (High) - ecological threshold.
3. # Health Based Investigation Levels for Public Open Spaces (i.e. recreational contact with sediment).
4. ID Insufficient detectable data for meaningful statistic to be calculated.

## 6 BIOTA TESTING

### 6.1 FIELD PROGRAM

Fish sampling was conducted within the Penrhyn Estuary on the 17 and 18 of February 2015 following the protocol outlined in the SAQP (WSP, 2015). As the uptake of mercury can vary within and between species, a range of fish (including fish at various life history stages) were targeted for analysis. This approach accounted for a range of factors/variables including age, diet, movement and micro habitat use, and thus the potential variation of concentrations within individual species and between species.

Considering previous surveys and recommendations of the Steering Committee the following species were targeted:

- sea mullet (*Mugil cephalus*)
- sand mullet (*Myxus elongatus*)
- yellow-fin bream (*Acanthopagrus australis*)
- silver biddy (*Gerres subfasciatus*)
- dusky flathead (*Platycephalus fuscus*)
- flat-tail mullet (*Liza argentea*)
- whiting (*Sillago ciliata*)
- luderick (*Girella tricuspidata*)
- trevalley (*Pseudocaranx* spp.)
- smooth toadfish (*Tetractenos glaber*)

Fish sampling was conducted by a licenced subcontractor via active (seine nets, hand reels) and passive (fyke nets) methods. Seine netting was conducted in 'wadable' water depths within the upper estuary on the ebbing tide. Double-winged fyke nets and blocker nets were deployed across the upper estuary channel at high tide and were set for several hours until reaches upstream had sufficiently drained.

To maintain consistency with previous investigations and where sufficient individuals were captured, 10 individuals from each species were assessed for mercury concentrations. Prior to tissue collection, fish were euthanised via overdose of Aqui-S® solution in accordance with Ecosure's NSW Fisheries Scientific Collection Permit and Animal Ethics Committee approval. They were then measured and weighed.

All samples were transferred to a chilled esky and kept on ice for delivery to a NATA accredited laboratory (Advanced Analytical Australia) for mercury analysis. As a minimum, 5g of sample from each individual was sent to the laboratory for analysis.

## 6.2 BIOTA STUDY RESULTS

The current survey resulted in the collection of 35 individuals, encompassing six species. With the exception of luderick (adult specimens only), various life history stages (i.e. juvenile and mature specimens) were also collected for each species.

Raw data for fish length, fish weight and tissue sample weight, and laboratory certificates are provided in Ecosure, 2015 (**Attachment F**). Results obtained can be summarised as follows:

- Mercury concentrations in all tissue samples was less than the ANZFSC (2011) maximum concentration of mercury within fish for human consumption (0.5 mg/kg);
- The maximum concentration recorded was 0.3 mg/kg within a yellow-fin bream sample;
- Two luderick samples recorded a mean concentration of 0.175 mg/kg  $\pm$  0.005 (se);
- Ten toadfish samples recorded a mean concentration of 0.100 mg/kg  $\pm$  0.010 (se);
- Eight whiting samples recorded a mean concentration of 0.068 mg/kg  $\pm$  0.007 (se);
- Four silver biddy samples recorded a mean concentration of 0.060 mg/kg  $\pm$  0.003 (se); and
- Ten sea mullet samples recorded a mean concentration of 0.056 mg/kg  $\pm$  0.005 (se).

## 7 QUALITY ASSURANCE / QUALTY CONTROL

Field quality control was maintained by following a rigorous sample collection, decontamination procedures, and sample documentation process as per the SAQP. This included collecting representative QA/QC samples for laboratory analyses to verify the quality of the data set. The sampling data quality objectives have been analysed and reported in terms of data precision, accuracy, representativeness, comparability and completeness. Section 7.1 provides a summary of the QA/QC evaluation.

### 7.1 EVALUATION OF QA/QC

A summary of project QA/QC findings is provided in Table 7.1 (following page).

**Table 7.1: QA/QC evaluation summary (soil and groundwater testing)**

Data Quality Objective	Sampling Frequency	Frequency Achieved?	DQI	95% DQI Met ?
Precision				
Intra-laboratory field duplicates	1/20	Actual rate 1/22 – 15 duplicates in total	<5xLOR: <100% RPD 5-10xLOR: <75% RPD or >5xLOR: <50% RPD	Generally “Yes” with exceptions noted and discussed in Section 0
Inter-laboratory field duplicates	1/20	Actual rate 1/22 – 15 duplicates in total		
Laboratory duplicates (ALS and Envirolab)	1/20	Yes	<5xLOR: no limit 5-10xLOR: <70% RPD or >5xLOR: <50% RPD	Yes
Laboratory method blanks	1 per batch	Yes	< LOR	Yes
Accuracy				
Laboratory matrix spikes	1/20	Yes	60 to 140%	Yes
Laboratory control samples	1/20	Yes	60 to 140%	Yes
Representativeness				
Sampling handling storage and transport appropriate for media and analytes	-	-	Yes	Samples chilled and transported in accordance with COC requirements.
Trip blank	1 per media	Yes	<LOR	Yes
Trip spike	1 per media	Yes	60 to 140%	Yes
Samples extracted and analysed within holding times.	-	-	Hold Times: 14 days - organics 6 months – inorganics	Yes
Comparability				
Standard operating procedures used for sample collection and handling (including decontamination)	All Samples	-	Yes	All sampling completed in accordance with WSP standard operating procedures. New sampling equipment and sampling gloves used for each sample.
	1 rinsate blank during program	Yes	<LOR	Yes
Standard analytical methods used for all analyses	All Samples	-	Yes	NATA accredited methods used.

Data Quality Objective	Sampling Frequency	Frequency Achieved?	DQI	95% DQI Met ?
Consistent field conditions, sampling staff and laboratory analysis	All Samples	-	Yes	All field work completed by WSP Environmental Scientists Philippa Childs, Aaron Young, Adeline Menet or Colin McKay. All laboratory analysis completed by NATA accredited laboratories Envirolab and ALS
Limits of reporting appropriate and consistent	All Samples	-	Yes	Yes
Completeness				
COC completed and appropriate	All Samples	-	Yes	Refer to Attachment D
Appropriate documentation	All Samples	-	Yes	Refer to Attachment D

**Notes:**

1. DQI – Data Quality Indicator
2. LOR – laboratory’s limit of reporting
3. RPD – relative percentage difference
4. COC – Chain of custody documentation

## 7.2 FIELD QA/QC TESTING

The QA/QC results along with relative percentage difference calculations for soil and sediment analyses are provided in Tables B5 and B6 respectively, in Attachment B. The findings of Trip Blank and Trip Spike, and Rinsate Blank are provide in the ALS laboratory transcript ES1504242.

The following comments are made as a summary regarding the quality of the field and analytical components of this project:

- The Mercury analyser used during the investigation work was hired from Field Environmental Instruments Inc. The calibration certificate for the meter is included in Attachment E;
- Sample integrity and container requirements were documented as acceptable (refer to sample receipt notifications in Attachment D);
- Holding time compliances were documented as acceptable. All samples were received by the laboratory within the relevant holding times (refer to sample receipt notifications in **Attachment D**);
- The Trip Blank result for soil returned all non-detectable concentrations for the analytes tested which indicates cross contamination was unlikely;
- Trip Spike result for soil was within acceptable percentages which indicated that volatile losses in transit were unlikely;
- Due to the variable nature of much of the soil materials tested (often comprising disturbed natural or fill materials) we expected some variability in the results from duplicate pairs. However many of the inter-laboratory and intra-laboratory duplicates showed low levels of variability with the primary sample. This gives confidence that the field protocols were repeatable and consistent, and that the laboratory testing was precise. A few isolated elevated RPDs for lead and total PAHs were observed, as summarised below and are likely to be due to variability in the material tested rather than a failure in the sample collection or testing process. These results do not give cause for

concern in the program as all results both for primary samples, and duplicates were below the site criteria.

- Elevated RPDs as discussed above and presented in Table B5 and B6, Attachment B included;
  - Intralab Duplicate 8 where RPDs were elevated for “sum of PAHs” though all individual analyses met the DQIs. This sample also had an elevated RPD for lead.
  - Interlab Duplicate 8 where RPDs were elevated for “sum of PAHs” though all individual analyses met the DQIs.
  - All other duplicate pairs returned acceptable RPDs.
- The primary (ALS Environmental) and secondary (Envirlab) laboratories were NATA registered at the time of analysis, and accredited for the analysis performed.

In summary, the field QA/QC data is determined to be of sufficient quality to ensure validity of the conclusions reached for this validation program.

### **7.3 LABORATORY QA/QC TESTING**

Laboratory QA/QC for both soil and groundwater analysis comprised chain-of-custody documentation, sample integrity and holding times, use of acceptable NATA-registered laboratory methods and laboratory QA/QC results. Laboratory QA/QC are detailed on the laboratory certificates provided in **Attachment D**.

ALS (Primary Laboratory) indicates that QA/QC compliance was acceptable.

All other laboratory QA/QC for soil and groundwater were met and are considered acceptable for the purpose of this investigation.

## **8 REFERENCES**

Agriculture and Resource Management Council of Australia and New Zealand and the Australian and New Zealand Environment and Conservation Council (ANZECC), 2000 *Australian and New Zealand guidelines for fresh and marine water quality*

FAO WHO, 2011 *Joint FAO/WHO Food Standards Programme, Codex Committee on Contaminants In Foods*

National Environment Protection Council, 2013 *National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013*.

WHO, 2000 *Air Quality Guidelines for Europe Second Edition* WHO Regional Publications, European Series, No. 91

WHO, 2003 *Concise International Chemical Assessment Document 50: Elemental mercury and inorganic mercury compounds: human health aspects*. Geneva, World Health Organization, *International Programme on Chemical Safety*.

WSP, 2015 *Sampling and Analysis Quality Plan Orica Botany Mercury Independent Review: Stage 2 - Environmental Testing Regime* (January 2015)

Australia New Zealand Food Standards Code (ANZFA), 2011, *Australia New Zealand Food Standards Code - Standard 1.4.1 - Contaminants and Natural Toxicants*.

## **9 REPORT LIMITATIONS**

The findings of this report are governed by the Scope outlined in Section 1 and throughout the letter report. As with any type of investigation, the confidence in the findings and the reliance that can be placed on this report is limited by the Scope. WSP was engaged by the client as an independent

consultant to conduct the Scope outlined in this report and to objectively present the results of the investigation conducted. WSP does not have any commercial interest in the project and has not been engaged to advertise, promote or endorse any client interests.

This report has been prepared for a specific purpose (stated within) for the client. Any other party who intends to rely on this report, or any data presented in this report, must contact WSP prior to doing so. WSP will advise such parties in writing on the extent that they may rely on this report, or data presented in this report. WSP's advice for any such reliance will be based on the available knowledge and the expressed purpose for which the report is to be relied upon. Any party who relies on this report without written advice from WSP does so entirely at their own risk.

The findings of this investigation are based on some information provided by the client. WSP trusts that the information provided by these sources is accurate, complete and is not misleading and, unless the Scope states otherwise, we have not been engaged to audit the veracity of any information provided to us. So, while normal assessments of data reliability are made during the course of our work, we assume no responsibility or liability for any errors or any omissions in any information provided by sources outside of WSP. Where inaccurate, incomplete or misleading information is provided to us by external parties there could be significant impacts on the integrity of this report. As such no warranties, expressed or implied, can be made.

This report must not be reproduced or referenced unless in full.

Yours sincerely

for WSP Environmental

A handwritten signature in blue ink, appearing to read 'Colin McKay'.

Colin McKay  
Principal Environmental Scientist

A handwritten signature in blue ink, appearing to read 'Stephen Barnett'.

Stephen Barnett  
Principal Environmental Engineer

Attachment A: Figures

Attachment B: Tables of results

Attachment C: Borelogs

Attachment D: Laboratory Transcripts

Attachment E: Calibration Certificate for Lumex RA-915 Mercury Analyser

Attachment F: Ecosure, 2015

**Attachment A – Figures**



- Former Chlor-Alkali Plant
- 1500m distance from FCAP
- Park\_boundary
- Penhryn Estuary

Image Source: Nearmap.  
Aerial dated 11 September 2014



Site Location & Features

Project 00045970  
Orica Mercury Independent Review Stage 2

FIGURE 1



**Total Mercury Concentration**

- All results less than Standard Residential guidelines (40mg/kg)
- 1 or more results greater than Standard Residential guidelines (40mg/kg)
- 1 or more results greater than Public Open Spaces guidelines (80mg/kg)
- ▨ Former Chlor-Alkali Plant

500 250 0 500 Metres



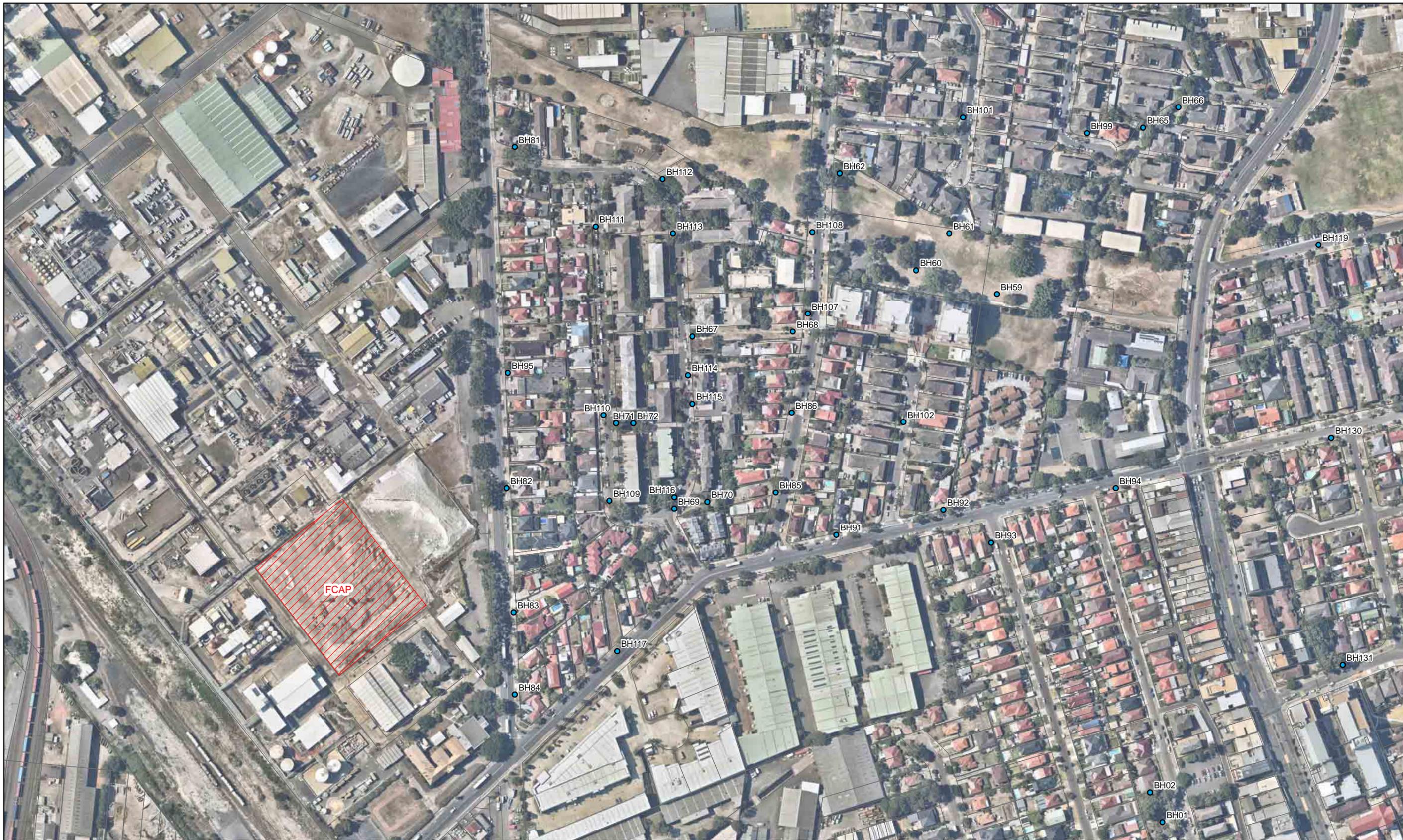
Soil Sampling Results - Total Mercury  
(surface samples 0 - 0.05m and depth samples 0.4 - 0.5m)

Project 00045970  
Orica Mercury Independent Review Stage 2



Image Source: Nearmap.  
Aerial dated 11 September 2014

FIGURE 2a



**Total Mercury Concentration**

- All results less than Standard Residential guidelines (40mg/kg)
- 1 or more results greater than Standard Residential guidelines (40mg/kg)
- 1 or more results greater than Public Open Spaces guidelines (80mg/kg)

▨ Former Chlor-Alkali Plant

Image Source: Nearmap.  
Aerial dated 11 September 2014



Soil Sampling Results - Total Mercury  
(surface samples 0 - 0.05m and depth samples 0.4 - 0.5m)

Project 00045970  
Orica Mercury Independent Review Stage 2

FIGURE 2b



**Chemical Concentrations**

- All results less than Standard Residential guidelines
- One or more results greater than Standard Residential guidelines
- One or more results greater than Public Open Space guidelines
- Former Chlor-Alkali Plant



Soil Sampling Results - Lead, Chromium, PAHs, PCBs  
(surface samples 0 - 0.05m)

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FIGURE 2c

Image Source: Nearmap.  
Aerial dated 11 September 2014





**Mercury Vapour Concentration**

- Inaccessible
- Less than guidelines ( $0.2\mu\text{g}/\text{m}^3$ )
- More than guidelines ( $0.2\mu\text{g}/\text{m}^3$ )

Former Chlor-Alkali Plant

Image Source: Nearmap.  
Aerial dated 11 September 2014

500 250 0 500 Metres



Mercury Vapour Sampling Results  
(Concentration at 1m above ground level)

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**Mercury Vapour Concentration**

- Inaccessible
- Less than Guidelines ( $0.2\mu\text{g}/\text{m}^3$ )
- Greater than Guidelines ( $0.2\mu\text{g}/\text{m}^3$ )
- ▨ Former Chlor-Alkali Plant

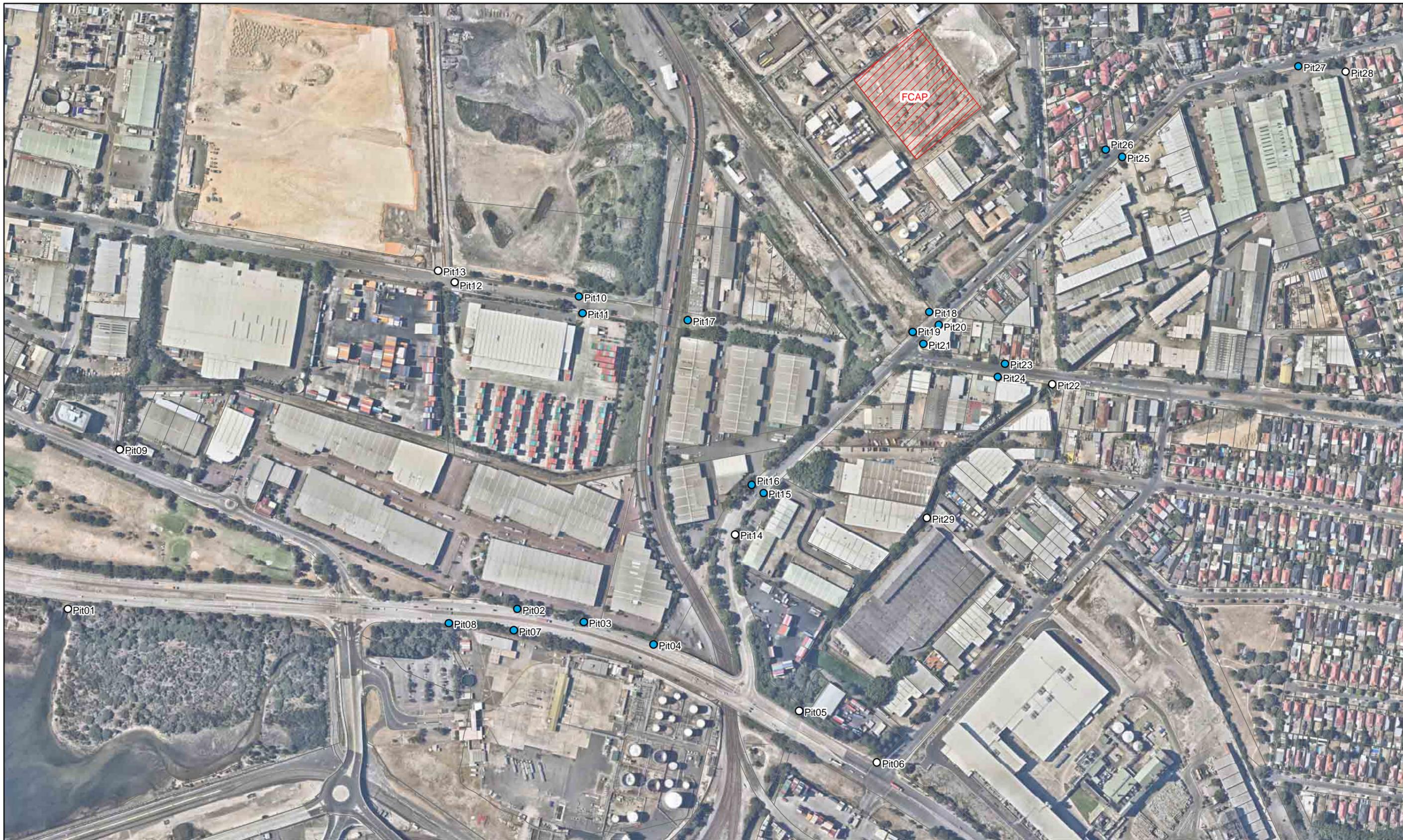
Image Source: Nearmap.  
Aerial dated 11 September 2014



**Mercury Vapour Sampling Results  
(Concentration at pit entrance or ground level)**

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FIGURE 3b



**Mercury Vapour Concentration**

- Inaccessible
- Less than guidelines ( $0.2\mu\text{g}/\text{m}^3$ )
- More than guidelines ( $0.2\mu\text{g}/\text{m}^3$ )
- ▨ Former Chlor-Alkali Plant

Image Source: Nearmap.  
Aerial dated 11 September 2014

150 75 0 150 Metres



Mercury Vapour Sampling Results  
(Concentration inside pits)

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**Total Mercury Concentration**

- Less than 'ISQG - Low' guidelines (0.15mg/kg)
- More than 'ISQG - Low' guidelines (0.15mg/kg)
- More than 'ISQG - High' guidelines (1.0mg/kg)

▨ Former Chlor-Alkali Plant

300 150 0 300 Metres



Sediment Sampling Results - Total Mercury  
(sediment depth 0 - 0.05m)

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Orica Mercury Independent Review Stage 2

Image Source: Nearmap.  
Aerial dated 11 September 2014



FIGURE 4



**Attachment B – Tables of results**

	Mercury
	mg/kg
NEPM HIL-A Residential	40
NEPM HIL-C Recreational	80

	Mercury
	mg/kg
NEPM HIL-A Residential	40
NEPM HIL-C Recreational	80

Field ID	Sample Depth	Sampled Date	
BH01	0-0.05	10/02/2015	<0.1
BH01	0.4-0.5	10/02/2015	<0.1
BH02	0-0.05	10/02/2015	<0.1
BH02	0.4-0.5	10/02/2015	<0.1
BH03	0-0.05	10/02/2015	<0.1
BH03	0.4-0.5	10/02/2015	<0.1
BH04	0-0.05	10/02/2015	0.2
BH04	0.4-0.5	10/02/2015	0.2
BH05	0-0.05	10/02/2015	<0.1
BH05	0.4-0.5	10/02/2015	<0.1
BH06	0-0.05	10/02/2015	0.1
BH06	0.4-0.5	10/02/2015	<0.1
BH07	0-0.05	10/02/2015	<0.1
BH07	0.4-0.5	10/02/2015	0.1
BH08	0-0.05	10/02/2015	<0.1
BH08	0.4-0.5	10/02/2015	<0.1
BH09	0-0.05	10/02/2015	<0.1
BH09	0.4-0.5	10/02/2015	<0.1
BH10	0-0.05	10/02/2015	<0.1
BH10	0.4-0.5	10/02/2015	<0.1
BH11	0-0.05	10/02/2015	<0.1
BH11	0.4-0.5	10/02/2015	<0.1
BH12	0-0.05	10/02/2015	<0.1
BH12	0.4-0.5	10/02/2015	<0.1
BH13	0-0.05	11/02/2015	<0.1
BH13	0.4-0.5	11/02/2015	<0.1
BH14	0-0.05	11/02/2015	<0.1
BH14	0.4-0.5	11/02/2015	<0.1
BH15	0-0.05	11/02/2015	0.1
BH15	0.4-0.5	11/02/2015	<0.1
BH16	0-0.05	11/02/2015	<0.1
BH16	0.4-0.5	11/02/2015	<0.1
BH17	0-0.05	11/02/2015	<0.1
BH17	0.4-0.5	11/02/2015	<0.1
BH18	0-0.05	11/02/2015	<0.1
BH18	0.2-0.3	11/02/2015	<0.1
BH19	0-0.05	11/02/2015	0.1
BH19	0.4-0.5	11/02/2015	<0.1
BH20	0-0.05	11/02/2015	<0.1
BH20	0.2-0.3	11/02/2015	<0.1
BH21	0-0.05	11/02/2015	<0.1
BH21	0.4-0.5	11/02/2015	<0.1
BH22	0-0.05	11/02/2015	0.4
BH22	0.4-0.5	11/02/2015	<0.1

Field ID	Sample Depth	Sampled Date	
BH23	0-0.05	11/02/2015	<0.1
BH23	0.4-0.5	11/02/2015	<0.1
BH24	0-0.05	11/02/2015	<0.1
BH24	0.4-0.5	11/02/2015	<0.1
BH25	0-0.05	11/02/2015	<0.1
BH25	0.4-0.5	11/02/2015	<0.1
BH26	0-0.05	11/02/2015	0.1
BH26	0.4-0.5	11/02/2015	<0.1
BH27	0-0.05	11/02/2015	0.1
BH27	0.4-0.5	11/02/2015	<0.1
BH28	0-0.05	12/02/2015	<0.1
BH28	0.2-0.3	12/02/2015	0.1
BH29	0-0.05	12/02/2015	<0.1
BH29	0.4-0.5	12/02/2015	<0.1
BH30	0-0.05	12/02/2015	<0.1
BH30	0.4-0.5	12/02/2015	<0.1
BH31	0-0.05	12/02/2015	<0.1
BH31	0.4-0.5	12/02/2015	<0.1
BH32	0-0.05	12/02/2015	<0.1
BH32	0.4-0.5	12/02/2015	<0.1
BH33	0-0.05	12/02/2015	<0.1
BH33	0.4-0.5	12/02/2015	<0.1
BH34	0-0.05	12/02/2015	0.1
BH34	0.2-0.3	12/02/2015	0.6
BH35	0-0.05	12/02/2015	<0.1
BH35	0.3-0.4	12/02/2015	<0.1
BH36	0-0.05	12/02/2015	<0.1
BH36	0.4-0.5	12/02/2015	<0.1
BH37	0-0.05	12/02/2015	<0.1
BH37	0.3-0.4	12/02/2015	<0.1
BH38	0-0.05	12/02/2015	0.1
BH38	0.3-0.4	12/02/2015	0.2
BH39	0-0.05	12/02/2015	<0.1
BH39	0.3-0.4	12/02/2015	<0.1
BH40	0-0.05	12/02/2015	<0.1
BH40	0.4-0.5	12/02/2015	<0.1
BH41	0-0.05	13/02/2015	<0.1
BH41	0.4-0.5	13/02/2015	<0.1
BH42	0-0.05	13/02/2015	<0.1
BH42	0.4-0.5	13/02/2015	<0.1
BH43	0-0.05	13/02/2015	0.3
BH43	0.4-0.5	13/02/2015	<0.1
BH44	0-0.05	13/02/2015	<0.1
BH44	0.4-0.5	13/02/2015	<0.1

	Mercury
	mg/kg
NEPM HIL-A Residential	40
NEPM HIL-C Recreational	80

	Mercury
	mg/kg
NEPM HIL-A Residential	40
NEPM HIL-C Recreational	80

Field ID	Sample Depth	Sampled Date	
BH45	0-0.05	13/02/2015	<0.1
BH45	0.4-0.5	13/02/2015	<0.1
BH46	0-0.05	13/02/2015	0.2
BH46	0.4-0.5	13/02/2015	0.2
BH47	0-0.05	13/02/2015	<0.1
BH47	0.4-0.5	13/02/2015	<0.1
BH48	0-0.05	13/02/2015	<0.1
BH48	0.1-0.2	13/02/2015	<0.1
BH49	0-0.05	13/02/2015	<0.1
BH49	0.4-0.5	13/02/2015	0.2
BH50	0-0.05	13/02/2015	<0.1
BH50	0.4-0.5	13/02/2015	<0.1
BH51	0-0.05	13/02/2015	<0.1
BH51	0.4-0.5	13/02/2015	<0.1
BH52	0-0.05	13/02/2015	0.1
BH52	0.4-0.5	13/02/2015	<0.1
BH53	0-0.05	13/02/2015	<0.1
BH53	0.4-0.5	13/02/2015	0.1
BH54	0-0.05	13/02/2015	0.3
BH54	0.4-0.5	13/02/2015	0.1
BH55	0-0.05	13/02/2015	0.8
BH55	0.4-0.5	13/02/2015	0.4
BH56	0-0.05	13/02/2015	0.8
BH56	0.3-0.4	13/02/2015	0.2
BH57	0-0.05	13/02/2015	4.7
BH57	0.4-0.5	13/02/2015	0.7
BH58	0-0.05	13/02/2015	0.8
BH58	0.4-0.5	13/02/2015	<0.1
BH59	0-0.05	13/02/2015	<0.1
BH59	0.4-0.5	13/02/2015	<0.1
BH60	0-0.05	13/02/2015	0.2
BH60	0.1-0.2	13/02/2015	0.1
BH61	0-0.05	13/02/2015	0.2
BH61	0.4-0.5	13/02/2015	0.2
BH62	0-0.05	13/02/2015	<0.1
BH62	0.4-0.5	13/02/2015	<0.1
BH63	0-0.05	17/02/2015	<0.1
BH63	0.4-0.5	17/02/2015	<0.1
BH64	0-0.05	17/02/2015	0.1
BH64	0.4-0.5	17/02/2015	<0.1
BH65	0-0.05	17/02/2015	<0.1
BH65	0.4-0.5	17/02/2015	0.2
BH66	0-0.05	17/02/2015	<0.1
BH66	0.4-0.5	17/02/2015	<0.1

Field ID	Sample Depth	Sampled Date	
BH67	0-0.05	17/02/2015	<0.1
BH67	0.4-0.5	17/02/2015	<0.1
BH68	0-0.05	17/02/2015	0.3
BH68	0.4-0.5	17/02/2015	<0.1
BH69	0-0.05	17/02/2015	0.2
BH69	0.4-0.5	17/02/2015	0.1
BH70	0-0.05	17/02/2015	<0.1
BH70	0.3-0.4	17/02/2015	0.1
BH71	0-0.05	17/02/2015	1.7
BH71	0.4-0.5	17/02/2015	<0.1
BH72	0-0.05	17/02/2015	0.2
BH72	0.4-0.5	17/02/2015	2.7
BH73	0-0.05	17/02/2015	<0.1
BH73	0.4-0.5	17/02/2015	<0.1
BH74	0-0.05	17/02/2015	0.1
BH74	0.4-0.5	17/02/2015	<0.1
BH75	0-0.05	17/02/2015	<0.1
BH75	0.4-0.5	17/02/2015	<0.1
BH76	0-0.05	17/02/2015	<0.1
BH76	0.4-0.5	17/02/2015	<0.1
BH77	0-0.05	19/02/2015	1
BH77	0.3-0.4	19/02/2015	2
BH78	0-0.05	19/02/2015	2.8
BH78	0.4-0.5	19/02/2015	2.3
BH79	0-0.05	19/02/2015	0.7
BH79	0.4-0.5	19/02/2015	0.7
BH80	0-0.05	19/02/2015	1.5
BH80	0.4-0.5	19/02/2015	0.6
BH81	0-0.05	19/02/2015	0.5
BH81	0.4-0.5	19/02/2015	<0.1
BH82	0-0.05	19/02/2015	0.8
BH82	0.4-0.5	19/02/2015	<0.1
BH83	0-0.05	19/02/2015	0.5
BH83	0.3-0.4	19/02/2015	0.2
BH84	0-0.05	19/02/2015	1.2
BH84	0.4-0.5	19/02/2015	0.1
BH85	0-0.05	19/02/2015	0.2
BH85	0.4-0.5	19/02/2015	<0.1
BH86	0-0.05	19/02/2015	0.2
BH86	0.4-0.5	19/02/2015	<0.1
BH87	0-0.05	19/02/2015	<0.1
BH87	0.4-0.5	19/02/2015	<0.1
BH88	0-0.05	19/02/2015	0.1
BH88	0.4-0.5	19/02/2015	<0.1

	Mercury
	mg/kg
NEPM HIL-A Residential	40
NEPM HIL-C Recreational	80

	Mercury
	mg/kg
NEPM HIL-A Residential	40
NEPM HIL-C Recreational	80

Field ID	Sample Depth	Sampled Date	Mercury (mg/kg)
BH89	0-0.05	19/02/2015	<0.1
BH89	0.3-0.4	19/02/2015	0.1
BH90	0-0.05	19/02/2015	2.3
BH90	0.4-0.5	19/02/2015	<0.1
BH91	0-0.05	19/02/2015	0.2
BH91	0.4-0.5	19/02/2015	<0.1
BH92	0-0.05	19/02/2015	<0.1
BH92	0.4-0.5	19/02/2015	<0.1
BH93	0-0.05	19/02/2015	0.2
BH93	0.4-0.5	19/02/2015	<0.1
BH94	0-0.05	19/02/2015	0.3
BH94	0.4-0.5	19/02/2015	<0.1
BH100	0-0.05	20/02/2015	<0.1
BH100	0.3-0.4	20/02/2015	<0.1
BH101	0-0.05	20/02/2015	0.1
BH101	0.4-0.5	20/02/2015	<0.1
BH102	0-0.05	20/02/2015	0.1
BH102	0.4-0.5	20/02/2015	<0.1
BH103	0-0.05	20/02/2015	<0.1
BH103	0.4-0.5	20/02/2015	<0.1
BH104	0-0.05	20/02/2015	<0.1
BH104	0.4-0.5	20/02/2015	<0.1
BH105	0-0.05	20/02/2015	<0.1
BH105	0.2-0.3	20/02/2015	<0.1
BH106	0-0.05	20/02/2015	<0.1
BH106	0.4-0.5	20/02/2015	<0.1
BH95	0-0.05	20/02/2015	0.2
BH95	0.4-0.5	20/02/2015	<0.1
BH96	0-0.05	20/02/2015	<0.1
BH96	0.4-0.5	20/02/2015	<0.1
BH97	0-0.05	20/02/2015	<0.1
BH97	0.4-0.5	20/02/2015	<0.1
BH98	0-0.05	20/02/2015	<0.1
BH98	0.4-0.5	20/02/2015	<0.1
BH99	0-0.05	20/02/2015	<0.1
BH99	0.4-0.5	20/02/2015	<0.1
BH107	0-0.05	24/02/2015	0.2
BH107	0.4-0.5	24/02/2015	<0.1
BH108	0-0.05	24/02/2015	0.2
BH108	0.4-0.5	24/02/2015	<0.1
BH109	0-0.05	24/02/2015	0.3
BH109	0.4-0.5	24/02/2015	<0.1
BH110	0-0.05	24/02/2015	0.2
BH110	0.4-0.5	24/02/2015	<0.1

Field ID	Sample Depth	Sampled Date	Mercury (mg/kg)
BH111	0-0.05	24/02/2015	0.1
BH111	0.4-0.5	24/02/2015	<0.1
BH112	0-0.05	24/02/2015	<0.1
BH112	0.4-0.5	24/02/2015	<0.1
BH113	0-0.05	24/02/2015	<0.1
BH113	0.4-0.5	24/02/2015	<0.1
BH114	0-0.05	24/02/2015	0.1
BH114	0.4-0.5	24/02/2015	<0.1
BH115	0-0.05	24/02/2015	0.2
BH115	0.3-0.4	24/02/2015	<0.1
BH116	0-0.05	24/02/2015	0.2
BH117	0-0.05	24/02/2015	0.3
BH117	0.3-0.4	24/02/2015	0.2
BH118	0-0.05	24/02/2015	<0.1
BH118	0.4-0.5	24/02/2015	<0.1
BH119	0-0.05	24/02/2015	<0.1
BH119	0.4-0.5	24/02/2015	<0.1
BH120	0-0.05	24/02/2015	<0.1
BH120	0.4-0.5	24/02/2015	<0.1
BH121	0-0.05	24/02/2015	<0.1
BH121	0.4-0.5	24/02/2015	<0.1
BH122	0-0.05	24/02/2015	<0.1
BH122	0.4-0.5	24/02/2015	<0.1
BH123	0-0.05	24/02/2015	<0.1
BH123	0.4-0.5	24/02/2015	<0.1
BH124	0-0.05	24/02/2015	<0.1
BH124	0.4-0.5	24/02/2015	<0.1
BH125	0-0.05	24/02/2015	0.1
BH125	0.4-0.5	24/02/2015	<0.1
BH126	0-0.05	24/02/2015	<0.1
BH126	0.4-0.5	24/02/2015	<0.1
BH127	0-0.05	24/02/2015	<0.1
BH127	0.4-0.5	24/02/2015	<0.1
BH128	0-0.05	26/02/2015	<0.1
BH128	0.4-0.5	26/02/2015	<0.1
BH129	0-0.05	26/02/2015	0.3
BH129	0.3-0.4	26/02/2015	0.1
BH130	0-0.05	26/02/2015	0.3
BH130	0.2-0.3	26/02/2015	0.2
BH131	0-0.05	26/02/2015	<0.1
BH131	0.4-0.5	26/02/2015	0.1
BH132	0-0.05	26/02/2015	<0.1
BH132	0.4-0.5	26/02/2015	<0.1

	Mercury
	mg/kg
NEPM HIL-A Residential	40
NEPM HIL-C Recreational	80

	Mercury
	mg/kg
NEPM HIL-A Residential	40
NEPM HIL-C Recreational	80

Field ID	Sample Depth	Sampled Date	Mercury (mg/kg)
BH133	0-0.05	26/02/2015	0.1
BH133	0.4-0.5	26/02/2015	<0.1
BH134	0-0.05	26/02/2015	<0.1
BH134	0.4-0.5	26/02/2015	<0.1
BH135	0-0.05	26/02/2015	0.2
BH135	0.4-0.5	26/02/2015	<0.1
BH136	0-0.05	26/02/2015	0.2
BH136	0.4-0.5	26/02/2015	<0.1
BH137	0-0.05	26/02/2015	<0.1
BH137	0.4-0.5	26/02/2015	<0.1
BH138	0-0.05	26/02/2015	<0.1
BH138	0.4-0.5	26/02/2015	<0.1
BH139	0-0.05	26/02/2015	<0.1
BH139	0.4-0.5	26/02/2015	<0.1
BH140	0-0.05	26/02/2015	0.2
BH140	0.4-0.5	26/02/2015	<0.1

Field ID	Sample Depth	Sampled Date	Mercury (mg/kg)
BH141	0-0.05	26/02/2015	<0.1
BH141	0.4-0.5	26/02/2015	<0.1
BH142	0-0.05	26/02/2015	0.1
BH142	0.4-0.5	26/02/2015	<0.1
BH143	0-0.05	26/02/2015	0.1
BH143	0.4-0.5	26/02/2015	<0.1
BH144	0-0.05	26/02/2015	<0.1
BH144	0.4-0.5	26/02/2015	<0.1
BH145	0-0.05	26/02/2015	3
BH145	0.4-0.5	26/02/2015	1.6
BH146	0-0.05	26/02/2015	0.1
BH146	0.4-0.5	26/02/2015	0.1
BH147	0-0.05	26/02/2015	<0.1
BH147	0.4-0.5	26/02/2015	<0.1
BH148	0-0.05	26/02/2015	<0.1
BH148	0.4-0.5	26/02/2015	<0.1

Statistical Summary Shallow Samples (0-0.05m)	
Number of Results	148.00
Number of Detects	63.00
Minimum Concentration	<0.1
Maximum Concentration	4.70
Average Concentration	0.24
Median Concentration	0.05
Standard Deviation	0.58
95% Upper confidence Limit	0.35

Statistical Summary Deep Samples (>0.05m)	
Number of Results	147.00
Number of Detects	31.00
Minimum Concentration	<0.1
Maximum Concentration	2.70
Average Concentration	0.14
Median Concentration	0.05
Standard Deviation	0.36
95% Upper confidence Limit	0.23

	Heavy Metals		Polyaromatic Hydrocarbons (PAHs)			Polychlorinated Biphenyls (PCB)
	Chromium (III+VI)	Lead	Naphthalene	Carcinogenic PAHs (as B(a)P TEQ)	PAHs (Sum of total)	PCBs (Sum of total)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	2	5	0.5	0.5	0.5	0.1
NEPM HIL-A Residential	100	300	3	3	300	1
NEPM HIL-C Recreational	300	600	NL	3	300	1

Field ID	Sample Dep	Sampled Date	Chromium (III+VI)	Lead	Naphthalene	Carcinogenic PAHs (as B(a)P TEQ)	PAHs (Sum of total)	PCBs (Sum of total)
BH59	0-0.05	13/02/2015	10	64	<0.5	<0.5	<0.5	<0.1
BH60	0-0.05	13/02/2015	2	21	<0.5	<0.5	<0.5	<0.1
BH61	0-0.05	13/02/2015	5	80	<0.5	<0.5	<0.5	<0.1
BH62	0-0.05	13/02/2015	6	52	<0.5	1	9.2	<0.1
BH81	0-0.05	19/02/2015	3	51	<0.5	<0.5	<0.5	<0.1
BH82	0-0.05	19/02/2015	12	111	<0.5	<0.5	3.3	<0.1
BH83	0-0.05	19/02/2015	5	62	<0.5	<0.5	1	<0.1
BH84	0-0.05	19/02/2015	7	124	<0.5	<0.5	1	<0.1
BH86	0-0.05	19/02/2015	5	82	<0.5	0.6	2.8	<0.1
BH92	0-0.05	19/02/2015	3	52	<0.5	1.3	8.6	<0.1
BH95	0-0.05	20/02/2015	8	45	<0.5	<0.5	<0.5	<0.1
BH108	0-0.05	24/02/2015	7	209	<0.5	2.6	19.9	<0.1
BH110	0-0.05	24/02/2015	3	25	<0.5	<0.5	<0.5	<0.1
BH111	0-0.05	24/02/2015	5	35	<0.5	<0.5	<0.5	<0.1
BH112	0-0.05	24/02/2015	5	60	<0.5	<0.5	<0.5	<0.1
BH114	0-0.05	24/02/2015	5	115	<0.5	<0.5	<0.5	<0.1
BH116	0-0.05	24/02/2015	5	75	<0.5	<0.5	<0.5	<0.1

**Statistical Summary**

Number of Results	17	17	17	17	17	17
Number of Detects	17	17	0	4	7	0
Minimum Concentration	2	21	<0.5	<0.5	<0.5	<0.1
Maximum Concentration	12	209	<0.5	2.6	19.9	<0.1
Average Concentration	5.6	74	0.25	0.51	2.8	0.05
Median Concentration	5	62	0.25	0.25	0.25	0.05
Standard Deviation	2.6	46	ID	0.62	5.2	ID
95% Upper Confidence Limit	6.7	96	ID	ID	ID	ID

ID = Insufficient Detectable Data for meaningful Statistical Analysis



Mercury Vapour				
	Inside Pit	Surface Level	1m above surface	Comments
	ng/m3	ng/m3	ng/m3	
WHO, 2003 - Tolerable long term inhalation	200	200	200	
WHO, 2000 - Annual average	1000	1000	1000	

Field ID	Sample Date	Temperature (°C)				
Pit01	5/02/2015	22			7	Drainage chane; discharge to estuary
Pit02	5/02/2015	22	27	30	31	
Pit03	5/02/2015	22	34	33	31	
Pit04	5/02/2015	22	31	31	31	
Pit05	5/02/2015	22			34	Could not access drainage channel
Pit06	5/02/2015	22		30	30	
Pit07	5/02/2015	22	25	24	26	
Pit08	5/02/2015	22	23	22	23	
Pit09	5/02/2015	22		20	20	Channel open to air
Pit10	5/02/2015	22	29	27	24	
Pit11	5/02/2015	22	32	30	29	
Pit12	5/02/2015	22			24	Inaccessable
Pit13	5/02/2015	22		25	23	Open drainage channel
Pit14	5/02/2015	22		22	22	
Pit15	5/02/2015	22	9	8	10	
Pit16	5/02/2015	22	16	13	18	
Pit17	5/02/2015	22	13	10	11	
Pit18	5/02/2015	22	27	20	15	
Pit19	5/02/2015	22	15	14	11	
Pit20	5/02/2015	22	19	13	11	
Pit21	5/02/2015	22	22	21		
Pit22	5/02/2015	22			15	Open drainage chanel, no access
Pit23	5/02/2015	22	17	13	8	
Pit24	5/02/2015	22	8	7	4	
Pit25	5/02/2015	22	24	17	12	
Pit26	5/02/2015	22	7	6	4	
Pit27	5/02/2015	22	9	7	6	
Pit28	5/02/2015	22		15	11	Unable to open grate
Pit29	5/02/2015	22			15	Channel inaccessible
BH01	10/02/2015	28		2	0	Baird Reserve
BH02	10/02/2015	28		4	1	Baird Reserve
BH03	10/02/2015	28		3	2	Barwon Cres Reserve
BH04	10/02/2015	28		11	14	Barwon Cres Reserve
BH05	10/02/2015	28		22	25	Barwon Cres Reserve
BH06	10/02/2015	30		1	1	Barwon Cres Reserve
BH07	10/02/2015	28		2	0	Barwon Cres Reserve
BH08	10/02/2015	28		3	4	Barwon Cres Reserve
BH09	10/02/2015	28		5	2	Franklin St Reserve
BH10	10/02/2015	28		11	18	Franklin St Reserve
BH11	10/02/2015	28		46	41	Rabaul Reserve
BH12	10/02/2015	28		1	1	Rabaul Reserve
BH13	11/02/2015	31		12	7	Nagle Park
BH14	11/02/2015	31		10	10	Nagle Park
BH15	11/02/2015	28		3	2	Nagle Park
BH16	11/02/2015	28		3	4	Nagle Park
BH17	11/02/2015	28		25	20	Nagle Park
BH18	11/02/2015	28		8	6	Nagle Park
BH19	11/02/2015	36		27	39	Hefron Park



Mercury Vapour			
Inside Pit	Surface Level	1m above surface	Comments
ng/m3	ng/m3	ng/m3	
WHO, 2003 - Tolerable long term inhalation	200	200	
WHO, 2000 - Annual average	1000	1000	

Field ID	Sample Date	Temperature (°C)				
BH20	11/02/2015	36		24	22	Hefron Park
BH21	11/02/2015	36		6	4	Hefron Park
BH22	11/02/2015	36		27	22	Hefron Park
BH23	11/02/2015	36		31	29	Hefron Park
BH24	11/02/2015	36		27	23	Hefron Park
BH25	11/02/2015	36		18	14	Hefron Park
BH26	11/02/2015	36		26	22	Hefron Park
BH27	11/02/2015	36		18	14	Hefron Park
BH28	12/02/2015	36		26	23	Hefron Park
BH29	12/02/2015	28		6	4	Hefron Park
BH30	12/02/2015	28		14	11	Hefron Park
BH31	12/02/2015	37		24	33	Hefron Park
BH32	12/02/2015	36		18	12	Hefron Park
BH33	12/02/2015	36		22	18	Hefron Park
BH34	12/02/2015	35		33	27	Pioneer Park
BH35	12/02/2015	37		53	40	Pioneer Park
BH36	12/02/2015	37		59	36	Pioneer Park
BH37	12/02/2015	37		10	8	Pioneer Park
BH38	12/02/2015	40		57	52	Pioneer Park
BH39	12/02/2015	36		1	2	Pioneer Park
BH40	12/02/2015	36		12	9	Pioneer Park
BH41	13/02/2015	25		8	10	Sir Joseph Banks Park
BH42	13/02/2015	25		4	5	Sir Joseph Banks Park
BH43	13/02/2015	27		3	6	Sir Joseph Banks Park
BH44	13/02/2015	26		4	3	Sir Joseph Banks Park
BH45	13/02/2015	27		10	13	Sir Joseph Banks Park
BH46	13/02/2015	29		38	28	Garnet Jackson Reserve
BH47	13/02/2015	31		8	10	Garnet Jackson Reserve
BH48	13/02/2015	29		20	19	Garnet Jackson Reserve
BH49	13/02/2015	31		31	32	Garnet Jackson Reserve
BH50	13/02/2015	32		0	0	Garnet Jackson Reserve
BH51	13/02/2015	32		2	1	Mutch Park
BH52	13/02/2015	32		22	18	Mutch Park
BH53	13/02/2015	32		35	22	Mutch Park
BH54	13/02/2015	32		3	4	Mutch Park
BH55	13/02/2015	32		5	4	Mutch Park
BH56	13/02/2015	33		6	8	Mutch Park
BH57	13/02/2015	33		13	13	Mutch Park
BH58	13/02/2015	34		21	20	Mutch Park
BH59	13/02/2015	32		6	6	Rhodes Street Reserve
BH60	13/02/2015	33		2	3	Rhodes Street Reserve
BH61	13/02/2015	30		5	9	Rhodes Street Reserve
BH62	13/02/2015	30		17	18	Rhodes Street Reserve
BH63	17/02/2015	32		18	17	Muler Reserve
BH64	17/02/2015	32		15	13	Muler Reserve
BH65	17/02/2015	32		11	10	Jauncy PI Reserve
BH66	17/02/2015	32		8	7	Jauncy PI Reserve
BH67	17/02/2015	32		28	30	Grace Campbell Reserve 1



Mercury Vapour			
Inside Pit	Surface Level	1m above surface	Comments
ng/m3	ng/m3	ng/m3	
WHO, 2003 - Tolerable long term inhalation	200	200	200
WHO, 2000 - Annual average	1000	1000	1000

Field ID	Sample Date	Temperature (°C)				
BH68	17/02/2015	32		28	29	Grace Campbell Reserve 1
BH69	17/02/2015	32		24	26	Grace Campbell Reserve 2
BH70	17/02/2015	32		27	26	Grace Campbell Reserve 2
BH71	17/02/2015	32		15	19	Nielson St Reserve
BH72	17/02/2015	32		26	24	Nielson St Reserve
BH73	17/02/2015	32		54	54	Purcell Park
BH74	17/02/2015	32		56	59	Purcell Park
BH75	17/02/2015	32		39	36	Purcell Park
BH76	17/02/2015	32		65	66	Purcell Park
BH77	19/02/2015	24		6	12	Wentworth Ave
BH78	19/02/2015	24		4	4	Wentworth Ave
BH79	19/02/2015	24		22	23	Denison St
BH80	19/02/2015	24		2	0	Smith St
BH81	19/02/2015	26		10	6	Grace Campbell Cres
BH82	19/02/2015	27		7	9	Denison St
BH83	19/02/2015	25		8	7	Denison St
BH84	19/02/2015	26		28	30	Denison St
BH85	19/02/2015	28		22	16	Rhodes St
BH86	19/02/2015	30		21	18	Rhodes St
BH87	19/02/2015	32		17	12	Rhodes St
BH88	19/02/2015	32		1	0	Rhodes St
BH89	19/02/2015	30		1	0	Denison St
BH90	19/02/2015	36		16	16	Denison St
BH91	19/02/2015	36		14	11	Beauchamp Rd
BH92	19/02/2015	35		5	7	Beauchamp Rd
BH93	19/02/2015	35		5	32	Jennings St
BH94	19/02/2015	35		52	55	Beauchamp Rd
BH95	20/02/2015	27		19	30	Denison St
BH96	20/02/2015	27		0	0	Flint St
BH97	20/02/2015	27		29	28	Flint St
BH98	20/02/2015	27		20	16	Jauncey Pl
BH99	20/02/2015	27		48	46	Jauncey Pl
BH100	20/02/2015	26		39	37	Brittain Cres
BH101	20/02/2015	28		2	3	Brittain Cres
BH102	20/02/2015	33		48	48	Flack Ave
BH103	20/02/2015	33		63	61	Donovan Ave
BH104	20/02/2015	33		49	48	Donovan Ave
BH105	20/02/2015	33		48	49	Parer St
BH106	20/02/2015	33		40	40	Bunnerong Rd
BH107	24/02/2015	23		16	14	Rhodes St
BH108	24/02/2015	23		9	8	Rhodes St
BH109	24/02/2015	24		14	16	Nilson Ave
BH110	24/02/2015	24		39	38	Nilson Ave
BH111	24/02/2015	28		39	12	Nilson Ave
BH112	24/02/2015	28		16	14	Grace Campbell Cres
BH113	24/02/2015	28		18	14	Grace Campbell Cres
BH114	24/02/2015	26		25	18	Grace Campbell Cres
BH115	24/02/2015	25		1	0	Grace Campbell Cres



Mercury Vapour			
Inside Pit	Surface Level	1m above surface	Comments
ng/m3	ng/m3	ng/m3	
WHO, 2003 - Tolerable long term inhalation	200	200	200
WHO, 2000 - Annual average	1000	1000	1000

Field ID	Sample Date	Temperature (°C)				
BH116	24/02/2015	26		5	5	Grace Campbell Cres
BH117	24/02/2015	24		8	8	Beauchamp Rd
BH118	24/02/2015	24		12	10	Bunnerong Rd
BH119	24/02/2015	24		29	26	Jersey Rd
BH120	24/02/2015	27		11	13	Jersey Rd
BH121	24/02/2015	26		19	15	Beauchamp Rd
BH122	24/02/2015	26		9	38	Bapaume Pde
BH123	24/02/2015	26		28	25	Hamel Rd
BH124	24/02/2015	26		23	21	Flanders Ave
BH125	24/02/2015	26		17	10	Knowles Ave
BH126	24/02/2015	28		33	26	Shirley Cres
BH127	24/02/2015	28		32	28	Shirley Cres
BH128	26/02/2015	24		73	72	Anthony Lane
BH129	26/02/2015	24		70	71	Anthony Lane
BH130	26/02/2015	25		67	66	Beauchamp Rd
BH131	26/02/2015	24		66	65	Daunt Ave
BH132	26/02/2015	25		63	64	Daunt Ave
BH133	26/02/2015	25		62	63	Pillars Pl
BH134	26/02/2015	26		61	63	Windsor St
BH135	26/02/2015	26		63	62	Hunter Ave
BH136	26/02/2015	25		64	65	Franklin St
BH137	26/02/2015	32		18	19	Stephen Rd
BH138	26/02/2015	34		32	34	Trevelyan St
BH139	26/02/2015	34		28	29	Brighton St
BH140	26/02/2015	25		70	72	Jennings St
BH141	26/02/2015	25		73	74	Perry St
BH142	26/02/2015	25		67	67	Harold St
BH143	26/02/2015	24		74	73	Harold St
BH144	26/02/2015	25		74	76	Harold St
BH145	26/02/2015	27		69	74	Bunnerong Rd
BH146	26/02/2015	27		66	68	Waterton Ave
BH147	27/02/2015	26		70	71	Murrabin Ave
BH148	27/02/2015	31		63	39	Partanna Ave

Statistical Summary				
Number of Results	19.00	172.00	176.00	
Number of Detects	19.00	172.00	176.00	
Minimum Concentration	7.00	0.00	0.00	
Maximum Concentration	34.00	74.00	76.00	
Average Concentration	20.37	24.35	23.33	
Median Concentration	22.00	19.50	18.00	
Standard Deviation	8.65	20.41	20.12	
95% Upper confidence Limit	23.81	31.13	29.34	

	Mercury	Methylmercury
	mg/kg	mg/kg
EQL	0.1	0.1
NEPM HIL-C Recreational	80	13
ANZECC ISQG Low (trigger value)	0.15	-
ANZECC ISQG High	1	-

Field ID	Sampled Date		
SED01	16/02/2015	<0.1	
SED02	16/02/2015	0.1	
SED03	16/02/2015	0.2	
SED04	16/02/2015	0.1	
SED05	16/02/2015	0.1	
SED06	16/02/2015	0.3	
SED07	16/02/2015	0.3	
SED08	16/02/2015	<0.1	
SED09	16/02/2015	<0.1	
SED10	16/02/2015	0.3	
SED11	16/02/2015	0.3	
SED12	16/02/2015	0.1	
SED13	16/02/2015	0.9	<0.10
SED14	16/02/2015	0.2	
SED15	16/02/2015	<0.1	
SED16	16/02/2015	0.1	
SED17	16/02/2015	0.4	
SED18	16/02/2015	0.5	<0.10
SED19	16/02/2015	<0.1	
SED20	16/02/2015	<0.1	

Statistical Summary		
Number of Results	20	2
Number of Detects	14	0
Minimum Concentration	<0.1	<0.1
Maximum Concentration	0.9	<0.1
Average Concentration	0.21	-
Median Concentration	0.1	0.05
Standard Deviation	0.21	-
95% Upper Confidence Limit	0.3	-



Table B5: QA/QC Results -  
Intra laboratory Duplicates

45970 - Orica Mercury  
Independent Review Stage 2

		Lab Field_ID Sampled_	ALS BH01 (0-0.05) 10/02/2015	ALS DUP1 10/02/2015	RPD	ALS BH12 (0-0.05) 10/02/2015	ALS DUP2 10/02/2015	RPD
ChemName	Units	EQL						
Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
		Lab Field_ID Sampled_	ALS BH24 (0-0.05) 11/02/2015	ALS DUP3 11/02/2015	RPD	ALS BH38 (0-0.05) 12/02/2015	ALS DUP4 12/02/2015	RPD
Mercury	mg/kg	0.1	<0.1	<0.1	0	0.1	0.1	0
		Lab Field_ID Sampled_	ALS BH54 0-0.05 13/02/2015	ALS DUP5 13/02/2015	RPD	ALS BH64 (0-0.05) 17/02/2015	ALS DUP6 17/02/2015	RPD
Mercury	mg/kg	0.1	0.3	0.4	29	0.1	0.1	0
		Lab Field_ID Sampled_	ALS SED07 16/02/2015	ALS SEDDUP1 16/02/2015	RPD	ALS BH72(0-0.05) 17/02/2015	ALS Dup7 17/02/2015	RPD
Mercury	mg/kg	0.1	0.3	0.3	0	0.2	<0.1	100
		Lab Field_ID Sampled_	ALS BH119 (0-0.05) 24/02/2015	ALS DUP9 24/02/2015	RPD	ALS BH139 (0-0.05) 26/02/2015	ALS DUP10 26/02/2015	RPD
Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
		Lab Field_ID Sampled_	ALS BH141 (0-0.05) 26/02/2015	ALS DUP11 26/02/2015	RPD	ALS BH144 (0-0.05) 26/02/2015	ALS DUP12 26/02/2015	RPD
Mercury	mg/kg	0.1	<0.1	0.1	0	<0.1	<0.1	0
		Lab Field_ID Sampled_	ALS BH146 (0-0.05) 26/02/2015	ALS DUP13 26/02/2015	RPD	ALS BH148 (0-0.05) 26/02/2015	ALS DUP14 26/02/2015	RPD
Mercury	mg/kg	0.1	0.1	0.1	0	<0.1	<0.1	0
		Lab Field_ID Sampled_	ALS BH86 (0-0.05) 19/02/2015	ALS DUP 8 19/02/2015	RPD			
Acenaphthene	mg/kg	0.5	<0.5	<0.5	0			
Acenaphthylene	mg/kg	0.5	<0.5	<0.5	0			
Anthracene	mg/kg	0.5	<0.5	<0.5	0			
Benz(a)anthracene	mg/kg	0.5	<0.5	0.8	46			
Benzo(a) pyrene	mg/kg	0.5	0.5	0.6	18			
Benzo(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	0			
Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0			
Chrysene	mg/kg	0.5	<0.5	0.7	33			
Benzo[b+j]fluoranthene	mg/kg	0.5	0.6	0.8	29			
Dibenz(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	0			
B(a)P TEQ	mg/kg	0.5	0.6	0.8	29			
Fluoranthene	mg/kg	0.5	0.8	1.6	67			
Fluorene	mg/kg	0.5	<0.5	<0.5	0			
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	<0.5	<0.5	0			
Naphthalene	mg/kg	0.5	<0.5	<0.5	0			
PAHs (Sum of total)	mg/kg	0.5	2.8	7.5	<b>91</b>			
Phenanthrene	mg/kg	0.5	<0.5	1.4	95			
Pyrene	mg/kg	0.5	0.9	1.6	56			
PCBs (Sum of total)	mg/kg	0.1	<0.1	<0.1	0			
Mercury	mg/kg	0.1	0.2	0.2	0			
Chromium (III+VI)	mg/kg	2	5.0	3.0	50			
Lead	mg/kg	5	82.0	43.0	<b>62</b>			

\*RPDs have only been considered where a concentration is greater than 0 times the EQL.

\*\*High RPDs are in bold (Acceptable RPDs are: 100 (0-5 x EQL); 75 (5-10 x EQL); 30 (> 10 x EQL))

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



Table B6: QA/QC Results -  
Inter laboratory Duplicates

45970 - Orica Mercury  
Independent Review Stage 2

		Lab	ALS	Envirolab		ALS	Envirolab	
		Field_ID	BH01 (0-0.05)	Trip 1	RPD	BH12 (0-0.05)	Trip 2	RPD
		Sampled_	10/02/2015	10/02/2015		10/02/2015	10/02/2015	
ChemName	Units	EQL						
Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
		Lab	ALS	Envirolab		ALS	Envirolab	
		Field_ID	BH24 (0-0.05)	Trip 3	RPD	BH38 (0-0.05)	Trip 4	RPD
		Sampled_	11/02/2015	11/02/2015		12/02/2015	12/02/2015	
Mercury	mg/kg	0.1	<0.1	<0.1	0	0.1	0.1	0
		Lab	ALS	Envirolab		ALS	Envirolab	
		Field_ID	BH54 0-0.05	Trip 5	RPD	BH64 (0-0.05)	Trip 6	RPD
		Sampled_	13/02/2015	13/02/2015		17/02/2015	17/02/2015	
Mercury	mg/kg	0.1	0.3	0.4	29	0.1	0.1	0
		Lab	ALS	Envirolab		ALS	Envirolab	
		Field_ID	SED07	Sed Trip 1	RPD	BH72(0-0.05)	Trip7	RPD
		Sampled_	16/02/2015	16/02/2015			24/02/2015	
Mercury	mg/kg	0.1	0.3	0.2	40	0.2	0.2	0
		Lab	ALS	Envirolab		ALS	Envirolab	
		Field_ID	BH119 (0-0.05)	Trip9	RPD	BH139 (0-0.05)	Trip10	RPD
		Sampled_	24/02/2015	24/02/2015		26/02/2015	26/02/2015	
Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
		Lab	ALS	Envirolab		ALS	Envirolab	
		Field_ID	BH141 (0.4-0.5)	Trip11	RPD	BH144 (0.4-0.5)	Trip12	RPD
		Sampled_	26/02/2015	26/02/2015		26/02/2015	26/02/2015	
Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
		Lab	ALS	Envirolab		ALS	Envirolab	
		Field_ID	BH146 (0.4-0.5)	Trip13	RPD	BH148 (0.4-0.5)	Trip14	RPD
		Sampled_	26/02/2015	26/02/2015		26/02/2015	27/02/2015	
Mercury	mg/kg	0.1	0.1	<0.1	0	<0.1	<0.1	0
		Lab	ALS	Envirolab		ALS	Envirolab	
		Field_ID	BH86 (0-0.05)	Trip 8	RPD			
		Sampled_	19/02/2015	19/02/2015				
Acenaphthene	mg/kg	0.5 / 0.1	<0.5	<0.1	0			
Acenaphthylene	mg/kg	0.5 / 0.1	<0.5	<0.1	0			
Anthracene	mg/kg	0.5 / 0.1	<0.5	0.1	0			
Benz(a)anthracene	mg/kg	0.5 / 0.1	<0.5	0.5	0			
Benzo(a) pyrene	mg/kg	0.5 / 0.1	0.5	0.55	10			
Benzo(g,h,i)perylene	mg/kg	0.5 / 0.1	<0.5	0.4	0			
Benzo(k)fluoranthene	mg/kg	0.5	<0.5	-	-			
Chrysene	mg/kg	0.5 / 0.1	<0.5	0.5	0			
Benzo[b+j]fluoranthene	mg/kg	0.5	0.6	-	-			
Dibenz(a,h)anthracene	mg/kg	0.5 / 0.1	<0.5	<0.1	0			
B(a)P TEQ	mg/kg	0.5	0.6	0.7	15			
Fluoranthene	mg/kg	0.5 / 0.1	0.8	1.0	22			
Fluorene	mg/kg	0.5 / 0.1	<0.5	<0.1	0			
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5 / 0.1	<0.5	0.5	0			
Naphthalene	mg/kg	0.5 / 0.1	<0.5	<0.1	0			
PAHs (Sum of total)	mg/kg	0.5	2.8	5.9	<b>71</b>			
Phenanthrene	mg/kg	0.5 / 0.1	<0.5	0.4	0			
Pyrene	mg/kg	0.5 / 0.1	0.9	1.0	11			
PCBs (Sum of total)	mg/kg	0.1	<0.1	<0.7	0			
Mercury	mg/kg	0.1	0.2	0.2	0			
Chromium (III+VI)	mg/kg	2 / 1	5.0	5.0	0			
Lead	mg/kg	5 / 1	82.0	74.0	10			

\*RPDs have only been considered where a concentration is greater than 0 times the EQL.

\*\*High RPDs are in bold (Acceptable RPDs are: 100 (0-5 x EQL); 75 (5-10 x EQL); 30 (> 10 x EQL))

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

**Attachment C – Borelogs**

<b>Borehole Log</b>		<b>Hole ID. BH1</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Baird Reserve</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336442</b>	
Date Started: <b>10/02/2015</b>	Northing: <b>6241038</b>		
Date Completed: <b>10/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark brown, medium grained, some root inclusions, occasional brick fragments.	dry	BH1_0.0-0.05	7	max = 2	No visual or olfactory signs of contamination observed.
	0.2									
	0.30			SP Natural	<b>SAND</b> - light grey, medium grained.	slightly moist	BH1_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.4									
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = <2, Avg = ---.

 Log Drawn By: Laurie White Contact: laurie.white@reumad.com.au	Logged By: <b>Aaron Young</b> Checked By: <b>Colin McKay</b>	Date: <b>10/02/2015</b> Date: <b>24/03/2015</b>
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WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:16 AM

<b>Borehole Log</b>		<b>Hole ID. BH2</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Baird Reserve</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336431</b>	
Date Started: <b>10/02/2015</b>	Northing: <b>6241064</b>		
Date Completed: <b>10/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					<i>Woodchip and Topsoil</i>					
	0.1			Fill	<b>FILL</b> - SAND, dark brown, medium grained, some root inclusions, some gravel inclusions.	slightly moist	BH2_0.0-0.05	6.5	max = 4	No visual or olfactory signs of contamination observed.
	0.2									
	0.30			SP Natural	<b>SAND</b> - light grey, medium grained.	slightly moist				No visual or olfactory signs of contamination observed.
	0.4									
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = <2, Avg = ---.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>10/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:17 AM

<b>Borehole Log</b>		<b>Hole ID. BH3</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Barwon Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>337087</b>	
Date Started: <b>10/02/2015</b>	Northing: <b>6240756</b>		
Date Completed: <b>10/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, dark brown, medium grained, root inclusions, gravel inclusions (20mmØ), mudstone, shale, bitumen, blue metal, plastic.	dry	BH3_0.0-0.05	6	max = 2	
	0.25				<b>FILL</b> - Silty SAND, dark brown, medium grained, gravel inclusions (50-80mmØ), sandstone, bitumen, blue metal.	dry	BH3_0.4-0.5	No visual or olfactory signs of contamination observed.		
	0.3									
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 2, Avg = ---.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:18 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>10/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID.</b>	<b>BH4</b>
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Barwon Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>		
Date Started: <b>10/02/2015</b>		Easting: <b>336985</b>	
Date Completed: <b>10/02/2015</b>		Northing: <b>6240792</b>	
		Zone: <b>56H</b>	

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, dark brown, medium grained, occasional gravel inclusions (<10mmØ), occasional plastic fragments.	dry	BH4_0.0-0.05	6	max = 11 Avg = 9	
	0.2									
	0.3									
	0.4						BH4_0.4-0.5			
	0.50									
	0.6				<b>End of Hole at 0.50m in Fill</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 14, Avg = 12.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:18 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>10/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH5</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Barwon Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>337003</b>	
Date Started: <b>10/02/2015</b>	Northing: <b>6240894</b>		
Date Completed: <b>10/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, dark brown, medium grained, root inclusions.	moist	BH5_0.0-0.05	6	max = 22	No visual or olfactory signs of contamination observed.
	0.2				<b>FILL</b> - SAND, light brown, occasional grey Silt mottles, medium grained.	very wet	BH5_0.4-0.5	No visual or olfactory signs of contamination observed.		
	0.30				<b>End of Hole at 0.50m in Fill</b>					
	0.4									
	0.50									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 25, Avg = ---.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>10/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:19 AM

<b>Borehole Log</b>		<b>Hole ID. BH6</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Barwon Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336948</b>	
Date Started: <b>10/02/2015</b>	Northing: <b>6240987</b>		
Date Completed: <b>10/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark grey / brown, fine to medium grained, occasional gravel inclusions (10-30mmØ), occasional roots and plastic.	slightly moist	BH6_0.0-0.05	6.5	max = <2	
	0.30		SP	Natural	<b>SAND</b> - yellow, medium grained, minor concretions.	slightly moist	BH6_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.4									
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = <2, Avg = ---.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>10/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:20 AM

<b>Borehole Log</b>		<b>Hole ID. BH7</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Barwon Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>337040</b>	
Date Started: <b>10/02/2015</b>	Northing: <b>6241033</b>		
Date Completed: <b>10/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, dark brown, medium grained, root inclusions.	slightly moist	BH7_0.0-0.05	7	max = <2 Avg = <2	No visual or olfactory signs of contamination observed.
	0.2				<b>FILL</b> - Sandy SILT, darker brown, medium grained, a clinker inclusion.	slightly moist	BH7_0.4-0.5	No visual or olfactory signs of contamination observed.		
	0.30				<b>End of Hole at 0.50m in Fill</b>					
	0.4									
	0.50									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = <2, Avg = <2.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>10/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:21 AM

<b>Borehole Log</b>		<b>Hole ID. BH8</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Barwon Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>337049</b>	
Date Started: <b>10/02/2015</b>	Northing: <b>6240456</b>		
Date Completed: <b>10/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, dark brown, medium grained, root inclusions.	slightly moist	BH8_0.0-0.05	7	max = 3 Avg = 3	No visual or olfactory signs of contamination observed.
	0.2									
	0.30									
	0.35		SP	Natural	<b>SAND</b> - brown, medium grained.	slightly moist	BH8_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.4		SP		<b>SAND</b> - dark orange, medium grained, occasional sand concretions.	slightly moist				
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

<b>Observations</b>	<b>Notes</b>
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 4, Avg = 2.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>10/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:21 AM

<b>Borehole Log</b>		<b>Hole ID. BH9</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Franklin Street Reserve</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>337691</b>	
Date Started: <b>10/02/2015</b>	Northing: <b>6240467</b>		
Date Completed: <b>10/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, dark grey, medium grained, disturbed, glass fragment.	slightly moist	BH9_0.0-0.05	6.5	max = 5 Avg = 2	No visual or olfactory signs of contamination observed.
	0.15			SP Natural	<b>SAND</b> - light grey / brown, medium grained.	slightly moist	BH9_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.2									
	0.3									
	0.4									
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 2, Avg = <2.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:22 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>10/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH10</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Franklin Street Reserve</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>337745</b>	
Date Started: <b>10/02/2015</b>	Northing: <b>6240463</b>		
Date Completed: <b>10/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1		SP	Natural	SAND - grey / brown, medium grained, root inclusions.	slightly moist	BH10_0.0-0.05	6.5	max = 18 Avg = 16	No visual or olfactory signs of contamination observed.
	0.15				SAND - light yellow, medium grained.	slightly moist				No visual or olfactory signs of contamination observed.
	0.2				SAND - light grey, medium grained.	slightly moist				No visual or olfactory signs of contamination observed.
	0.3									
	0.40									
	0.50									
	0.6				<b>End of Hole at 0.50m in Natural</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 18, Avg = 16.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:23 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>10/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID.</b>	<b>BH11</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name:	<b>Orica Mercury Independant Review</b>	Hole Depth:	<b>0.50 m</b>
	Project Number:	<b>45970</b>	GW Encountered:	<b>No</b>
	Location / Site:	<b>Rabaul Way Reserve</b>		
	Client:	<b>NSW EPA</b>		
	Drill Company:	<b>N/A</b>		
	Drill Method:	<b>Hand Auger</b>	Easting:	<b>337619</b>
Date Started:	<b>10/02/2015</b>	Northing:	<b>6241277</b>	
Date Completed:	<b>10/02/2015</b>	Zone:	<b>56H</b>	

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1		SP	Natural	SAND - SAND, light brown / yellow, fine to medium grained, occasional small root inclusions.	dry	BH11_0.0-0.05	6	max = 46 Avg = 38	No visual or olfactory signs of contamination observed.
	0.15				grading to .....					
	0.2				SAND - light yellow, medium to coarse grained.	slightly moist				No visual or olfactory signs of contamination observed.
	0.3									
	0.4						BH11_0.4-0.5			
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 41, Avg = 40.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:24 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>10/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH12</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Rabaul Way Reserve</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>337600</b>	
Date Started: <b>10/02/2015</b>	Northing: <b>6241302</b>		
Date Completed: <b>10/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown / grey, fine grained, occasional inclusions of clay, coke, ash, sandstone and concrete cobbles (100-150mmØ).		BH12_0.0-0.05	---	max = <2 Avg = <2	
	0.2									
	0.3				grading to ....					
	0.40		SP	Natural	<b>SAND</b> - light brown, medium grained.	slightly moist	BH12_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.50									
	0.6				<b>End of Hole at 0.50m</b> in Natural					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = <2, Avg = <2.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>10/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:25 AM

<b>Borehole Log</b>		<b>Hole ID.</b>	<b>BH13</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name:	<b>Orica Mercury Independant Review</b>	Hole Depth:	<b>0.50 m</b>
	Project Number:	<b>45970</b>	GW Encountered:	<b>No</b>
	Location / Site:	<b>Nagle Park</b>		
	Client:	<b>NSW EPA</b>		
	Drill Company:	<b>N/A</b>		
	Drill Method:	<b>Hand Auger</b>	Easting:	<b>336619</b>
Date Started:	<b>11/02/2015</b>	Northing:	<b>6242705</b>	
Date Completed:	<b>11/02/2015</b>	Zone:	<b>56H</b>	

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark brown / grey, medium grained, root inclusions.	dry	BH13_0.0-0.05	---	max = 2 Avg = 2	No visual or olfactory signs of contamination observed.
	0.15				<b>FILL</b> - SAND, light grey, fine to medium grained, occasional bitumen fragments and gravels (20mmØ).	dry			No visual or olfactory signs of contamination observed.	
	0.2									
	0.30			Natural	<b>SAND</b> - light grey / white, fine to medium grained.	dry				No visual or olfactory signs of contamination observed.
	0.4				SP			BH13_0.4-0.5		
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 7, Avg = 5.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>11/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:25 AM

<b>Borehole Log</b>		<b>Hole ID. BH14</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Nagle Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336673</b>	
Date Started: <b>11/02/2015</b>	Northing: <b>6242767</b>		
Date Completed: <b>11/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark brown, fine grained, root inclusions.	dry	BH14_0.0-0.05	6	max = 10 Avg = 8	No visual or olfactory signs of contamination observed.
	0.15				<b>FILL</b> - SAND, light brown / dark brown mottled, fine to medium grained, dark brown sand concretions.	dry				
	0.2									
	0.3									
	0.4									
	0.50						BH14_0.4-0.5			
	0.6				<b>End of Hole at 0.50m in Fill</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 10, Avg = 9.

 Log Drawn By: Laurie White Contact: laurie.white@reumad.com.au	Logged By: <b>Philippa Childs</b> Checked By: <b>Colin McKay</b>	Date: <b>11/02/2015</b> Date: <b>24/03/2015</b>
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WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:26 AM

<b>Borehole Log</b>		<b>Hole ID.</b>	<b>BH15</b>
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Nagle Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336730</b>	
Date Started: <b>11/02/2015</b>	Northing: <b>6242829</b>		
Date Completed: <b>11/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark brown, fine to medium grained, root inclusions, coke / charcoal gravel inclusions (5-15mmØ).	dry	BH15_0.0-0.05	7	max = 3 Avg = 2	
	0.15				<b>FILL</b> - SAND, light brown, slightly mottled, medium grained, with sand concretions (10-30mmØ).	dry				
	0.2			Natural	<b>SAND</b> - dark brown / grey, fine grained.	slightly moist				No visual or olfactory signs of contamination observed.
	0.30									
	0.4			Natural			BH15_0.4-0.5			
	0.50									
	0.6				<b>End of Hole at 0.50m in Natural</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 2, Avg = 2.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>11/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:27 AM

<b>Borehole Log</b>		<b>Hole ID. BH16</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Nagle Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336817</b>	
Date Started: <b>11/02/2015</b>	Northing: <b>6242783</b>		
Date Completed: <b>11/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark brown, fine to medium grained, occasional gravel inclusions (50mmØ).	dry	BH16_0.0-0.05	5.5	max = 3 Avg = 2	No visual or olfactory signs of contamination observed.
	0.15				<b>FILL</b> - SAND, dark brown / grey, medium to coarse grained, coke and sandstone gravel inclusions (10-40mmØ).	dry				
	0.2			Natural	<b>SAND</b> - light brown / grey, medium grained.	slightly moist				No visual or olfactory signs of contamination observed.
	0.30									
	0.4			Natural			BH16_0.4-0.5			
	0.50									
	0.6				<b>End of Hole at 0.50m in Natural</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 4, Avg = 3.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>11/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:28 AM

<b>Borehole Log</b>		<b>Hole ID. BH17</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Nagle Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336750</b>	
Date Started: <b>11/02/2015</b>	Northing: <b>6242708</b>		
Date Completed: <b>11/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.10			Fill	<b>FILL</b> - SAND, dark brown, fine to medium grained, occasional coke / charcoal gravel inclusions (5mmØ).	dry	BH17_0.0-0.05	6.5	max = 25 Avg = 18	
	0.20				<b>FILL</b> - SAND, dark grey / light grey, medium grained, 30% coke / charcoal gravel inclusions (5-10mmØ).	dry				
	0.30				<b>FILL</b> - SAND, light yellow / grey, medium grained.	slightly moist				
	0.4			SP Natural	<b>SAND</b> - light grey, medium grained.	slightly moist	BH17_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.50									
	0.6				<b>End of Hole at 0.50m</b> in Natural					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 20, Avg = 16.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>11/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:28 AM

<b>Borehole Log</b>		<b>Hole ID. BH18</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.30 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Nagle Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336678</b>	
Date Started: <b>11/02/2015</b>	Northing: <b>6242634</b>		
Date Completed: <b>11/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Samples / Tests			Observations / Comments
						ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass				
	0.1			Fill	<b>FILL</b> - SAND, dark brown, light grey / yellow sand concretions (5-50mmØ), occasional dark brown sand concretions (10-15mmØ).	BH18_0.0-0.05	5.5	max = 8 Avg = 7	No visual or olfactory signs of contamination observed.
	0.2		BH18_0.2-0.3						
	0.30				<b>Refusal at 0.30m</b> in Fill on gravel inclusions				
	0.4								
	0.5								
	0.6								
	0.7								
	0.8								
	0.9								
	1.0								

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 6, Avg = 5.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:29 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>11/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID.</b>	<b>BH19</b>
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Heffron Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>		
Date Started: <b>11/02/2015</b>		Easting: <b>336672</b>	
Date Completed: <b>11/02/2015</b>		Northing: <b>6241650</b>	
		Zone: <b>56H</b>	

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark brown, fine grained, root inclusions.	dry	BH19_0.0-0.05	6	max = 27 Avg = 19	No visual or olfactory signs of contamination observed.
	0.15				<b>FILL</b> - Silty SAND, grey / brown mottled, fine grained.	dry				No visual or olfactory signs of contamination observed.
	0.2			SP Natural	<b>SAND</b> - light grey, fine grained.	slightly moist	BH19_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.35									
	0.4									
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 39, Avg = 26.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:30 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>11/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH20</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.30 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Heffron Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336630</b>	
Date Started: <b>11/02/2015</b>	Northing: <b>6241906</b>		
Date Completed: <b>11/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown, fine grained, igneous gravel inclusions (5-40mmØ).	dry	BH20_0.0-0.05	7.5	max = 24 Avg = 20	No visual or olfactory signs of contamination observed.
	0.2		BH20_0.2-0.3							
	0.30				<b>Refusal at 0.30m</b> in Fill due to cobbles					
	0.4									
	0.5									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 22, Avg = 18.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>11/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:31 AM

<b>Borehole Log</b>		<b>Hole ID.</b>	<b>BH21</b>	
 <b>WSP Environmental Pty Ltd</b>  Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com	Project Name:	<b>Orica Mercury Independant Review</b>	Hole Depth:	<b>0.50 m</b>
	Project Number:	<b>45970</b>	GW Encountered:	<b>No</b>
	Location / Site:	<b>Heffron Park</b>		
	Client:	<b>NSW EPA</b>		
	Drill Company:	<b>N/A</b>		
	Drill Method:	<b>Hand Auger</b>	Easting:	<b>336986</b>
Date Started:	<b>11/02/2015</b>	Northing:	<b>6241973</b>	
Date Completed:	<b>11/02/2015</b>	Zone:	<b>56H</b>	

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					<i>Sand</i>					
	0.1	SP	SP	Natural	<b>SAND</b> - SAND, white, medium grained, root inclusions.	dry	BH21_0.0-0.05	5.5	max = 6 Avg = 4	No visual or olfactory signs of contamination observed.
	0.2									
	0.30				<b>SAND</b> - SAND, light yellow, slightly mottled, medium grained.	slightly moist				No visual or olfactory signs of contamination observed.
	0.4	SP					BH21_0.4-0.5			
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 4, Avg = 4.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>11/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:31 AM

<b>Borehole Log</b>		<b>Hole ID. BH22</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Heffron Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>337092</b>	
Date Started: <b>11/02/2015</b>	Northing: <b>6241862</b>		
Date Completed: <b>11/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments	
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>		
					Grass						
	0.1			Fill	<b>FILL</b> - Silty SAND, dark brown, fine grained.	dry	BH22_0.0-0.05	5	max = 27 Avg = 22	No visual or olfactory signs of contamination observed.	
	0.15				<b>FILL</b> - Silty SAND, dark brown / light brown mottled, fine grained, coal gravel inclusions (5-20mmØ).	slightly moist					
	0.2			SP Natural	<b>SAND</b> - light brown, medium grained.	slightly moist				No visual or olfactory signs of contamination observed.	
	0.25										
	0.3										
	0.4						BH22_0.4-0.5				
	0.50				<b>End of Hole at 0.50m in Natural</b>						
	0.6										
	0.7										
	0.8										
	0.9										
	1.0										

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 22, Avg = 19.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>11/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:32 AM

<b>Borehole Log</b>		<b>Hole ID. BH23</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Heffron Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336871</b>	
Date Started: <b>11/02/2015</b>	Northing: <b>6241836</b>	Zone: <b>56H</b>	
Date Completed: <b>11/02/2015</b>			

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark brown, fine grained, root inclusions.	dry	BH23_0.0-0.05	5	max = 31 Avg = 26	No visual or olfactory signs of contamination observed.
	0.15				<b>FILL</b> - Silty SAND, brown / grey, fine to medium grained, clinker gravel inclusions (5-30mmØ).	slightly moist				
	0.2			SP Natural	<b>SAND</b> - grey, medium grained, gravel concretions (5mmØ).	slightly moist	BH23_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.25									
	0.3									
	0.4									
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 29, Avg = 24.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>11/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:33 AM

<b>Borehole Log</b>		<b>Hole ID. BH24</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Heffron Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336855</b>	
Date Started: <b>11/02/2015</b>	Northing: <b>6241682</b>		
Date Completed: <b>11/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests				Observations / Comments
							ID No.	pH	DUP TRIP QC	Hg Vapour ng/m <sup>3</sup>	
					Grass						
	0.1			Fill	<b>FILL</b> - SAND, light brown, fine to medium grained, clinker gravel inclusions (5-80mmØ), sandstone gravel inclusions (5-50mmØ).	dry	BH24_0.0-0.05	7	Dup3 Trip3	max = 27 Avg = 19	
	0.30		SP	Natural	<b>SAND</b> - light brown / light yellow mottled, fine to medium grained.	slightly moist	BH24_0.4-0.5				No visual or olfactory signs of contamination observed.
	0.50				<b>End of Hole at 0.50m in Natural</b>						
	0.6										
	0.7										
	0.8										
	0.9										
	1.0										

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 23, Avg = 18.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>11/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:34 AM

<b>Borehole Log</b>		<b>Hole ID. BH25</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Heffron Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336953</b>	
Date Started: <b>11/02/2015</b>	Northing: <b>6242140</b>		
Date Completed: <b>11/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown / grey, very fine to fine grained, clinker gravel inclusions (5-30mmØ).	dry	BH25_0.0-0.05	6	max = 18 Avg = 14	
	0.2									
	0.3									
	0.40									
	0.50				<b>FILL</b> - SAND, light grey, fine grained, gravel inclusions (to 5mmØ).	slightly moist	BH25_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.6				<b>End of Hole at 0.50m in Fill</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 14, Avg = 11.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:34 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>11/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH26</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Heffron Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>337874</b>	
Date Started: <b>11/02/2015</b>	Northing: <b>6242163</b>		
Date Completed: <b>11/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown / grey, very fine to fine grained, clinker gravel inclusions (5-30mmØ).	dry	BH26_0.0-0.05	7	max = 26 Avg = 22	
	0.25				<b>FILL</b> - SAND, brown / light grey mottled, fine to medium grained, clinker gravel inclusions (5-15mmØ).	slightly moist	BH26_0.4-0.5			
	0.3									
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 22, Avg = 19.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:35 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>11/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH27</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Heffron Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>337217</b>	
Date Started: <b>11/02/2015</b>	Northing: <b>6242006</b>		
Date Completed: <b>11/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark brown, fine to medium grained, occasional clinker gravel inclusions (40mmØ).	dry	BH27_0.0-0.05	8.5	max = 18 Avg = 14	No visual or olfactory signs of contamination observed.
	0.20				<b>FILL</b> - SAND, grey / brown mottled, fine to medium grained, occasional clinker gravel inclusions (10-40mmØ).	slightly moist				
	0.25		SP	Natural	<b>SAND</b> - light grey, medium grained.	slightly moist				
	0.3								BH27_0.4-0.5	
	0.4									
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 14, Avg = 6.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:36 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>11/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH28</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.30 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Heffron Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>337177</b>	
Date Started: <b>12/02/2015</b>	Northing: <b>6242340</b>		
Date Completed: <b>12/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark brown, fine grained, igneous gravel inclusions (5-30mmØ).	dry	BH28_0.0-0.05	7	max = 26 Avg = 24	No visual or olfactory signs of contamination observed.
	0.2		BH28_0.2-0.3							
	0.30				<b>Refusal at 0.30m in Fill</b>					
	0.4									
	0.5									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 23, Avg = 19.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>12/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:37 AM

<b>Borehole Log</b>		<b>Hole ID. BH29</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Heffron Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336917</b>	
Date Started: <b>12/02/2015</b>	Northing: <b>6242292</b>		
Date Completed: <b>12/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, light brown, fine grained, root inclusions.	dry	BH29_0.0-0.05	7	max = 6 Avg = 2	No visual or olfactory signs of contamination observed.
	0.25		Grading to ....							
	0.3				<b>FILL</b> - SAND, light grey / brown, fine grained, with glass and aluminium fragments.	dry	BH29_0.4-0.5			
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 4, Avg = 2.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:37 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>12/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH30</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Heffron Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336871</b>	
Date Started: <b>12/02/2015</b>	Northing: <b>6242305</b>		
Date Completed: <b>12/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, light brown, fine to very fine grained, occasional clinker gravel (10-20mmØ).	dry	BH30_0.0-0.05	6	max = 14 Avg = 10	
	0.2									
	0.3									
	0.40									
	0.50			Natural	<b>FILL</b> - SAND, light brown, fine to medium grained.	slightly moist	BH30_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.6				<b>End of Hole at 0.50m in Natural</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 11, Avg = 10.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>12/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:38 AM

<b>Borehole Log</b>		<b>Hole ID. BH31</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Heffron Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336500</b>	
Date Started: <b>12/02/2015</b>	Northing: <b>6242252</b>		
Date Completed: <b>12/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, slightly Silty, brown, fine to very fine grained, root inclusions.	dry	BH31_0.0-0.05	6.5	max = 24 Avg = 16	No visual or olfactory signs of contamination observed.
	0.20				<b>FILL</b> - SAND, brown, fine to medium grained.	dry				No visual or olfactory signs of contamination observed.
	0.3		SP	Natural	<b>SAND</b> - light brown, medium grained.	slightly moist	BH31_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.35									
	0.4									
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 33, Avg = 23.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>12/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:39 AM

<b>Borehole Log</b>		<b>Hole ID. BH32</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Heffron Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336545</b>	
Date Started: <b>12/02/2015</b>	Northing: <b>6242066</b>		
Date Completed: <b>12/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown, fine grained, root inclusions.	dry	BH32_0.0-0.05	6	max = 18 Avg = 12	No visual or olfactory signs of contamination observed.
	0.2									
	0.3									
	0.40									
	0.50		SP	Natural	<b>SAND</b> - light brown, fine to medium grained.	dry	BH32_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.6				<b>End of Hole at 0.50m</b> in Natural					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 12, Avg = 10.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:40 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>12/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH33</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independent Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Heffron Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336777</b>	
Date Started: <b>12/02/2015</b>	Northing: <b>6241935</b>		
Date Completed: <b>12/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark brown, fine to medium grained, root inclusions.	dry	BH33_0.0-0.05	7	max = 22 Avg = 16	No visual or olfactory signs of contamination observed.
	0.2									
	0.30		SP	Natural	<b>SAND</b> - light brown, fine to medium grained.	dry	BH33_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.4									
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 18, Avg = 14.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>12/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:40 AM

<b>Borehole Log</b>		<b>Hole ID. BH34</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.30 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Pioneers Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>338060</b>	
Date Started: <b>12/02/2015</b>	Northing: <b>6240988</b>		
Date Completed: <b>12/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, dark brown, fine grained, occasional gravel inclusions (5-10mm), concretions of sand and gravel.	dry	BH34_0.0-0.05	8	max = 33 Avg = 28	No visual or olfactory signs of contamination observed.
	0.20				<b>FILL</b> - Silty SAND, dark brown / grey, fine grained, clumps of moist clay, fibrous material (likely geofabric), occasional glass inclusions.	slightly moist	BH34_0.2-0.3			
	0.30				<b>Refusal at 0.30m in Fill</b>					
	0.4									
	0.5									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 27, Avg = 23.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>12/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:41 AM

<b>Borehole Log</b>		<b>Hole ID. BH35</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.40 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Pioneers Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>338186</b>	
Date Started: <b>12/02/2015</b>	Northing: <b>6241077</b>		
Date Completed: <b>12/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty Clayey SAND, dark brown, root inclusions.	dry	BH35_0.0-0.05	5.5	max = 53 Avg = 51	No visual or olfactory signs of contamination observed.
	0.20				<b>FILL</b> - Sandy CLAY, dark brown / grey, stiff.	moist	BH35_0.3-0.4	No visual or olfactory signs of contamination observed.		
	0.3									
	0.40				<b>Refusal at 0.40m in Fill</b>					
	0.5									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 40, Avg = 35.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:42 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>12/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID.</b>	<b>BH36</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name:	<b>Orica Mercury Independant Review</b>	Hole Depth:	<b>0.50 m</b>
	Project Number:	<b>45970</b>	GW Encountered:	<b>No</b>
	Location / Site:	<b>Pioneers Park</b>		
	Client:	<b>NSW EPA</b>		
	Drill Company:	<b>N/A</b>		
	Drill Method:	<b>Hand Auger</b>	Easting:	<b>338107</b>
Date Started:	<b>12/02/2015</b>	Northing:	<b>6241173</b>	
Date Completed:	<b>12/02/2015</b>	Zone:	<b>56H</b>	

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Samples / Tests			Observations / Comments
						ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass				
	0.1			Fill	<b>FILL</b> - SAND, light brown, medium grained, occasional sand concretions or sandstone gravel inclusions (5-50mmØ).	BH36_0.0-0.05	6.5	max = 59 Avg = 50	No visual or olfactory signs of contamination observed.
	0.2				Grading to ....				
	0.30				<b>FILL</b> - SAND, light brown / brown, medium grained, sandstone gravel inclusions (10-50mmØ).	BH36_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.4								
	0.50				<b>End of Hole at 0.50m in Fill</b>				
	0.6								
	0.7								
	0.8								
	0.9								
	1.0								

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 36, Avg = 34.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:43 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>12/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID.</b>	<b>BH37</b>
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.40 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Pioneers Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>		
Date Started: <b>12/02/2015</b>		Easting: <b>338014</b>	
Date Completed: <b>12/02/2015</b>		Northing: <b>6241091</b>	
		Zone: <b>56H</b>	

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, light brown, fine grained, root inclusions.	dry	BH37_0.0-0.05	5.5	max = 16 Avg = 8	No visual or olfactory signs of contamination observed.
	0.15				<b>FILL</b> - Silty Clayey SAND, dark brown, fine grained, clay and silt concretions.	slightly moist	BH37_0.3-0.4	No visual or olfactory signs of contamination observed.		
	0.2									
	0.3									
	0.40				<b>Refusal at 0.40m</b> in Fill due to stiff clay					
	0.5									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 8, Avg = 8.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:43 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>12/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH38</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.40 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Pioneers Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>338276</b>	
Date Started: <b>12/02/2015</b>	Northing: <b>6240932</b>		
Date Completed: <b>12/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests				Observations / Comments
							ID No.	pH	DUP TRIP QC	Hg Vapour ng/m <sup>3</sup>	
					Grass						
	0.1			Fill	<b>FILL</b> - SAND, brown / grey, fine grained, root inclusions, occasional clinker gravel and rubber.	dry	BH38_0.0-0.05	7	Dup Trip	max = 47 Avg = 45	
	0.2		BH38_0.3-0.4								
	0.3				<b>Refusal at 0.40m</b> in Fill on cobbles						
	0.40										
	0.5										
	0.6										
	0.7										
	0.8										
	0.9										
	1.0										

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 52, Avg = 51.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>12/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:44 AM

<b>Borehole Log</b>		<b>Hole ID. BH39</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.40 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Pioneers Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>338206</b>	
Date Started: <b>12/02/2015</b>	Northing: <b>6240876</b>		
Date Completed: <b>12/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, light brown / light grey, fine to medium grained, root inclusions.	dry	BH39_0.0-0.05	5	max = <2 Avg = <2	No visual or olfactory signs of contamination observed.
	0.20				<b>FILL</b> - SAND, light grey, fine grained, sandstone gravel inclusions (10-80mm).	dry	BH39_0.3-0.4	No visual or olfactory signs of contamination observed.		
	0.3									
	0.40				<b>Refusal at 0.40m</b> in Fill due to gravel					
	0.5									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 2, Avg = <2.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>12/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:45 AM

<b>Borehole Log</b>		<b>Hole ID. BH40</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Pioneers Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>338099</b>	
Date Started: <b>12/02/2015</b>	Northing: <b>6240798</b>		
Date Completed: <b>12/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, slightly Silty, dark brown, very fine to fine grained, root inclusions.	dry	BH40_0.0-0.05	6	max = 12 Avg = 7	No visual or olfactory signs of contamination observed.
	0.15				<b>FILL</b> - SAND, light brown, fine to medium grained.	dry				No visual or olfactory signs of contamination observed.
	0.2				<b>FILL</b> - SAND, dark brown / light brown mottled, fine grained.	slightly moist				No visual or olfactory signs of contamination observed.
	0.30				<b>FILL</b> - SAND, dark brown / light brown mottled, fine grained.	slightly moist				No visual or olfactory signs of contamination observed.
	0.35			SP Natural	<b>SAND</b> - light brown / light yellow mottled, fine to medium grained, cemented sand inclusions (5-15mmØ).	slightly moist	BH40_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.4				<b>SAND</b> - light brown / light yellow mottled, fine to medium grained, cemented sand inclusions (5-15mmØ).	slightly moist				No visual or olfactory signs of contamination observed.
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 9, Avg = 6.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:45 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>12/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID.</b>	<b>BH41</b>
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Sir Joseph Banks Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>		
Date Started: <b>13/02/2015</b>		Easting: <b>333555</b>	
Date Completed: <b>13/02/2015</b>		Northing: <b>6241415</b>	
		Zone: <b>56H</b>	

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1		SM	Natural	<b>Silty SAND</b> - dark brown, fine to medium grained, root inclusions.	moist	BH41_0.0-0.05	6	max = 8 Avg = 7	No visual or olfactory signs of contamination observed.
	0.15		SP	Natural	<b>SAND</b> - brown, fine to medium grained.	moist				No visual or olfactory signs of contamination observed.
	0.25		SP	Natural	Grading to ....					
	0.3		SP	Natural	<b>SAND</b> - light brown, medium grained, shell inclusions (5-15mmØ).	moist				No visual or olfactory signs of contamination observed.
	0.4		SP	Natural			BH41_0.4-0.5			
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 10, Avg = 8.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:46 AM

<b>Borehole Log</b>		<b>Hole ID.</b>	<b>BH42</b>
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Sir Joseph Banks Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>		
Date Started: <b>13/02/2015</b>	Easting: <b>333921</b>	Northing: <b>6241106</b>	
Date Completed: <b>13/02/2015</b>		Zone: <b>56H</b>	

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments	
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>		
					Grass						
	0.1		SP	Natural	SAND - dark brown, fine to medium grained, occasional root inclusions.	moist	BH42_0.0-0.05	6	max = 4 Avg = 3	No visual or olfactory signs of contamination observed.	
	0.15				Grading to ....						No visual or olfactory signs of contamination observed.
	0.2				SAND - brown, fine to medium grained.	moist					No visual or olfactory signs of contamination observed.
	0.30				SAND - light brown, medium grained.	moist	BH42_0.4-0.5			No visual or olfactory signs of contamination observed.	
	0.4	SP									
	0.50				<b>End of Hole at 0.50m in Natural</b>						
	0.6										
	0.7										
	0.8										
	0.9										
	1.0										

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 5, Avg = 3.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:47 AM

<b>Borehole Log</b>		<b>Hole ID. BH43</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.60 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Sir Joseph Banks Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>334035</b>	
Date Started: <b>13/02/2015</b>	Northing: <b>6241266</b>		
Date Completed: <b>13/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown, fine to medium grained, ash inclusions (15mmØ), charcoal / coke inclusions (5mmØ), ironstone concretions (<5mmØ).	dry	BH43_0.0-0.05	7(?)	max = 3 Avg = <2	
	0.2						BH43_0.4-0.5			
	0.3									
	0.4									
	0.50									
	0.60		SP	Natural	<b>SAND</b> - light brown, medium.	slightly moist				No visual or olfactory signs of contamination observed.
					<b>End of Hole at 0.60m in Natural</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 6, Avg = 2.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:48 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH44</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Sir Joseph Banks Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>333222</b>	
Date Started: <b>13/02/2015</b>	Northing: <b>6241611</b>		
Date Completed: <b>13/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.10			Fill	<b>FILL</b> - SAND, dark brown, fine grained, large amount organic matter, some roots.	dry	BH44_0.0-0.05	5.5	max = 4 Avg = 2	No visual or olfactory signs of contamination observed.
	0.2		<b>FILL</b> - SAND, brown, fine grained, occasional roots, occasional blue metal gravel inclusions (5mmØ).		dry					No visual or olfactory signs of contamination observed.
	0.25		Grading to ....							
	0.3		<b>FILL</b> - SAND, light brown, medium grained, shell grit, occasional blue metal gravel inclusions (5mmØ), occasional breeze.		dry					No visual or olfactory signs of contamination observed.
	0.4						BH44_0.4-0.5			
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 3, Avg = 2.

	Log Drawn By: Laurie White	Logged By: <b>Colin McKay</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:49 AM

<b>Borehole Log</b>		<b>Hole ID.</b>	<b>BH45</b>	
 <b>WSP Environmental Pty Ltd</b>  Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com	Project Name:	<b>Orica Mercury Independant Review</b>	Hole Depth:	<b>0.50 m</b>
	Project Number:	<b>45970</b>	GW Encountered:	<b>No</b>
	Location / Site:	<b>Sir Joseph Banks Park</b>		
	Client:	<b>NSW EPA</b>		
	Drill Company:	<b>N/A</b>		
	Drill Method:	<b>Hand Auger</b>	Easting:	<b>332970</b>
Date Started:	<b>13/02/2015</b>	Northing:	<b>6241931</b>	
Date Completed:	<b>13/02/2015</b>	Zone:	<b>56H</b>	

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					<i>Grass / Bare Sand</i>					
	0.1	SP	Natural	Natural	<b>SAND</b> - light brown, medium grained, occasional shell grit and fragments throughout.	dry	BH45_0.0-0.05	7	max = 10 Avg = 9	No visual or olfactory signs of contamination observed.
	0.2									
	0.3									
	0.40				Grading to ....					
	0.50	SP			<b>SAND</b> - cream, medium grained.	dry	BH45_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.6				<b>End of Hole at 0.50m</b> in Natural					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 13, Avg = 12.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:49 AM

	Log Drawn By: Laurie White	Logged By: <b>Colin McKay</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID.</b>	<b>BH46</b>	
 <b>WSP Environmental Pty Ltd</b>  Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com	Project Name:	<b>Orica Mercury Independant Review</b>	Hole Depth:	<b>0.50 m</b>
	Project Number:	<b>45970</b>	GW Encountered:	<b>No</b>
	Location / Site:	<b>Garnet Jackson Reserve</b>		
	Client:	<b>NSW EPA</b>		
	Drill Company:	<b>N/A</b>		
	Drill Method:	<b>Hand Auger</b>	Easting:	<b>334413</b>
Date Started:	<b>13/02/2015</b>	Northing:	<b>6242241</b>	
Date Completed:	<b>13/02/2015</b>	Zone:	<b>56H</b>	

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Sandy Silty CLAY, dark brown, ash, coke and clinker fragments throughout (to 15mmØ).	dry	BH46_0.0-0.05	6.5	max = 38 Avg = 36	
	0.2							BH46_0.4-0.5		
	0.3									
	0.4									
	0.50									
	0.6				<b>End of Hole at 0.50m in Fill</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 28, Avg = 24.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:50 AM

	Log Drawn By: Laurie White	Logged By: <b>Colin McKay</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID.</b>	<b>BH47</b>	
 <b>WSP Environmental Pty Ltd</b>  Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com	Project Name:	<b>Orica Mercury Independant Review</b>	Hole Depth:	<b>0.50 m</b>
	Project Number:	<b>45970</b>	GW Encountered:	<b>No</b>
	Location / Site:	<b>Garnet Jackson Reserve</b>		
	Client:	<b>NSW EPA</b>		
	Drill Company:	<b>N/A</b>		
	Drill Method:	<b>Hand Auger</b>	Easting:	<b>334424</b>
Date Started:	<b>13/02/2015</b>	Northing:	<b>6242162</b>	
Date Completed:	<b>13/02/2015</b>	Zone:	<b>56H</b>	

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown, fine grained, root inclusions, occasional iron fragments (10mmØ, very corroded).	dry	BH47_0.0-0.05	6	max = 8 Avg = 6	No visual or olfactory signs of contamination observed.
	0.15			Natural	<b>SAND</b> - light brown, fine grained, root inclusions.	dry				No visual or olfactory signs of contamination observed.
	0.2		SP		Grading to ....					
	0.3			Natural	<b>SAND</b> - light brown, medium, occasional iron concretions / staining.	dry				No visual or olfactory signs of contamination observed.
	0.35		SP							
	0.4			Natural						
	0.50		SP							
	0.6				<b>End of Hole at 0.50m</b> in Natural					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 10, Avg = 8.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White Contact: laurie.white@reumad.com.au	Logged By: <b>Colin McKay</b> Checked By: <b>Colin McKay</b>	Date: <b>13/02/2015</b> Date: <b>24/03/2015</b>
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WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:51 AM

<b>Borehole Log</b>		<b>Hole ID. BH48</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.20 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Garnet Jackson Reserve</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>334497</b>	
Date Started: <b>13/02/2015</b>	Northing: <b>6242180</b>		
Date Completed: <b>13/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Samples / Tests			Observations / Comments
						ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass				
	0.1			Fill	<b>FILL</b> - Silty SAND, dark brown, fine grained, roots throughout, some blue metal and glass fragments (to 10mmØ).	BH48_0.0-0.05	6.5	max = 20 Avg = 16	No visual or olfactory signs of contamination observed.
	0.20					BH48_0.1-0.2			
	0.3				<b>Refusal at 0.20m</b> on unknown object				
	0.4								
	0.5								
	0.6								
	0.7								
	0.8								
	0.9								
	1.0								

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 19, Avg = 18.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Colin McKay</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:52 AM

<b>Borehole Log</b>		<b>Hole ID. BH49</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Garnet Jackson Reserve</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>334477</b>	
Date Started: <b>13/02/2015</b>	Northing: <b>6242306</b>		
Date Completed: <b>13/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Clayey SAND, reddish orange, fine to medium grained, with brown silty sand mixed through.	dry	BH49_0.0-0.05	6	max = 31 Avg = 28	No visual or olfactory signs of contamination observed.
	0.20		<b>FILL</b> - Silty SAND, dark brown, fine to medium, (likely Fill).		dry	BH49_0.4-0.5	No visual or olfactory signs of contamination observed.			
	0.3									
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 32, Avg = 30.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:52 AM

	Log Drawn By: Laurie White	Logged By: <b>Colin McKay</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH50</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Garnet Jackson Reserve</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>334412</b>	
Date Started: <b>13/02/2015</b>	Northing: <b>6242351</b>		
Date Completed: <b>13/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.10			Fill	<b>FILL</b> - Silty SAND, light brown, fine grained, root inclusions, minor coke and clinker gravel (to 5mmØ).	dry	BH50_0.0-0.05	---	max = <2 Avg = <2	
	0.2		<b>FILL</b> - Silty SAND, brown / grey, fine grained, fine blue metal gravel inclusions, crushed sandstone fragments (10-20mmØ), aluminium can.		dry	BH50_0.1-0.5				
	0.3									
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = <2, Avg = <2.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:53 AM

	Log Drawn By: Laurie White	Logged By: <b>Colin McKay</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH51</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Mutch Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335465</b>	
Date Started: <b>13/02/2015</b>	Northing: <b>6243073</b>		
Date Completed: <b>13/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, dark brown, fine grained, some charcoal and coke inclusions.	moist	BH51_0.0-0.05	7	max = 2 Avg = <2	
	0.2									
	0.3									
	0.4									
	0.50						BH51_0.4-0.5			
	0.6				<b>End of Hole at 0.50m in Fill</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = <2, Avg = <2.

	Log Drawn By: Laurie White	Logged By: <b>Aaron Young</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:54 AM

<b>Borehole Log</b>		<b>Hole ID. BH52</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Mutch Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335486</b>	
Date Started: <b>13/02/2015</b>	Northing: <b>6243190</b>		
Date Completed: <b>13/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark brown, fine grained, root inclusions, occasional charcoal fragments (20mmØ).	dry	BH52_0.0-0.05	6	max = 22 Avg = 21	
	0.20				<b>FILL</b> - SAND, light brown / cream mottled, medium grained, crushed sandstone fragments (30mmØ).	dry				No visual or olfactory signs of contamination observed.
	0.30			Natural	<b>SAND</b> - dark brown, medium grained.	dry	BH52_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.40				Grading to ....					No visual or olfactory signs of contamination observed.
	0.50				<b>SAND</b> - yellow, medium grained.	dry				No visual or olfactory signs of contamination observed.
	0.6				<b>End of Hole at 0.50m in Fill</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 15, Avg = 18.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Aaron Young</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:54 AM

<b>Borehole Log</b>		<b>Hole ID. BH53</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Mutch Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335584</b>	
Date Started: <b>13/02/2015</b>	Northing: <b>6243103</b>		
Date Completed: <b>13/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, dark brown, fine, some charcoal inclusions.	dry	BH53_0.0-0.05	6.5	max = 35 Avg = 30	
	0.2				<b>FILL</b> - Clayey SAND, dark brown, fine to medium grained, blue metal gravel, coke and crushed sandstone inclusions.	dry	BH53_0.4-0.5			
	0.30				<b>End of Hole at 0.50m in Fill</b>					
	0.4									
	0.50									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 22, Avg = 18.

	Log Drawn By: Laurie White	Logged By: <b>Aaron Young</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:55 AM

<b>Borehole Log</b>		<b>Hole ID. BH54</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Mutch Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335567</b>	
Date Started: <b>13/02/2015</b>	Northing: <b>6242957</b>		
Date Completed: <b>13/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests				Observations / Comments
							ID No.	pH	DUP TRIP QC	Hg Vapour ng/m <sup>3</sup>	
					Grass						
	0.1			Fill	<b>FILL</b> - SAND, dark brown, medium grained, occasional fragments of glass, plastic, coke, pine bark, blue metal gravel.	dry	BH54_0.0-0.05	6	Dup5 Trip5	max = 3 Avg = <2	
	0.25		Grading to ....								
	0.3				<b>FILL</b> - SAND, brown, medium to coarse grained, with yellowish brown sandy clay and crushed sandstone.	slightly moist					No visual or olfactory signs of contamination observed.
	0.4										
	0.50				<b>End of Hole at 0.50m in Fill</b>						
	0.6										
	0.7										
	0.8										
	0.9										
	1.0										

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 4, Avg = 2.

	Log Drawn By: Laurie White	Logged By: <b>Colin McKay</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:56 AM

<b>Borehole Log</b>		<b>Hole ID. BH55</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Mutch Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335516</b>	
Date Started: <b>13/02/2015</b>	Northing: <b>6242868</b>		
Date Completed: <b>13/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark brown, fine grained, root inclusions, occasional concrete fragments (to 10mmØ).	dry	BH55_0.0-0.05	7	max = 5 Avg = 3	No visual or olfactory signs of contamination observed.
	0.2				<b>FILL</b> - Clayey SAND, brown, coarse grained, crushed sandstone (to 20mmØ), crushed concrete (to 10mmØ), terracotta and brick fragments (to 10mmØ).	dry	BH55_0.4-0.5	No visual or olfactory signs of contamination observed.		
	0.30				<b>End of Hole at 0.50m in Fill</b>					
	0.4									
	0.50									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 4, Avg = 4.

	Log Drawn By: Laurie White	Logged By: <b>Colin McKay</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:57 AM

<b>Borehole Log</b>		<b>Hole ID. BH56</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.40 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Mutch Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335460</b>	
Date Started: <b>13/02/2015</b>	Northing: <b>6242733</b>		
Date Completed: <b>13/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, dark brown, fine grained, coke inclusions (10-15mmØ), crushed concrete (10-40mmØ), woodchips, light blue powder (possibly copper).	moist	BH56_0.0-0.05	7	max = 6 Avg = 3	No olfactory signs of contamination observed.
	0.2						BH56_0.3-0.4			
	0.3									
	0.40				<b>End of Hole at 0.40m in Fill</b>					
	0.5									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 8, Avg = 7.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:57 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH57</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Mutch Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335363</b>	
Date Started: <b>13/02/2015</b>	Northing: <b>6242810</b>		
Date Completed: <b>13/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Sandy Silty CLAY, dark brown, fine grained, terracotta and crushed sandstone inclusions (10mmØ).	dry	BH57_0.0-0.05	5	max = 13 Avg = 12	No visual or olfactory signs of contamination observed.
	0.25				<b>FILL</b> - Silty SAND, dark brown, fine to medium grained, tile, nail and riverstone inclusions (15mmØ).	dry	BH57_0.4-0.5	No visual or olfactory signs of contamination observed.		
	0.3									
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 13, Avg = 11.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:58 AM

<b>Borehole Log</b>		<b>Hole ID.</b>	<b>BH58</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name:	<b>Orica Mercury Independant Review</b>	Hole Depth:	<b>0.50 m</b>
	Project Number:	<b>45970</b>	GW Encountered:	<b>No</b>
	Location / Site:	<b>Mutch Park</b>		
	Client:	<b>NSW EPA</b>		
	Drill Company:	<b>N/A</b>		
	Drill Method:	<b>Hand Auger</b>	Easting:	<b>335388</b>
Date Started:	<b>13/02/2015</b>	Northing:	<b>6242932</b>	
Date Completed:	<b>13/02/2015</b>	Zone:	<b>56H</b>	

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark brown, fine grained.	dry	BH58_0.0-0.05	6	max = 21 Avg = 19	No visual or olfactory signs of contamination observed.
	0.25				<b>FILL</b> - SAND, grey, fine grained, tile inclusions, crushed sandstone inclusions (5-10mmØ), riverstone inclusions (15mmØ).	dry	BH58_0.4-0.5	No visual or olfactory signs of contamination observed.		
	0.3									
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 20, Avg = 18.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:59 AM

<b>Borehole Log</b>		<b>Hole ID. BH59</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>		Hole Depth: <b>0.50 m</b>
	Project Number: <b>45970</b>		GW Encountered: <b>No</b>
	Location / Site: <b>Rhodes St</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>		Easting: <b>336297</b>
Date Started: <b>13/02/2015</b>		Northing: <b>6241501</b>	
Date Completed: <b>13/02/2015</b>		Zone: <b>56H</b>	

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, dark brown, fine to medium grained, gravel inclusions (5-10mmØ).	dry	BH59_0.0-0.05	6.5	max = 6 Avg = 4	No visual or olfactory signs of contamination observed.
	0.20				<b>FILL</b> - SAND, light grey / brown, fine to medium grained, riverstone gravel inclusions (10-25mmØ).	dry	BH59_0.4-0.5	No visual or olfactory signs of contamination observed.		
	0.3									
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 6, Avg = 6.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:56:59 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH60</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Rhodes St</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336226</b>	
Date Started: <b>13/02/2015</b>	Northing: <b>6241522</b>		
Date Completed: <b>13/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, brown, fine to medium grained, root inclusions, crushed sandstone (5-80mmØ), ironstone gravels (15-30mmØ).	dry	BH60_0.0-0.05	6	max = 2 Avg = <2	No visual or olfactory signs of contamination observed.
	0.25				<b>FILL</b> - SAND, slightly Silty, brown, fine to medium grained, sandstone gravel inclusions (5-20mmØ), concrete fragments (20mmØ).	dry	BH60_0.4-0.5	No visual or olfactory signs of contamination observed.		
	0.3									
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 3, Avg = 2.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:00 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH61</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Rhodes St</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336255</b>	
Date Started: <b>13/02/2015</b>	Northing: <b>6241554</b>		
Date Completed: <b>13/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown / grey, fine to medium grained, sandstone gravel inclusions (5-50mmØ).	dry	BH61_0.0-0.05	8	max = 8 Avg = 7	
	0.2				Coke inclusions at 0.4m.					
	0.3									
	0.4									
	0.50									
	0.6				<b>End of Hole at 0.50m in Fill</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 9, Avg = 8.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:01 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH62</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Rhodes St</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336159</b>	
Date Started: <b>13/02/2015</b>	Northing: <b>6241607</b>		
Date Completed: <b>13/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Clayey SAND, dark brown, cohesive, fine to medium grained.	moist	BH62_0.0-0.05	6.5	max = 17 Avg = 15	No visual or olfactory signs of contamination observed.
	0.2								BH62_0.4-0.5	
	0.3									
	0.4									
	0.50									
	0.6				<b>End of Hole at 0.50m in Fill</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 18, Avg = 17.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>13/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:02 AM

<b>Borehole Log</b>		<b>Hole ID. BH63</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Muller Reserve</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336260</b>	
Date Started: <b>17/02/2015</b>	Northing: <b>6242226</b>		
Date Completed: <b>17/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					<i>Woodchips / Soil</i>					
	0.1			Fill	<b>FILL</b> - SAND, light brown, medium grained, wood and root inclusions, clinker inclusions (5mmØ), riverstone inclusions (15mmØ).	dry	BH63_0.0-0.05	6.5	max = 18 Avg = 17	No visual or olfactory signs of contamination observed.
	0.2									
	0.3									
	0.40		SP	Natural	<b>SAND</b> - light orange / brown, medium grained.	dry	BH63_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.50									
					<b>End of Hole at 0.50m</b> in Natural					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 17, Avg = 16.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:02 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>17/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH64</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.60 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Muller Reserve</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336234</b>	
Date Started: <b>17/02/2015</b>	Northing: <b>6242203</b>		
Date Completed: <b>17/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests				Observations / Comments
							ID No.	pH	DUP TRIP QC	Hg Vapour ng/m <sup>3</sup>	
					Grass						
	0.1			Fill	<b>FILL</b> - SAND, brown / grey, medium grained, angular gravel inclusions (15-20mmØ).	dry	BH64_0.0-0.05	5.5	Dup6 Trip6 Dup6 (EPA)	max = 15 Avg = 14	No visual or olfactory signs of contamination observed.
	0.2						BH64_0.4-0.5				
	0.3										
	0.4										
	0.50										
	0.60		SP	Natural	<b>SAND</b> - light grey, medium grained, angular gravel inclusions (15-20mmØ).	slightly moist					No visual or olfactory signs of contamination observed.
	0.7				<b>End of Hole at 0.60m in Natural</b>						
	0.8										
	0.9										
	1.0										

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 13, Avg = 12.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>17/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:03 AM

<b>Borehole Log</b>		<b>Hole ID. BH65</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Jauncy PI Reserve</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336425</b>	
Date Started: <b>17/02/2015</b>	Northing: <b>6241647</b>		
Date Completed: <b>17/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown / light brown, fine to medium grained, occasional gravel inclusions (5-15mmØ).	dry	BH65_0.0-0.05	6.5	max = 11 Avg = 9	No visual or olfactory signs of contamination observed.
	0.20				<b>FILL</b> - SAND, dark brown / dark grey, fine to medium grained, ash fragments, occasional charcoal and clinker inclusions.	dry	BH65_0.4-0.5			
	0.3									
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 10, Avg = 8.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:04 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>17/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH66</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Jauncy PI Reserve</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336456</b>	
Date Started: <b>17/02/2015</b>	Northing: <b>6241665</b>		
Date Completed: <b>17/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, slightly Silty, dark brown, fine grained, occasional riverstone inclusions (25mmØ), crushed terracotta fragments.	dry	BH66_0.0-0.05	6	max = 8 Avg = 7	No visual or olfactory signs of contamination observed.
	0.25		SP	Natural	<b>SAND</b> - light grey, fine to medium grained.	slightly moist	BH66_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 7, Avg = 6.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>17/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:05 AM

<b>Borehole Log</b>		<b>Hole ID. BH67</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Grace Campbell Reserve</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336030</b>	
Date Started: <b>17/02/2015</b>	Northing: <b>6241461</b>		
Date Completed: <b>17/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown, fine grained, root inclusions, occasional riverstone gravel (5-15mmØ).	dry	BH67_0.0-0.05	7	max = 28 Avg = 28	No visual or olfactory signs of contamination observed.
	0.2									
	0.30		SP	Natural	<b>SAND</b> - light brown / white, fine to medium grained, occasional charcoal inclusions (5-10mmØ).	slightly moist	BH67_0.4-0.5			
	0.4									
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 30, Avg = 29.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:05 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>17/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH68</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Grace Campbell Reserve</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336118</b>	
Date Started: <b>17/02/2015</b>	Northing: <b>6241468</b>		
Date Completed: <b>17/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, grey / brown, fine grained, root inclusions.	dry	BH68_0.0-0.05	6	max = 28 Avg = 27	No visual or olfactory signs of contamination observed.
	0.20		SP	Natural	<b>SAND</b> - light grey, fine grained.	slightly moist	BH68_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.3									
	0.4									
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 29, Avg = 28.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>17/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:06 AM

<b>Borehole Log</b>		<b>Hole ID. BH69</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Grace Campbell Gr Reserve</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336014</b>	
Date Started: <b>17/02/2015</b>	Northing: <b>6241313</b>		
Date Completed: <b>17/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, slightly Silty, brown, fine to medium grained, occasional angular gravel inclusions (15mmØ), charcoal inclusions (<5mmØ).	dry	BH69_0.0-0.05	6	max = 24 Avg = 23	
	0.2									
	0.3									
	0.40									
	0.50		SP	Natural	<b>SAND</b> - grey, medium grained.	slightly moist	BH69_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.6				<b>End of Hole at 0.50m</b> in Natural					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 26, Avg = 24.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:07 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>17/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH70</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.40 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Grace Campbell Gr Reserve</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336043</b>	
Date Started: <b>17/02/2015</b>	Northing: <b>6241319</b>		
Date Completed: <b>17/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown, fine to medium grained, root inclusions, occasional angular gravel inclusions.	dry	BH70_0.0-0.05	6.5	max = 27 Avg = 26	No visual or olfactory signs of contamination observed.
	0.15		<b>FILL</b> - SAND, light brown, medium grained, crushed sandstone inclusions (5mmØ), charcoal (<5mmØ), riverstones (<5mmØ).		dry					
	0.2		<b>FILL</b> - Silty SAND, brown, fine grained, angular gravel inclusions (2-10mmØ), wood fragments, coke (5mmØ), charcoal (2mmØ).		dry	BH70_0.3-0.4				
	0.30									
	0.40				<b>End of Hole at 0.40m</b> in Fill on gravel					
	0.5									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 26, Avg = 26.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:08 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>17/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH71</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Nielson St Reserve</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335963</b>	
Date Started: <b>17/02/2015</b>	Northing: <b>6241388</b>		
Date Completed: <b>17/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, dark brown, fine grained, root inclusions.	dry	BH71_0.0-0.05	7	max = 15 Avg = 13	No visual or olfactory signs of contamination observed.
	0.15				<b>FILL</b> - Gravelly SAND, light brown, very stiff, fine grained, large clay inclusions, ash and coke fragments.	dry				
	0.2				<b>FILL</b> - SAND, light grey, fine to medium grained, coke inclusions (<2mmØ), clinker inclusions (2mmØ).	dry				
	0.30									
	0.40			SP	<b>SAND</b> - light yellow, fine grained.	slightly moist	BH71_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.50									
	0.6				<b>End of Hole at 0.50m in Natural</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 19, Avg = 18.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>17/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:08 AM

<b>Borehole Log</b>		<b>Hole ID. BH72</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Nielson St Reserve</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335978</b>	
Date Started: <b>17/02/2015</b>	Northing: <b>6241388</b>		
Date Completed: <b>17/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests				Observations / Comments
							ID No.	pH	DUP TRIP QC	Hg Vapour ng/m <sup>3</sup>	
					Grass						
	0.1			Fill	<b>FILL</b> - Silty SAND, brown, fine grained, gravel inclusions (2-5mmØ), charcoal (2-10mmØ), coke (<5mmØ).	dry	BH72_0.0-0.05	6.5	Dup7 Trip7 Dup7 (EPA)	max = 26 Avg = 25	No visual or olfactory signs of contamination observed.
	0.25		<b>FILL</b> - SAND, yellow, fine to medium grained, charcoal inclusions (<5mmØ).		dry						
	0.35		<b>FILL</b> - Silty SAND, light grey, fine to medium grained, with some clay.		dry	BH72_0.4-0.5					
	0.4										
	0.50				<b>End of Hole at 0.50m in Fill</b>						
	0.6										
	0.7										
	0.8										
	0.9										
	1.0										

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 24, Avg = 23. Located on top of a small mound.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>17/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:09 AM

<b>Borehole Log</b>		<b>Hole ID. BH73</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Purcell Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336136</b>	
Date Started: <b>17/02/2015</b>	Northing: <b>6240459</b>		
Date Completed: <b>17/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.10			Fill	<b>FILL</b> - Silty Sandy CLAY, light brown, soft, root inclusions, wood fragments, clinker (2-10mmØ).	dry	BH73_0.0-0.05	7	max = 54 Avg = 52	
	0.2		<b>FILL</b> - Silty Sandy CLAY, dark brown, firm, gravel and riverstone inclusions (10mmØ), clinker (5-15mmØ), minor coke (<2mmØ).		dry					
	0.30		<b>FILL</b> - SAND, light grey, medium grained, coke and charcoal inclusions (<2mmØ).		dry					
	0.4						BH73_0.4-0.5			
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 54, Avg = 51.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>17/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:10 AM

<b>Borehole Log</b>		<b>Hole ID. BH74</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Purcell Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336119</b>	
Date Started: <b>17/02/2015</b>	Northing: <b>6240507</b>		
Date Completed: <b>17/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, dark grey, loose, fine grained, occasional root inclusions, coke (2mmØ), terracotta, glass, angular gravel (40mmØ).	dry	BH74_0.0-0.05	6	max = 56 Avg = 55	
	0.2				Grading to ....					
	0.30									
	0.40			Natural	<b>FILL</b> - SAND, dark grey, fine to medium grained, angular gravel and coke inclusions (<5mmØ).	dry	BH74_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.50				<b>SAND</b> - light grey, medium grained.	slightly moist				
	0.6				<b>End of Hole at 0.50m</b> in Natural					
	0.7									
	0.8									
	0.9									
	1.0									

<b>Observations</b>	<b>Notes</b>
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 59, Avg = 59.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>17/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:11 AM

<b>Borehole Log</b>		<b>Hole ID. BH75</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Purcell Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336147</b>	
Date Started: <b>17/02/2015</b>	Northing: <b>6240593</b>		
Date Completed: <b>17/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Sandy SILT, light brown / grey, loose, fine grained, occasional angular gravel (5mmØ), coke (<5mmØ), charcoal.	dry	BH75_0.0-0.05	6	max = 39 Avg = 37	
	0.2				Grading to ....					
	0.30									
	0.40			Natural	<b>FILL</b> - Silty SAND, light grey, fine to medium grained, minor charcoal and coke fragments, gravel (<5mmØ).	dry	BH75_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.50				<b>SAND</b> - light grey, medium grained.	slightly moist				
	0.6				<b>End of Hole at 0.50m in Natural</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 36, Avg = 34.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:12 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>17/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH76</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Purcell Park</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336062</b>	
Date Started: <b>17/02/2015</b>	Northing: <b>6240614</b>		
Date Completed: <b>17/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Sandy SILT, light brown, loose, fine grained, occasional angular gravel (<5mmØ), clinker (2mmØ).	dry	BH76_0.0-0.05	6	max = 65 Avg = 64	
	0.20				<b>FILL</b> - Sandy Gravelly CLAY, brown / grey, fine to medium grained, large clumps of very stiff clay, angular gravel inclusions (2-15mmØ).	dry				
	0.3			SP Natural	<b>SAND</b> - light grey, fine to medium grained.	slightly moist				
	0.35								BH76_0.4-0.5	
	0.4									
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 66, Avg = 63.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:12 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>17/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH77</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.40 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Wentworth Ave</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335663</b>	
Date Started: <b>19/02/2015</b>	Northing: <b>6242434</b>		
Date Completed: <b>19/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, light brown, fine grained, gravel inclusions (5-80mmØ), sandstone, riverstones (20mmØ).	dry	BH77_0.0-0.05	6.5	max = 6 Avg = 5	No visual or olfactory signs of contamination observed.
	0.20				<b>FILL</b> - Silty SAND, brown, fine grained, coke and charcoal inclusions (5-10mmØ), clinker (25mmØ).	dry	BH77_0.3-0.4			
	0.3									
	0.40				<b>End of Hole at 0.40m in Fill</b>					
	0.5									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 12, Avg = 9.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>19/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:13 AM

<b>Borehole Log</b>		<b>Hole ID. BH78</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Wentworth Ave</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335784</b>	
Date Started: <b>19/02/2015</b>	Northing: <b>6242389</b>		
Date Completed: <b>19/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, brown, fine grained, occasional roots, sandstone gravel inclusions (10-40mmØ), angular riverstone (<10mmØ), occasional charcoal.	dry	BH78_0.0-0.05	6.5	max = 4 Avg = 4	
	0.2									
	0.3									
	0.4									
	0.50						BH78_0.4-0.5			
	0.6				<b>End of Hole at 0.50m in Fill</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 4, Avg = 3.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:14 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>19/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH79</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Denison Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335812</b>	
Date Started: <b>19/02/2015</b>	Northing: <b>6242200</b>		
Date Completed: <b>19/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, grey / brown, fine to medium grained, wood inclusions, coke (<5mmØ), glass (15mmØ).	dry	BH79_0.0-0.05	6.5	max = 22 Avg = 21	
	0.2				Root inclusions at 0.3m.					
	0.3					Terracotta tile at 0.5m.		BH79_0.4-0.5		
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 23, Avg = 21.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>19/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:14 AM

<b>Borehole Log</b>		<b>Hole ID. BH80</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Smith Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335728</b>	
Date Started: <b>19/02/2015</b>	Northing: <b>6242204</b>		
Date Completed: <b>19/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, light brown, fine grained.  Crushed sandstone inclusions from 0.1m.	dry	BH80_0.0-0.05	8	max = 2 Avg = <2	No visual or olfactory signs of contamination observed.
	0.2		Clinkers (10mmØ) at 0.3m.							
	0.3		Charcoal at 0.4m.							
	0.4									
	0.45				<b>FILL</b> - SAND, light grey, fine to medium grained.	dry	BH80_0.4-0.5			
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = <2, Avg = <2.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>19/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:15 AM

<b>Borehole Log</b>		<b>Hole ID. BH81</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Grace Campbell Cres</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335874</b>	
Date Started: <b>19/02/2015</b>	Northing: <b>6241630</b>		
Date Completed: <b>19/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, slightly Silty, brown / grey, fine grained, wood and root inclusions, occasional gravel (10mmØ).	dry	81_0.0-0.05	5.5	max = 10 Avg = 9	No visual or olfactory signs of contamination observed.
	0.2									
	0.3									
	0.40									
	0.50		SP	Natural	<b>SAND</b> - light brown, fine to medium.	dry	81_0.4-0.5			No visual or olfactory signs of contamination observed.
					<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 6, Avg = 2.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>19/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:16 AM

<b>Borehole Log</b>		<b>Hole ID. BH82</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Denison Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335867</b>	
Date Started: <b>19/02/2015</b>	Northing: <b>6241331</b>		
Date Completed: <b>19/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, slightly Silty, brown, fine to medium grained, gravel inclusions (5-15mmØ), occasional clinker (10mmØ).	dry	BH82_0.0-0.05	7	max = 7 Avg = 5	
	0.2									
	0.3				Grading to ....					
	0.35		SP	Natural	<b>SAND</b> - light brown, fine to medium grained.	dry	BH82_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.4									
	0.50				<b>End of Hole at 0.50m</b> in Natural					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 9, Avg = 9.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>19/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:17 AM

<b>Borehole Log</b>		<b>Hole ID. BH83</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.40 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Denison Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335873</b>	
Date Started: <b>19/02/2015</b>	Northing: <b>6241222</b>		
Date Completed: <b>19/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Gravelly SAND, dark brown / grey, fine grained, clinker inclusions (5-30mmØ), bitumen, coke (<5mmØ), angular river gravel, white slag (5-40mmØ).	dry	BH83_0.0-0.05	6.5	max = 8 Avg = 6	
	0.2				Root inclusions at 0.3m.					
	0.3				Sandstone gravel (50mmØ) at 0.4m.		BH83_0.3-0.4			
	0.40				<b>End of Hole at 0.40m</b> in Fill on gravel					
	0.5									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 7, Avg = 5.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:17 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>19/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH84</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Denison Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335874</b>	
Date Started: <b>19/02/2015</b>	Northing: <b>6241150</b>		
Date Completed: <b>19/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					<i>Grass / Soil</i>					
	0.1			Fill	<b>FILL</b> - SAND, slightly Silty, grey / brown, fine grained, occasional root inclusions, occasional crushed sandstone.	dry	BH84_0.0-0.05	7	max = 28 Avg = 28	No visual or olfactory signs of contamination observed.
	0.25									
	0.3			SP Natural	<b>SAND</b> - light brown / light yellow, medium grained.	slightly moist	BH84_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.4									
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 30, Avg = 29.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>19/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:18 AM

<b>Borehole Log</b>		<b>Hole ID. BH85</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Rhodes Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336103</b>	
Date Started: <b>19/02/2015</b>	Northing: <b>6241327</b>		
Date Completed: <b>19/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown / grey, fine to medium grained, angular gravel inclusions (5-15mmØ).	dry	BH85_0.0-0.05	6	max = 22 Avg = 20	No visual or olfactory signs of contamination observed.
	0.2									
	0.3				Igneous gravel cobble (80mmØ) at 0.3m.					
	0.40									
	0.50		SP	Natural	<b>SAND</b> - light brown, fine to medium grained, occasional gravel inclusions (<10mmØ) (possibly from above).		BH85_0.4-0.5			No visual or olfactory signs of contamination observed.
					<b>End of Hole at 0.50m</b> in Natural					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 16, Avg = 4.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:19 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>19/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH86</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Rhodes Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336117</b>	
Date Started: <b>19/02/2015</b>	Northing: <b>6241396</b>		
Date Completed: <b>19/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests				Observations / Comments
							ID No.	pH	DUP TRIP QC	Hg Vapour ng/m <sup>3</sup>	
					Grass						
	0.1			Fill	<b>FILL</b> - Silty SAND, brown, fine grained, angular river gravel inclusions (15mmØ), charcoal (<5mmØ).	dry	BH86_0.0-0.05	7	Dup 8 Trip8	max = 21 Avg = 19	
	0.2										
	0.3										
	0.40										
	0.50		SP	Natural	<b>SAND</b> - light brown, medium grained.	dry	BH86_0.4-0.5				No visual or olfactory signs of contamination observed.
					<b>End of Hole at 0.50m</b> in Natural						
	0.6										
	0.7										
	0.8										
	0.9										
	1.0										

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 18, Avg = 16.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>19/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:20 AM

<b>Borehole Log</b>		<b>Hole ID. BH87</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Rhodes Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336146</b>	
Date Started: <b>19/02/2015</b>	Northing: <b>6241821</b>		
Date Completed: <b>19/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark brown, fine to medium grained, occasional root inclusions, occasional angular river gravel inclusions (15mmØ).	dry	BH87_0.0-0.05	5.5	max = 17 Avg = 15	No visual or olfactory signs of contamination observed.
	0.2				<b>FILL</b> - SAND, light grey, medium grained, occasional sand concretions (possible natural).	dry				No visual or olfactory signs of contamination observed.
	0.25									
	0.3			Natural	<b>SAND</b> - light yellow / light orange, medium grained.	dry	BH87_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.4									
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 12, Avg = 10.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:20 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>19/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH88</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Rhodes Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336106</b>	
Date Started: <b>19/02/2015</b>	Northing: <b>6241953</b>		
Date Completed: <b>19/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, dark brown / grey, fine to medium grained, occasional clinker (5-15mmØ).	dry	BH88_0.0-0.05	6.5	max = <2 Avg = <2	
	0.25		<b>FILL</b> - Silty SAND, grey, fine to medium grained, (possible natural).		dry					No visual or olfactory signs of contamination observed.
	0.3									
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = <2, Avg = <2.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:21 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>19/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH89</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.40 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Denison Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335820</b>	
Date Started: <b>19/02/2015</b>	Northing: <b>6242377</b>		
Date Completed: <b>19/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1 0.2 0.3 0.40			Fill	<b>FILL</b> - Silty SAND, light brown, occasional sand concretions (5-10mmØ), slag (10mmØ), clinker (<5mmØ).	dry	BH89_0.0-0.05	7.5	max = <2 Avg = <2	Sample falling back into hole.
	0.5 0.6 0.7 0.8 0.9 1.0				<b>End of Hole at 0.40m</b> in Fill, too dry to extract		BH89_0.4-0.5			

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = <2, Avg = <2.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:22 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>19/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH90</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Denison Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336824</b>	
Date Started: <b>19/02/2015</b>	Northing: <b>6242287</b>		
Date Completed: <b>19/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown / grey, fine grained, root inclusions, coke inclusions (<5mmØ), charcoal (<5mmØ).	dry	BH90_0.0-0.05	6.5	max = 16 Avg = 14	
	0.2		Terracotta fragment (30mmØ) at 0.2m.							
	0.25		<b>FILL</b> - SAND, dark grey, fine to medium grained, occasional terracotta fragments (<10mmØ).		dry					No visual or olfactory signs of contamination observed.
	0.3		<b>FILL</b> - SAND, light grey, medium grained.		dry					No visual or olfactory signs of contamination observed.
	0.35		<b>FILL</b> - SAND, dark grey, fine to medium grained.		dry					No visual or olfactory signs of contamination observed.
	0.4						BH90_0.4-0.5			
	0.45									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 16, Avg = 15.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>19/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:23 AM

<b>Borehole Log</b>		<b>Hole ID. BH91</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Beauchamp Road</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336156</b>	
Date Started: <b>19/02/2015</b>	Northing: <b>6241290</b>		
Date Completed: <b>19/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, grey / brown, fine grained, root inclusions, concrete fragments (10mmØ), clinkers (<5mmØ).	dry	BH91_0.0-0.05	7.5	max = 14 Avg = 11	
	0.20		<b>FILL</b> - Silty SAND, brown, very fine grained, sand concretions present.		dry					No visual or olfactory signs of contamination observed.
	0.3		Grading to ....							
	0.35		<b>FILL</b> - Silty SAND, grey, very fine grained.		dry					No visual or olfactory signs of contamination observed.
	0.4						BH91_0.4-0.5			
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 11, Avg = 9.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>19/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:23 AM

<b>Borehole Log</b>		<b>Hole ID. BH92</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Beauchamp Road</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336250</b>	
Date Started: <b>19/02/2015</b>	Northing: <b>6241312</b>		
Date Completed: <b>19/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, brown, fine grained, occasional river gravel inclusions (15mmØ).	dry	BH92_0.0-0.05	7	max = 5 Avg = 4	No visual or olfactory signs of contamination observed.
	0.2				Grading to ....					
	0.30				<b>FILL</b> - Silty Clayey SAND, brown, fine to medium grained.	dry	BH92_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 7, Avg = 5.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:24 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>19/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH93</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Jennings Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336292</b>	
Date Started: <b>19/02/2015</b>	Northing: <b>6241283</b>		
Date Completed: <b>19/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark brown / grey, fine grained, root inclusions, occasional angular igneous gravel inclusions (5-20mmØ), coke (<5mmØ), sand concretions (5mmØ).	dry	BH93_0.0-0.05	6.5	max = 35 Avg = 33	
	0.35				<b>FILL</b> - SAND, light grey, medium grained, occasional clinker inclusions (5mmØ).	slightly moist	BH93_0.4-0.5			
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 32, Avg = 30.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:25 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>19/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH94</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Beauchamp Road</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336401</b>	
Date Started: <b>19/02/2015</b>	Northing: <b>6241331</b>		
Date Completed: <b>19/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, brown /grey, fine to medium grained, root inclusions, brick (20mmØ), coke (30mmØ), wood.	dry	BH94_0.0-0.05	7	max = 52 Avg = 50	
	0.20				<b>FILL</b> - SAND, minor Silt, dark grey / light grey, medium grained.	dry				
	0.3			SP Natural	<b>SAND</b> - light grey / white, medium grained.	slightly moist				No visual or olfactory signs of contamination observed.
	0.35									
	0.4									
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 55, Avg = 53.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:26 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>19/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH95</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Denison Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335868</b>	
Date Started: <b>20/02/2015</b>	Northing: <b>6241432</b>		
Date Completed: <b>20/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Topsoil					
	0.1			Fill	<b>FILL</b> - SAND, light brown, fine grained, occasional sand concretions (5-10mmØ).	dry	BH95_0.0-0.05	7	max = 19 Avg = 18	No visual or olfactory signs of contamination observed.
	0.2									
	0.3			SP Natural	<b>SAND</b> - light brown / white, fine to medium grained.	dry	BH95_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.35									
	0.4									
	0.50				<b>End of Hole at 0.50m</b> in Natural					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 30, Avg = 25.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:26 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>20/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH96</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Flint Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335260</b>	
Date Started: <b>20/02/2015</b>	Northing: <b>6241973</b>		
Date Completed: <b>20/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, brown, fine to medium grained, root inclusions, occasional concrete fragments (10mmØ), occasional gravel (<10mmØ).	dry	BH96_0.0-0.05	7.5	max = --- Avg = ---	No visual or olfactory signs of contamination observed.
	0.25				<b>FILL</b> - SAND, brown / light brown, fine to medium grained, occasional sand concretions (5mmØ).	dry				
	0.35		SP	Natural	<b>SAND</b> - light grey, fine to medium grained.	dry	BH96_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.4									
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = ---, Avg = ---.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>20/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:27 AM

<b>Borehole Log</b>		<b>Hole ID. BH97</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Flint Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336425</b>	
Date Started: <b>20/02/2015</b>	Northing: <b>6241946</b>		
Date Completed: <b>20/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown and light grey, fine grained, root inclusions, occasional silty concretions, occasional sandstone gravels (20-30mmØ).	dry	BH97_0.0-0.05	6.5	max = 29 Avg = 27	No visual or olfactory signs of contamination observed.
	0.20		<b>FILL</b> - Sandy SILT, brown, fine to medium grained, wood fragments.		dry					No visual or olfactory signs of contamination observed.
	0.25		<b>FILL</b> - SAND, brown and light grey, fine to medium grained.		dry					No visual or olfactory signs of contamination observed.
	0.3									
	0.4									
	0.50						BH97_0.4-0.5			
	0.6				<b>End of Hole at 0.50m in Fill</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 28, Avg = 26.

 Log Drawn By: Laurie White Contact: laurie.white@reumad.com.au	Logged By: <b>Philippa Childs</b> Checked By: <b>Colin McKay</b>	Date: <b>20/02/2015</b> Date: <b>24/03/2015</b>
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WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:28 AM

<b>Borehole Log</b>		<b>Hole ID. BH98</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Jauncey Place</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336382</b>	
Date Started: <b>20/02/2015</b>	Northing: <b>6241808</b>		
Date Completed: <b>20/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown / grey, medium grained, occasional quartz grains (2mmØ), orange and white slag (5-15mmØ), glass fragments (10mmØ).	dry	BH98_0.0-0.05	6	max = 20 Avg = 19	No visual or olfactory signs of contamination observed.
	0.35				<b>FILL</b> - SAND, dark grey, fine to medium grained.	dry	BH98_0.4-0.5			
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 16, Avg = 14.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>20/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:29 AM

<b>Borehole Log</b>		<b>Hole ID. BH99</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Jauncey Place</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336376</b>	
Date Started: <b>20/02/2015</b>	Northing: <b>6241621</b>		
Date Completed: <b>20/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty Clayey SAND, dark brown, fine grained, root inclusions, occasional river gravel (5-15mmØ), sandstone gravel (5mmØ), wood fragments.	dry	BH99_0.0-0.05	7	max = 48 Avg = 46	No visual or olfactory signs of contamination observed.
	0.20				<b>FILL</b> - SAND, light brown / yellow, fine grained, angular igneous gravel inclusions (<5mmØ).	dry				No visual or olfactory signs of contamination observed.
	0.25				<b>SAND</b> - yellow, medium grained.	dry				No visual or olfactory signs of contamination observed.
	0.3			SP Natural						
	0.4							BH99_0.4-0.5		
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 46, Avg = 44.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>20/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:29 AM

<b>Borehole Log</b>		<b>Hole ID. BH100</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.40 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Brittain Cres</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336264</b>	
Date Started: <b>20/02/2015</b>	Northing: <b>6241768</b>	Zone: <b>56H</b>	
Date Completed: <b>20/02/2015</b>			

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments	
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>		
					Grass						
	0.1			Fill	<b>FILL</b> - Silty SAND, minor Clay, dark brown, fine grained, clinker inclusions (5-30mmØ).	dry	BH100_0.0-0.05	5.5	max = 39 Avg = 37		
	0.2				Rusted metal fragments (15mmØ) at 0.15m.						
	0.30				<b>FILL</b> - SAND, dark grey, fine grained, charcoal inclusions (<5mmØ), clinker (10mmØ).	dry	BH100_0.3-0.4				
	0.40				<b>End of Hole at 0.40m</b> in Fill on concrete						
	0.5										
	0.6										
	0.7										
	0.8										
	0.9										
	1.0										

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 37, Avg = 36.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>20/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:30 AM

<b>Borehole Log</b>		<b>Hole ID. BH101</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Brittain Cres</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336267</b>	
Date Started: <b>20/02/2015</b>	Northing: <b>6241656</b>		
Date Completed: <b>20/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments	
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>		
					Grass						
	0.1			Fill	<b>FILL</b> - SAND, brown / grey, fine to medium grained, root inclusions, occasional crushed sandstone (<5mmØ).	dry	BH101_0.0-0.05	6	max = 2 Avg = <2	No visual or olfactory signs of contamination observed.	
	0.15					<b>FILL</b> - SAND, slightly Silty, brown, fine grained, crushed sandstone inclusions (20mmØ), angular river gravels (10mmØ), occasional glass, occasional clinker.	dry				
	0.2					<b>FILL</b> - SAND, light grey, medium grained, dark brown / black silt concretions.	dry	BH101_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.3										
	0.35										
	0.4										
	0.50				<b>End of Hole at 0.50m in Fill</b>						
	0.6										
	0.7										
	0.8										
	0.9										
	1.0										

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 3, Avg = <2.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>20/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:31 AM

<b>Borehole Log</b>		<b>Hole ID. BH102</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Flack Ave</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336215</b>	
Date Started: <b>20/02/2015</b>	Northing: <b>6241389</b>		
Date Completed: <b>20/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests		Observations / Comments
							ID No.	Hg Vapour ng/m <sup>3</sup>	
					Grass				
	0.1			Fill	<b>FILL</b> - Silty SAND, brown, fine grained, sandstone inclusions (10mmØ), coke (<5mmØ), plastic fragments.	dry	BH102_0.0-0.05	max = 48 Avg = 46	
	0.20		<b>FILL</b> - SAND, light brown, fine to medium grained, sandstone inclusions (15mmØ), coke (5-10mmØ), sand concretions (5mmØ).		dry				
	0.3		<b>FILL</b> - SAND, light grey, fine to medium grained, with ash (50%), coke and charcoal fragments.		dry	BH102_0.4-0.5			
	0.40								
	0.50				<b>End of Hole at 0.50m in Fill</b>				
	0.6								
	0.7								
	0.8								
	0.9								
	1.0								

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 48, Avg = 46.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:32 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>20/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH103</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Donovan Ave</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336586</b>	
Date Started: <b>20/02/2015</b>	Northing: <b>6242380</b>		
Date Completed: <b>20/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, brown, fine grained, silt concretions (<5mmØ), clinkers (10mmØ).	dry	BH103_0.0-0.05	6.5	max = 63 Avg = 61	No visual or olfactory signs of contamination observed.
	0.15				<b>FILL</b> - SAND, light brown / light yellow, fine grained, orange silt concretions, occasional angular gravel.	dry	BH103_0.4-0.5			
	0.2				<b>End of Hole at 0.50m in Fill</b>					
	0.3									
	0.4									
	0.50									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 61, Avg = 59.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>20/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:32 AM

<b>Borehole Log</b>		<b>Hole ID. BH104</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Donovan Ave</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336367</b>	
Date Started: <b>20/02/2015</b>	Northing: <b>6242380</b>		
Date Completed: <b>20/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					<i>Grass / Sand</i>					
	0.1			Fill	<b>FILL</b> - Silty SAND, brown / grey, fine to medium, minor charcoal inclusions (<5mmØ), minor angular gravels (5-40mm).	dry	BH104_0.0-0.05	7	max = 49 Avg = 49	
	0.2									
	0.3				Grading to ....					
	0.35		SP	Natural	<b>SAND</b> - light grey, medium grained.	slightly moist				No visual or olfactory signs of contamination observed.
	0.4								BH104_0.4-0.5	
	0.50				<b>End of Hole at 0.50m</b> in Natural					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 48, Avg = 45.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:33 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>20/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH105</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.30 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Parer Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336398</b>	
Date Started: <b>20/02/2015</b>	Northing: <b>6242593</b>	Zone: <b>56H</b>	
Date Completed: <b>20/02/2015</b>			

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, grey / brown, fine to medium grained, minor charcoal inclusions (5mmØ), occasional sandstone gravels (15mmØ), occasional angular igneous gravels (5mmØ).	dry	BH105_0.0-0.05	6	max = 48 Avg = 47	
	0.2		BH105_0.2-0.3							
	0.30				<b>End of Hole at 0.30m</b> in Fill on tree root					
	0.4									
	0.5									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 49, Avg = 47.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>20/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:34 AM

<b>Borehole Log</b>		<b>Hole ID. BH106</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Bunnerong Road</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336153</b>	
Date Started: <b>20/02/2015</b>	Northing: <b>6242594</b>		
Date Completed: <b>20/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, brown / grey, fine grained, root inclusions, angular igneous gravels (5mmØ).	dry	BH106_0.0-0.05	6	max = 40 Avg = 40	No visual or olfactory signs of contamination observed.
	0.2									
	0.30		SP	Natural	<b>SAND</b> - light grey, fine to medium grained, root inclusions.	dry	BH106_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.4									
	0.50				<b>End of Hole at 0.50m</b> in Natural					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 40, Avg = 39.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>20/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:35 AM

<b>Borehole Log</b>		<b>Hole ID. BH107</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Rhodes Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336131</b>	
Date Started: <b>24/02/2015</b>	Northing: <b>6241484</b>		
Date Completed: <b>24/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests		Observations / Comments
							ID No.	Hg Vapour ng/m <sup>3</sup>	
					Grass				
	0.10			Fill	<b>FILL</b> - Silty SAND, dark brown, fine grained, root inclusions.	moist	BH107_0.0-0.05	max = 16 Avg = 14	No visual or olfactory signs of contamination observed.
	0.2				<b>FILL</b> - SAND, light brown / light grey, fine grained, occasional root inclusions.	moist			No visual or olfactory signs of contamination observed.
	0.30				<b>FILL</b> - SAND, dark brown / dark grey, fine grained.	moist			No visual or olfactory signs of contamination observed.
	0.35				<b>FILL</b> - SAND, light brown / light grey, fine grained.	moist			No visual or olfactory signs of contamination observed.
	0.40			SP	<b>SAND</b> - light grey / white, fine grained.	moist	BH107_0.4-0.5		No visual or olfactory signs of contamination observed.
	0.50				<b>SAND</b> - light grey / white, fine grained.	moist			No visual or olfactory signs of contamination observed.
	0.6				<b>End of Hole at 0.50m in Natural</b>				
	0.7								
	0.8								
	0.9								
	1.0								

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 14, Avg = 12.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:35 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>24/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID.</b>	<b>BH108</b>
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Rhodes Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336136</b>	
Date Started: <b>24/02/2015</b>	Northing: <b>6241555</b>		
Date Completed: <b>24/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.10			Fill	<b>FILL</b> - SAND, dark brown, fine grained, root inclusions.	dry	BH108_0.0-0.05	6	max = 9 Avg = 7	No visual or olfactory signs of contamination observed.
	0.2				<b>FILL</b> - SAND, light brown, fine grained, occasional angular river gravels (10mmØ).	dry				No visual or olfactory signs of contamination observed.
	0.3									
	0.4						BH108_0.4-0.5			
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 8, Avg = 6.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>24/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:36 AM

<b>Borehole Log</b>		<b>Hole ID. BH109</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Nilson Ave</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335957</b>	
Date Started: <b>24/02/2015</b>	Northing: <b>6241320</b>		
Date Completed: <b>24/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown / grey, fine to medium grained, slag and coke inclusions (<5mmØ).	dry	BH109_0.0-0.05	6	max = 19 Avg = 16	
	0.2				<b>FILL</b> - SAND, brown / grey, medium grained, root inclusions, occasional angular river gravels (10mmØ).	moist	BH109_0.4-0.5	No visual or olfactory signs of contamination observed.		
	0.30									
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 16, Avg = 14.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>24/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:37 AM

<b>Borehole Log</b>		<b>Hole ID. BH110</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Nilson Ave</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335952</b>	
Date Started: <b>24/02/2015</b>	Northing: <b>6241395</b>		
Date Completed: <b>24/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, light brown, fine to medium grained, wood (mulch) inclusions.	dry	BH110_0.0-0.05	5.5	max = 39 Avg = 37	No visual or olfactory signs of contamination observed.
	0.20				Grading to ....					
	0.3						<b>FILL</b> - SAND, light brown, fine to medium grained, occasional wood inclusions, sandstone gravels (10mmØ), tile fragments (10mmØ).	dry		
	0.40			Natural	<b>SAND</b> - grey and light yellow, fine to medium grained.	moist	BH110_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.50									<b>End of Hole at 0.50m in Natural</b>
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 38, Avg = 24.

 Log Drawn By: Laurie White Contact: laurie.white@reumad.com.au	Logged By: <b>Philippa Childs</b> Checked By: <b>Colin McKay</b>	Date: <b>24/02/2015</b> Date: <b>24/03/2015</b>
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WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:38 AM

<b>Borehole Log</b>		<b>Hole ID. BH111</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Nilson Ave</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335945</b>	
Date Started: <b>24/02/2015</b>	Northing: <b>6241560</b>		
Date Completed: <b>24/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments	
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>		
					Grass						
	0.1			Fill	<b>FILL</b> - Silty SAND, brown, fine to medium grained, root inclusions, sand concretions (10-20mmØ), occasional white slag (5mmØ).	dry	BH111_0.0-0.05	6.5	max = 12 Avg = 11	No visual or olfactory signs of contamination observed.	
	0.15				<b>FILL</b> - SAND, light brown / light grey, fine grained, occasional clinker inclusions (10mmØ).	dry					
	0.2			Natural	<b>SAND</b> - light grey, fine to medium grained.	moist				No visual or olfactory signs of contamination observed.	
	0.35										
	0.4										
	0.50				<b>End of Hole at 0.50m in Natural</b>						
	0.6										
	0.7										
	0.8										
	0.9										
	1.0										

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 12, Avg = 11.

 Log Drawn By: Laurie White Contact: laurie.white@reumad.com.au	Logged By: <b>Philippa Childs</b> Checked By: <b>Colin McKay</b>	Date: <b>24/02/2015</b> Date: <b>24/03/2015</b>
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WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:38 AM

<b>Borehole Log</b>		<b>Hole ID. BH112</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Grace Campbell Cres</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336004</b>	
Date Started: <b>24/02/2015</b>	Northing: <b>6241602</b>		
Date Completed: <b>24/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, slightly Silty, brown and dark grey, fine grained, charcoal inclusions (5mmØ), sandstone gravels (5mmØ), occasional clinker (20mmØ).	dry	BH112_0.0-0.05	7	max = 16 Avg = 14	
	0.2				<b>FILL</b> - SAND, brown / grey, fine grained, occasional clinker inclusions (5mmØ).	moist				
	0.25									
	0.3									
	0.40		SP	Natural	<b>SAND</b> - light grey, fine to medium grained.	moist	BH112_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.50									
	0.6				<b>End of Hole at 0.50m in Natural</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 10, Avg = 14.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>24/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:39 AM

<b>Borehole Log</b>		<b>Hole ID. BH113</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Grace Campbell Cres</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336013</b>	
Date Started: <b>24/02/2015</b>	Northing: <b>6241554</b>		
Date Completed: <b>24/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.10			Fill	<b>FILL</b> - Silty SAND, brown, fine grained, wood inclusions, crushed concrete (<5mmØ).	dry	BH113_0.0-0.05	6	max = 18 Avg = 14	No visual or olfactory signs of contamination observed.
	0.2				<b>FILL</b> - SAND, light brown / dark brown mottled, fine to medium grained, dark brown sand concretions (15mmØ), occasional clinkers (30mmØ).	moist				
	0.40		SP	Natural	<b>SAND</b> - light brown, fine to medium grained.	moist	BH113_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.50									
	0.6				<b>End of Hole at 0.50m in Natural</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 14, Avg = 14.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>24/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:40 AM

<b>Borehole Log</b>		<b>Hole ID. BH114</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Grace Campbell Cres</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336026</b>	
Date Started: <b>24/02/2015</b>	Northing: <b>6241430</b>		
Date Completed: <b>24/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark brown, fine grained, occasional root inclusions.	dry	BH114_0.0-0.05	6.5	max = 25 Avg = 24	No visual or olfactory signs of contamination observed.
	0.15				<b>FILL</b> - SAND, grey, fine grained, coke inclusions (<5mmØ), occasional clinker (5mmØ).	damp				
	0.2			SP Natural	<b>SAND</b> - light grey / light brown, fine to medium grained.	moist				No visual or olfactory signs of contamination observed.
	0.3									
	0.35									
	0.4				<b>End of Hole at 0.50m in Natural</b>					
	0.50									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 18, Avg = 15.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:41 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>24/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID.</b>	<b>BH115</b>	
 <b>WSP Environmental Pty Ltd</b>  Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com	Project Name:	<b>Orica Mercury Independant Review</b>	Hole Depth:	<b>0.30 m</b>
	Project Number:	<b>45970</b>	GW Encountered:	<b>No</b>
	Location / Site:	<b>Grace Campbell Cres</b>		
	Client:	<b>NSW EPA</b>		
	Drill Company:	<b>N/A</b>		
	Drill Method:	<b>Hand Auger</b>	Easting:	<b>336030</b>
Date Started:	<b>24/02/2015</b>	Northing:	<b>6241405</b>	
Date Completed:	<b>24/02/2015</b>	Zone:	<b>56H</b>	

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, light brown / dark brown, fine grained, occasional charcoal inclusions (5mmØ).	dry	BH115_0.0-0.05	6	max = <2 Avg = <2	
	0.2			Fill	Sandstone and river gravel inclusions at 0.3m (>20mmØ).		BH115_0.2-0.3			
	0.30			Fill	<b>End of Hole at 0.30m</b> in Fill on gravel					
	0.4									
	0.5									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = <2, Avg = <2.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>24/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:41 AM

<b>Borehole Log</b>		<b>Hole ID.</b>	<b>BH116</b>	
 <b>WSP Environmental Pty Ltd</b>  Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com	Project Name:	<b>Orica Mercury Independant Review</b>	Hole Depth:	<b>0.20 m</b>
	Project Number:	<b>45970</b>	GW Encountered:	<b>No</b>
	Location / Site:	<b>Grace Campbell Cres</b>		
	Client:	<b>NSW EPA</b>		
	Drill Company:	<b>N/A</b>		
	Drill Method:	<b>Hand Auger</b>	Easting:	<b>336014</b>
Date Started:	<b>24/02/2015</b>	Northing:	<b>6241323</b>	
Date Completed:	<b>24/02/2015</b>	Zone:	<b>56H</b>	

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1 0.20			Fill	<b>FILL</b> - Silty SAND, brown, fine grained, angular river gravel inclusions (10-40mmØ).	dry	BH116_0.0-0.05	6.5	max = 5 Avg = 4	No visual or olfactory signs of contamination observed.
	0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0				<b>Refusal at 0.20m</b> in Fill due to gravel					

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 5, Avg = 2.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:42 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>24/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH117</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.40 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Beauchamp Road</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>335964</b>	
Date Started: <b>24/02/2015</b>	Northing: <b>6241188</b>		
Date Completed: <b>24/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, minor Clay, dark brown, fine grained, root inclusions, crushed sandstone inclusions (20mmØ), angular river gravel (15mmØ).	dry	BH117_0.0-0.05	6.5	max = 8 Avg = 8	No visual or olfactory signs of contamination observed.
	0.2		BH117_0.3-0.4							
	0.3									
	0.40				<b>Refusal at 0.40m</b> in Fill due to gravel					
	0.5									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 8, Avg = 7.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>24/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:43 AM

<b>Borehole Log</b>		<b>Hole ID. BH118</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Bunnerong Road</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336604</b>	
Date Started: <b>24/02/2015</b>	Northing: <b>6241807</b>		
Date Completed: <b>24/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, dark brown, fine grained.	moist	BH118_0.0-0.05	6	max = 12 Avg = 9	No visual or olfactory signs of contamination observed.
	0.15				<b>FILL</b> - Silty SAND, brown / grey, fine grained, occasional river gravel inclusions (20mmØ).	dry				
	0.2				Root inclusions at 0.3-0.4m.		BH118_0.4-0.5			
	0.3									
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 10, Avg = 9.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>24/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:44 AM

<b>Borehole Log</b>		<b>Hole ID. BH119</b>
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>
	Location / Site: <b>Jersey Road</b>	
	Client: <b>NSW EPA</b>	
	Drill Company: <b>N/A</b>	
	Drill Method: <b>Hand Auger</b>	Easting: <b>336579</b>
Date Started: <b>24/02/2015</b>	Northing: <b>6241544</b>	Zone: <b>56H</b>
Date Completed: <b>24/02/2015</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests				Observations / Comments
							ID No.	pH	DUP TRIP QC	Hg Vapour ng/m <sup>3</sup>	
					Grass						
	0.1			Natural	<b>FILL</b> - Silty SAND, brown, fine to medium grained, root inclusions, charcoal (<5mmØ), crushed concrete, angular igneous gravel, glass fragment.	dry	BH119_0.0-0.05	6	Dup9 Trip9 Dup9 (EPA)	max = 29 Avg = 25	
	0.25				<b>FILL</b> - Silty SAND, brown / pale orange, fine to medium grained, clumps of clay (5-20mmØ), occasional charcoal inclusions (<5mmØ).	dry	BH119_0.4-0.5				
	0.3										
	0.4										
	0.50				<b>End of Hole at 0.50m in Fill</b>						
	0.6										
	0.7										
	0.8										
	0.9										
	1.0										

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 26, Avg = 23.

 Log Drawn By: Laurie White Contact: laurie.white@reumad.com.au	Logged By: <b>Philippa Childs</b> Checked By: <b>Colin McKay</b>	Date: <b>24/02/2015</b> Date: <b>24/03/2015</b>
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WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:44 AM

<b>Borehole Log</b>		<b>Hole ID. BH120</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Jersey Road</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>337188</b>	
Date Started: <b>24/02/2015</b>	Northing: <b>6241817</b>		
Date Completed: <b>24/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, light grey / light brown, fine grained, crushed sandstone inclusions (15mmØ), charcoal (5mmØ), crushed terracotta (5mmØ).	dry	BH120_0.0-0.05	6.5	max = 11 Avg = 7	
	0.2		Coal gravels (15mmØ) at 0.15m.							
	0.30		Grading to ....							
	0.4				<b>FILL</b> - SAND, light brown / light grey, medium grained, occasional sandstone gravel inclusions (10mmØ), clinker / slag (30mmØ).	dry	BH120_0.4-0.5			
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 13, Avg = 7.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>24/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:45 AM

<b>Borehole Log</b>		<b>Hole ID. BH121</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Beauchamp Road</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>337053</b>	
Date Started: <b>24/02/2015</b>	Northing: <b>6241512</b>		
Date Completed: <b>24/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown, fine to medium grained, igneous gravel inclusions (40-70mmØ).	dry	BH121_0.0-0.05	8	max = 19 Avg = 13	No visual or olfactory signs of contamination observed.
	0.15				<b>FILL</b> - Silty SAND, dark brown, fine to medium grained, coke inclusions (5mmØ), sandstone inclusions (5mmØ).	dry				No visual or olfactory signs of contamination observed.
	0.2				<b>FILL</b> - SAND, light grey, fine grained, minor pale orange clay (possible natural).	dry	BH121_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.3									
	0.35									
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 15, Avg = 4.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>24/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:46 AM

<b>Borehole Log</b>		<b>Hole ID. BH122</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Bapaume Pde</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>337239</b>	
Date Started: <b>24/02/2015</b>	Northing: <b>6241519</b>		
Date Completed: <b>24/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown, fine grained, occasional clinker inclusions (5mmØ), terracotta (5mmØ), coke (<5mmØ).	dry	BH122_0.0-0.05	7.5	max = 9 Avg = 4	
	0.2									
	0.3				Large piece of terracotta (120mmØ) at 0.35m.					
	0.40									
	0.50		SP	Natural	<b>SAND</b> - light brown / light yellow, fine to medium grained.	dry	BH122_0.4-0.5			No visual or olfactory signs of contamination observed.
					<b>End of Hole at 0.50m</b> in Natural					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 38, Avg = 32.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:46 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>24/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH123</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Hamel Road</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>337226</b>	
Date Started: <b>24/02/2015</b>	Northing: <b>6241325</b>		
Date Completed: <b>24/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark brown, fine to medium grained, root inclusions, occasional angular river gravels (10-30mmØ).	dry	BH123_0.0-0.05	6	max = 28 Avg = 18	No visual or olfactory signs of contamination observed.
	0.20		<b>FILL</b> - SAND, light brown, medium grained, root inclusions, occasional sand concretions, occasional angular river gravels (10mmØ).		dry	BH123_0.4-0.5	No visual or olfactory signs of contamination observed.			
	0.3									
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 25, Avg = 20.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>24/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:47 AM

<b>Borehole Log</b>		<b>Hole ID. BH124</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>Yes</b>	
	Location / Site: <b>Flanders Ave</b>	GW Inflow: <b>0.2m bgl</b>	
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>337252</b>	
Date Started: <b>24/02/2015</b>	Northing: <b>6241077</b>	Zone: <b>56H</b>	
Date Completed: <b>24/02/2015</b>			

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark brown / dark grey, fine to medium grained, root inclusions, occasional slag inclusions (30mmØ).	very moist	BH124_0.0-0.05	8.5	max = 23 Avg = 19	
	0.20				<b>FILL</b> - SAND, light grey, medium grained.	very moist to wet				
	0.3				Angular sandstone gravel inclusions at 0.35m.		BH124_0.4-0.5			
	0.4									
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   Groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 21, Avg = 15.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:48 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>24/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH125</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Knowles Ave</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>337230</b>	
Date Started: <b>24/02/2015</b>	Northing: <b>6240884</b>		
Date Completed: <b>24/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments	
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>		
					Grass						
	0.1			Fill	<b>FILL</b> - SAND, light grey / light brown, fine to medium grained, ash fragments (5-15mmØ), charcoal (5mmØ), occasional sandstone gravels (5mmØ), occasional orange sand concretions (10mmØ).	dry	BH125_0.0-0.05	6.5	max = 17 Avg = 16		
	0.2										
	0.3										
	0.40				Grading to ....						
	0.50				<b>FILL</b> - SAND, light grey / light brown, fine to medium grained.	dry	BH125_0.4-0.5			No visual or olfactory signs of contamination observed.	
	0.6				<b>End of Hole at 0.50m in Fill</b>						
	0.7										
	0.8										
	0.9										
	1.0										

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 10, Avg = 5.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>24/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:49 AM

<b>Borehole Log</b>		<b>Hole ID. BH126</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Shirley Cres</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336776</b>	
Date Started: <b>24/02/2015</b>	Northing: <b>6240446</b>		
Date Completed: <b>24/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown / grey, medium grained, occasional sand concretions (10mmØ).	dry	BH126_0.0-0.05	6.5	max = 33 Avg = 30	No visual or olfactory signs of contamination observed.
	0.20		<b>FILL</b> - SAND, brown, medium grained, occasional angular river gravel inclusions (10mmØ).		dry				No visual or olfactory signs of contamination observed.	
	0.3		Grading to ....							
	0.40		<b>FILL</b> - SAND, dark brown, medium grained.		dry	BH126_0.4-0.5			No visual or olfactory signs of contamination observed.	
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 26, Avg = 23.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>24/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:49 AM

<b>Borehole Log</b>		<b>Hole ID. BH127</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Shirley Cres</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336704</b>	
Date Started: <b>24/02/2015</b>	Northing: <b>6240320</b>		
Date Completed: <b>24/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, dark brown / grey, fine to medium grained.	moist	BH127_0.0-0.05	6	max = 32 Avg = 26	No visual or olfactory signs of contamination observed.
	0.2									
	0.30			SP Natural	<b>SAND</b> - dark grey, fine to medium grained.	moist	BH127_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.4									
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 28, Avg = 22.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:50 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>24/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH128</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Anthony Lane</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336863</b>	
Date Started: <b>26/02/2015</b>	Northing: <b>6241548</b>		
Date Completed: <b>26/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, grey / brown, fine to medium grained, occasional root inclusions, occasional slag inclusions (<5mmØ).	dry	BH128_0.0-0.05	5.5	max = 73 Avg = 70	
	0.25		SP	Natural	<b>SAND</b> - light grey, fine to medium grained.	dry				No visual or olfactory signs of contamination observed.
	0.3									
	0.4						BH128_0.4-0.5			
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 72, Avg = 71.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>26/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:51 AM

<b>Borehole Log</b>		<b>Hole ID. BH129</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.30 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Anthony Lane</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336730</b>	
Date Started: <b>26/02/2015</b>	Northing: <b>6241504</b>		
Date Completed: <b>26/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, brown, fine grained.  Sandstone gravel inclusions (30mmØ) from 0.1m.	dry	BH129_0.0-0.05	5	max = 70 Avg = 68	No visual or olfactory signs of contamination observed.
	0.15				<b>FILL</b> - Silty SAND, brown / grey, fine grained, sandstone gravel inclusions (10-40mmØ).	dry				No visual or olfactory signs of contamination observed.
	0.25				<b>FILL</b> - Silty SAND, light brown / light orange, fine grained, sandstone gravel inclusions (10-40mmØ), angular igneous gravels (10mmØ).	dry	BH129_0.2-0.3			No visual or olfactory signs of contamination observed.
	0.30				<b>Refusal at 0.30m</b> in Fill on gravel					
	0.4									
	0.5									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 71, Avg = 69.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>26/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:52 AM

<b>Borehole Log</b>		<b>Hole ID. BH130</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.30 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Beauchamp Road</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336590</b>	
Date Started: <b>26/02/2015</b>	Northing: <b>6241375</b>		
Date Completed: <b>26/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments	
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>		
					Grass						
	0.1			Fill	<b>FILL</b> - Clayey SAND, dark brown, fine grained, nutrient rich, occasional angular gravel inclusions.	dry	BH130_0.0-0.05	8.5	max = 67 Avg = 65	No visual or olfactory signs of contamination observed.	
	0.2										
	0.25							<b>FILL</b> - SAND, light brown, fine to medium grained.	dry	BH130_0.2-0.3	
	0.30				<b>Refusal at 0.30m</b> in Fill on sandstone gravels						
	0.4										
	0.5										
	0.6										
	0.7										
	0.8										
	0.9										
	1.0										

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 66, Avg = 65.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>26/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:52 AM

<b>Borehole Log</b>		<b>Hole ID. BH131</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Daunt Ave</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336600</b>	
Date Started: <b>26/02/2015</b>	Northing: <b>6241176</b>		
Date Completed: <b>26/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments		
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>			
					Grass							
	0.1			Fill	<b>FILL</b> - Clayey SAND, light brown and dark brown, fine grained, occasional crushed sandstone inclusions, clinkers (5mmØ).	dry	BH131_0.0-0.05	8	max = 66 Avg = 62			
	0.2											
	0.30											
	0.40				<b>FILL</b> - Sandy CLAY, brown / grey, medium stiff.	dry				No visual or olfactory signs of contamination observed.		
	0.50				<b>FILL</b> - Clayey SAND, light brown, fine grained, crushed sandstone inclusions.	dry	BH131_0.4-0.5			No visual or olfactory signs of contamination observed.		
	0.6				<b>End of Hole at 0.50m in Fill</b>							
	0.7											
	0.8											
	0.9											
	1.0											

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 65, Avg = 63.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>26/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:53 AM

<b>Borehole Log</b>		<b>Hole ID. BH132</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Daunt Ave</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336756</b>	
Date Started: <b>26/02/2015</b>	Northing: <b>6241192</b>		
Date Completed: <b>26/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments	
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>		
					Grass						
	0.1			Fill	<b>FILL</b> - SAND, light brown / light grey, fine to medium grained, occasional angular igneous gravel (15mmØ).	dry	BH132_0.0-0.05	7	max = 63 Avg = 62	No visual or olfactory signs of contamination observed.	
	0.15				<b>FILL</b> - SAND, light brown / light orange, fine grained, occasional clinker inclusions (<5mmØ).	dry					
	0.2				<b>FILL</b> - Silty SAND, light brown / light grey, fine grained, occasional angular igneous gravel (<5mmØ).	dry	BH132_0.4-0.5				No visual or olfactory signs of contamination observed.
	0.30										
	0.4										
	0.50				<b>End of Hole at 0.50m in Fill</b>						
	0.6										
	0.7										
	0.8										
	0.9										
	1.0										

<b>Observations</b>	<b>Notes</b>
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 64, Avg = 62.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>26/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:54 AM

<b>Borehole Log</b>		<b>Hole ID. BH133</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Pillars Place</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336686</b>	
Date Started: <b>26/02/2015</b>	Northing: <b>6241081</b>		
Date Completed: <b>26/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, dark brown, fine grained, root inclusions.	dry	BH133_0.0-0.05	7.5	max = 62 Avg = 60	No visual or olfactory signs of contamination observed.
	0.15				<b>FILL</b> - Silty SAND, light brown, fine grained, angular gravel inclusions (5-10mmØ), occasional plastic and fibrous material.	dry				
	0.2									
	0.3									
	0.4						BH133_0.4-0.5			
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 63, Avg = 61.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:55 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>26/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH134</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Windsor Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336818</b>	
Date Started: <b>26/02/2015</b>	Northing: <b>6241102</b>		
Date Completed: <b>26/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown, fine to medium grained, root inclusions, wood, river gravel (15mmØ), occasional clinker (10mmØ), occasional ash (<5mmØ).	dry	BH134_0.0-0.05	7.5	max = 61 Avg = 61	
	0.25				<b>FILL</b> - SAND, brown, fine to medium grained, occasional dark brown sand concretions, occasional clinker inclusions (5mmØ).	dry				
	0.35				<b>FILL</b> - SAND, light brown / light orange, fine to medium grained, occasional dark brown sand concretions.	moist				
	0.40			Natural	<b>SAND</b> - brown / orange, medium grained.	slightly moist	BH134_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.50									
	0.6				<b>End of Hole at 0.50m in Natural</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 63, Avg = 61.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:55 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>26/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH135</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.30 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Hunter Ave</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336734</b>	
Date Started: <b>26/02/2015</b>	Northing: <b>6240901</b>		
Date Completed: <b>26/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown / grey, fine to medium grained, root inclusions, crushed sandstone inclusions, occasional angular gravel inclusions.	dry	BH135_0.0-0.05	5.5	max = 63 Avg = 62	No visual or olfactory signs of contamination observed.
	0.20				<b>FILL</b> - SAND, light brown / light grey, fine to medium grained, crushed sandstone inclusions.	dry	BH135_0.2-0.3			No visual or olfactory signs of contamination observed.
	0.25				<b>FILL</b> - SAND, light brown, fine grained.	dry				No visual or olfactory signs of contamination observed.
	0.30									
	0.4				<b>End of Hole at 0.30m</b> in Fill on gravel					
	0.5									
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

<b>Observations</b>	<b>Notes</b>
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 62, Avg = 62.

 Log Drawn By: Laurie White Contact: laurie.white@reumad.com.au	Logged By: <b>Philippa Childs</b> Checked By: <b>Colin McKay</b>	Date: <b>26/02/2015</b> Date: <b>24/03/2015</b>
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WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:56 AM

<b>Borehole Log</b>		<b>Hole ID. BH136</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Franklin Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336663</b>	
Date Started: <b>26/02/2015</b>	Northing: <b>6240819</b>		
Date Completed: <b>26/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, light grey / light brown, medium grained, root inclusions.	dry	BH136_0.0-0.05	6.5	max = 64 Avg = 63	No visual or olfactory signs of contamination observed.
	0.20		<b>FILL</b> - SAND, light grey, fine to medium grained, occasional angular gravel inclusions (<5mmØ), occasional clinker (<5mmØ).		dry				No visual or olfactory signs of contamination observed.	
	0.3		Grading to ....							
	0.40		<b>FILL</b> - SAND, light grey / white, fine to medium grained, occasional coke inclusions (<2mmØ).		dry	BH136_0.4-0.5				
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 65, Avg = 63.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:57 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>26/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH137</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Stephen Road</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>334486</b>	
Date Started: <b>26/02/2015</b>	Northing: <b>6241712</b>		
Date Completed: <b>26/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.10			Fill	<b>FILL</b> - Silty SAND, brown, fine grained.	moist	BH137_0.0-0.05	6.5	max = 18 Avg = 16	No visual or olfactory signs of contamination observed.
	0.2				<b>FILL</b> - SAND, grey, fine to medium grained, occasional charcoal inclusions (2mmØ).	moist				
	0.30				Grading to ....					
	0.4			SP Natural	<b>SAND</b> - light grey, fine grained.	moist	BH137_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 19, Avg = 19.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>26/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:58 AM

<b>Borehole Log</b>		<b>Hole ID. BH138</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Trevelyan Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>334296</b>	
Date Started: <b>26/02/2015</b>	Northing: <b>6241715</b>		
Date Completed: <b>26/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, brown / grey, fine grained, occasional angular river gravel inclusions (10mmØ), ash (<5mmØ), sandstone gravels (15mmØ).	moist	BH138_0.0-0.05	6	max = 32 Avg = 31	
	0.2									
	0.30		SP	Natural	<b>sand</b> - grey, fine to medium grained, (likely natural).	moist	BH138_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.4									
	0.50				<b>End of Hole at 0.50m</b> in Natural					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 34, Avg = 32.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>26/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:58 AM

<b>Borehole Log</b>		<b>Hole ID. BH139</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Brighton Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>334399</b>	
Date Started: <b>26/02/2015</b>	Northing: <b>6241956</b>		
Date Completed: <b>26/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Samples / Tests				Observations / Comments
						ID No.	pH	DUP TRIP QC	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, with minor Clay, brown, fine grained, wood inclusions, orange sand concretions (5mmØ).	BH139_0.0-0.05	6.5	Dup10 Trip10 Dup10 (EPA)	max = 28 Avg = 27	No visual or olfactory signs of contamination observed.
	0.20		<b>FILL</b> - Silty SAND, brown / pale orange, fine grained, occasional dark brown orange sand concretions.		BH139_0.4-0.5				No visual or olfactory signs of contamination observed.	
	0.3									
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 29, Avg = 27.

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:57:59 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>26/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH140</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Jennings Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>334414</b>	
Date Started: <b>26/02/2015</b>	Northing: <b>6240878</b>		
Date Completed: <b>26/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown and light grey, fine grained, root inclusions, occasional clinker inclusions (<5mmØ).	dry	BH140_0.0-0.05	7	max = 70 Avg = 69	
	0.15				<b>FILL</b> - SAND, light brown, medium grained, angular igneous gravel inclusions (<5mmØ), occasional sandstone gravel inclusions (5mmØ),.	dry				No visual or olfactory signs of contamination observed.
	0.2				Large river stone at 0.35m.					
	0.3									
	0.40				<b>FILL</b> - Gravelly SAND, dark grey / black, medium grained, ash inclusions, clinker inclusions (10mmØ).	moist	BH140_0.4-0.5			
	0.50				<b>Refusal at 0.50m</b> in Fill					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 72, Avg = 70.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>26/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:58:00 AM

<b>Borehole Log</b>		<b>Hole ID. BH141</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Perry Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336049</b>	
Date Started: <b>26/02/2015</b>	Northing: <b>6240881</b>		
Date Completed: <b>26/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, brown / grey, fine to medium grained, occasional clinker inclusions (20mmØ), occasional angular gravel (<5mmØ).	dry	BH141_0.0-0.05	7	max = 73 Avg = 71	No visual or olfactory signs of contamination observed.
	0.2				Grading to ....					
	0.35				<b>FILL</b> - SAND, light brown, fine to medium grained, occasional coke inclusions (<5mmØ).	dry				
	0.4			SP Natural	<b>SAND</b> - light brown, fine to medium grained.	moist	BH141_0.4-0.5			
	0.45									
	0.50				<b>End of Hole at 0.50m</b> in Natural					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 74, Avg = 73.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:58:01 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>26/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID. BH142</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Harold Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336053</b>	
Date Started: <b>26/02/2015</b>	Northing: <b>6240781</b>	Zone: <b>56H</b>	
Date Completed: <b>26/02/2015</b>			

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments	
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>		
					Grass						
	0.1			Fill	<b>FILL</b> - Silty SAND, dark brown, fine to medium grained, occasional root inclusions, occasional clinker inclusions (5mmØ).	dry	BH142_0.0-0.05	6	max = 67 Avg = 66		
	0.15										
	0.20				<b>FILL</b> - Silty SAND, dark grey, fine to medium grained, occasional root inclusions, occasional angular river gravel.	dry					No visual or olfactory signs of contamination observed.
	0.30				<b>FILL</b> - SAND, pale orange / light grey, fine to medium grained, occasional terracotta fragments (15mmØ).	dry					No visual or olfactory signs of contamination observed.
	0.4				<b>FILL</b> - SAND, light orange / light grey, fine grained.	dry				No visual or olfactory signs of contamination observed.	
	0.45										
	0.50			Natural	<b>SAND</b> - light grey, fine to medium grained.	dry	BH142_0.4-0.5			No visual or olfactory signs of contamination observed.	
	0.6				<b>End of Hole at 0.50m in Natural</b>						
	0.7										
	0.8										
	0.9										
	1.0										

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 67, Avg = 65.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>26/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:58:01 AM

<b>Borehole Log</b>		<b>Hole ID. BH143</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Harold Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336245</b>	
Date Started: <b>26/02/2015</b>	Northing: <b>6240742</b>		
Date Completed: <b>26/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, brown, fine grained, root inclusions, weathered sandstone, occasional angular gravels (15mmØ), occasional coke inclusions (<5mmØ).	dry	BH143_0.0-0.05	6.5	max = 74 Avg = 72	No visual or olfactory signs of contamination observed.
	0.20		<b>FILL</b> - SAND, slightly Silty, brown / grey, fine grained, occasional clinker inclusions, plastic fragment, occasional angular gravels (<5mmØ).		dry					
	0.3		<b>FILL</b> - SAND, light grey / light brown, fine to medium grained, sandstone gravel inclusions (15mmØ).		dry	BH143_0.4-0.5				
	0.40									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 73, Avg = 72.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>26/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:58:02 AM

<b>Borehole Log</b>		<b>Hole ID. BH144</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Harold Street</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336427</b>	
Date Started: <b>26/02/2015</b>	Northing: <b>6240719</b>		
Date Completed: <b>26/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.10			Fill	<b>FILL</b> - SAND, brown, fine grained, root inclusions.	dry	BH144_0.0-0.05	6.5	max = 74 Avg = 73	No visual or olfactory signs of contamination observed.
	0.20			Fill	<b>FILL</b> - SAND, dark brown / grey, fine to medium grained, occasional charcoal inclusions (5mmØ).	dry				
	0.3			SP Natural	<b>SAND</b> - light grey, fine grained.	dry				No visual or olfactory signs of contamination observed.
	0.4			SP Natural			BH144_0.4-0.5			
	0.50				<b>End of Hole at 0.50m in Natural</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 75, Avg = 72.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>26/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:58:03 AM

<b>Borehole Log</b>		<b>Hole ID. BH145</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Bunnerong Road</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336575</b>	
Date Started: <b>26/02/2015</b>	Northing: <b>6240708</b>		
Date Completed: <b>26/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - SAND, light brown, medium grained, root and wood inclusions, occasional igneous gravel inclusions, occasional charcoal (<5mmØ).	dry	BH145_0.0-0.05	6.5	max = 69 Avg = 66	No visual or olfactory signs of contamination observed.
	0.25		Grading to ....							
	0.3				<b>FILL</b> - SAND, light grey, fine to medium grained, sand concretions (5-15mmØ).	dry	BH145_0.4-0.5			
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 74, Avg = 73.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>26/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:58:04 AM

<b>Borehole Log</b>		<b>Hole ID. BH146</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Waterton Ave</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336793</b>	
Date Started: <b>26/02/2015</b>	Northing: <b>6240667</b>		
Date Completed: <b>26/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, brown, fine grained, angular gravel inclusions (5-10mmØ), crushed sandstone (5mmØ), occasional clinkers (15mmØ).	dry	BH146_0.0-0.05	6.5	max = 66 Avg = 66	
	0.2									
	0.3									
	0.4									
	0.50						BH146_0.4-0.5			
	0.6				<b>End of Hole at 0.50m in Fill</b>					
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling. Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling. Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling. Groundwater   No groundwater encountered during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 68, Avg = 66.

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>26/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:58:05 AM

<b>Borehole Log</b>		<b>Hole ID. BH147</b>	
 <p><b>WSP Environmental Pty Ltd</b></p> <p>Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com</p>	Project Name: <b>Orica Mercury Independant Review</b>	Hole Depth: <b>0.50 m</b>	
	Project Number: <b>45970</b>	GW Encountered: <b>No</b>	
	Location / Site: <b>Murrabin Ave</b>		
	Client: <b>NSW EPA</b>		
	Drill Company: <b>N/A</b>		
	Drill Method: <b>Hand Auger</b>	Easting: <b>336258</b>	
Date Started: <b>27/02/2015</b>	Northing: <b>6240537</b>		
Date Completed: <b>27/02/2015</b>	Zone: <b>56H</b>		

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, brown, fine grained, root inclusions, occasional quartz gravels (<5mmØ), occasional brick fragments (30mmØ), occasional coke (<5mmØ).	dry	BH147_0.0-0.05	6.5	max = 70 Avg = 69	
	0.2				<b>FILL</b> - SAND, grey, fine grained, occasional rusted nail inclusions, occasional crushed sandstone, occasional clinker (<5mmØ).	dry				
	0.25									
	0.3									
	0.40		SP	Natural	<b>SAND</b> - light grey / light brown, fine to medium grained.	dry	BH147_0.4-0.5			No visual or olfactory signs of contamination observed.
	0.50									
					<b>End of Hole at 0.50m</b> in Natural					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 71, Avg = 70.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:58:05 AM

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>27/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

<b>Borehole Log</b>		<b>Hole ID.</b>	<b>BH148</b>	
 <b>WSP Environmental Pty Ltd</b>  Level 1, 41 McLaren Street North Sydney NSW 2060 Office: +61 (0)2 8925 6700 www.wspgroup.com	Project Name:	<b>Orica Mercury Independant Review</b>	Hole Depth:	<b>0.50 m</b>
	Project Number:	<b>45970</b>	GW Encountered:	<b>No</b>
	Location / Site:	<b>Partanna Ave</b>		
	Client:	<b>NSW EPA</b>		
	Drill Company:	<b>N/A</b>		
	Drill Method:	<b>Hand Auger</b>	Easting:	<b>336264</b>
Date Started:	<b>27/02/2015</b>	Northing:	<b>6240411</b>	
Date Completed:	<b>27/02/2015</b>	Zone:	<b>56H</b>	

Water Inflow	Depth (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples / Tests			Observations / Comments
							ID No.	pH	Hg Vapour ng/m <sup>3</sup>	
					Grass					
	0.1			Fill	<b>FILL</b> - Silty SAND, grey / brown, fine grained, occasional clinker inclusions (5mmØ), occasional angular gravel (<5mmØ).	dry	BH148_0.0-0.05	7	max = 36 Avg = 34	
	0.20		<b>FILL</b> - SAND, brown / pale orange, fine grained, orange sand concretions (2-10mmØ).		dry	BH148_0.4-0.5	No visual or olfactory signs of contamination observed.			
	0.3									
	0.4									
	0.50				<b>End of Hole at 0.50m in Fill</b>					
	0.6									
	0.7									
	0.8									
	0.9									
	1.0									

Observations	Notes
Asbestos   No visual evidence of asbestos noted during drilling.	Hg Vapour (ng/m <sup>3</sup> ) 1m above Ground Level: max = 39, Avg = 37.
Staining   No visual evidence of contamination (e.g. staining / precipitate) noted during drilling.	
Odour   No olfactory (e.g. odour) evidence of contamination noted during drilling.	
Groundwater   No groundwater encountered during drilling.	

	Log Drawn By: Laurie White	Logged By: <b>Philippa Childs</b>	Date: <b>27/02/2015</b>
	Contact: laurie.white@reumad.com.au	Checked By: <b>Colin McKay</b>	Date: <b>24/03/2015</b>

WSP LOG 2015 HG ORICA MERCURY 45970.GPJ WSP.GDT 24/3/15 10:58:06 AM

**Attachment D – Laboratory Transcripts**



**CHAIN OF CUSTODY**

ALS Laboratory: please tick →

**JADELAKE 21** Burns Road Forth SA 5200  
Ph: 08 8558 0890 E: noah@alsglobal.com

**BRISBANE 32** Chand Street Stirling QLD 4053  
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

**GLADSTONE 33** Callamnoch Drive Clinton QLD 4680  
Ph: 07 3171 6800 E: gladstone@alsglobal.com

**MACKEY 78** Macdonell Road Mackay QLD 4740  
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**MELBOURNE 2-4** Westall Road Gerngym VIC 3174  
Ph: 03 8549 6833 E: samples.melbourne@alsglobal.com

**MURDOCH 27** Sydney Road Murdoch NSW 2300  
Ph: 02 6322 6735 E: murdoch@alsglobal.com

**NEWCASTLE 5-165** Marlene Road Newcastle West NSW  
Ph: 02 4214 2600 E: samples.newcastle@alsglobal.com

**OWARA 413** Geary Place North Nowra NSW 2541  
Ph: 02 4223 2303 E: nowra@alsglobal.com

**PERTH 10** Mac Way #100 WA 8050  
Ph: 08 9209 7653 E: samples.perth@alsglobal.com

**POTTERY 277-289** Woodrow Road Sutherland NSW 2257  
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

**TOWNSVILLE 14-15** Deana Street Goffs QLD 4845  
Ph: 07 4785 0600 E: samples.townsville@alsglobal.com

**WOLLONGONG 26** Korany Street Wollongong NSW 2500  
Ph: 02 4225 3126 E: wollongong@alsglobal.com

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS : <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)			
SITE: Botany		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		Custody Seal Intact? Yes No N/A			
PROJECT: Orca Mercury Independent Review	PROJECT NO.: 45970	ALS QUOTE NO.: SY11065/14		Free ice / frozen ice bricks present upon receipt? Yes No N/A			
ORDER NUMBER:	PURCHASE ORDER NO.:	COUNTRY OF ORIGIN:		Random Sample Temperature on Receipt: °C			
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 977 926		Other comment:			
SAMPLER: AY/PC		SAMPLER MOBILE:		RECEIVED BY:		RECEIVED BY:	
COC Emailed to ALS? (NO)		EDD FORMAT (or default):		RELINQUISHED BY:		RELINQUISHED BY:	
Email Reports to: colin.mckay@wspgroup.com; philippa.chilids@wspgroup.com		Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME:		DATE/TIME:	
				RECEIVED BY: Frank AS DATE/TIME: 13/12/15 1146		DATE/TIME:	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required).										Additional Information			
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable													
1	BH01 (0-0.05)	10/02/2015	Soil			X													
2	BH01 (0.4-0.5)	10/02/2015	Soil			X													
3	BH02 (0-0.05)	10/02/2015	Soil			X													
4	BH02 (0.4-0.5)	10/02/2015	Soil			X													
5	BH03 (0-0.05)	10/02/2015	Soil			X													
6	BH03 (0.4-0.5)	10/02/2015	Soil			X													
7	BH04 (0-0.05)	10/02/2015	Soil			X													
8	BH04 (0.4-0.5)	10/02/2015	Soil			X													
9	BH05 (0-0.05)	10/02/2015	Soil			X													
10	BH05 (0.4-0.5)	10/02/2015	Soil			X													
11	BH06 (0-0.05)	10/02/2015	Soil			X													
12	BH06 (0.4-0.5)	10/02/2015	Soil			X													
					TOTAL	12													

Environmental Division  
Sydney  
Work Order  
**ES1503556**



Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; H = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Solids; B = Unpreserved Bag; LI = Lugdun Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.



**CHAIN OF CUSTODY**

ALS Laboratory: please tick →

DADELADE 21 Dugan Place Moorooka SA 5006  
Ph: 08 8365 9895 E: ade@als.com.au

BRISBANE 22 Shand Street Staines QLD 4053  
Ph: 07 3243 7221 E: samples.brisbane@alsglobal.com

GLADSTONE 45 Deane Road Gladstone QLD 4680  
Ph: 07 7471 1626 E: glad@als.com.au

MACKAY 78 Harbour Road Mackay QLD 4740  
Ph: 07 4944 0177 E: mackay@alsglobal.com

MELBOURNE 24 Westlab Road Geelong VIC 3177  
Ph: 03 4549 9600 E: samples.melbourne@alsglobal.com

MURFREY 27 Sydney Road Malaga NSW 2050  
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NEWCASTLE 5-665 Macdonald Road Mayfield West NSW 2304  
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NEWCASTLE 113 Coors Place North Newcastle NSW 2311  
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SYDNEY 277-289 Woodpark Road Spillfield NSW 2164  
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TOWNSVILLE 14-15 Casma Court Bohle QLD 4816  
Ph: 07 4796 0500 E: tow@alsglobal.com

WOLLONGONG 80 Kenny Street Wollongong NSW 2502  
Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS : <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)		
SITE: Botany		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		Custody Seal Intact? Yes No N/A		
PROJECT: Orca Mercury Independent Review	PROJECT NO.: 45970	ALS QUOTE NO.: SY71085/14	COC SEQUENCE NUMBER (Circle)			Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:	PURCHASE ORDER NO.:	COUNTRY OF ORIGIN:	COC: 1 2 3 4 5 6 7			Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 977 926		OF: 1 2 3 4 5 6 7		
SAMPLER: AY/PC		SAMPLER MOBILE:		RELINQUISHED BY:		RECEIVED BY:
COC Emailed to ALS? (NO)		EDD FORMAT (or default):		DATE/TIME:		DATE/TIME:
Email Reports to: colin.mckay@wspgroup.com; philippa.chilids@wspgroup.com		Email Invoice to (will default to PM if no other addresses are listed):		RECEIVED BY: Frank MCS		DATE/TIME: 13/2/15 1140

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle req. req).							Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable								
13	BH07 (0.0-0.5)	10/02/2015	Soil			x								
14	BH07 (0.4-0.5)	10/02/2015	Soil			x								
15	BH08 (0-0.05)	10/02/2015	Soil			x								
16	BH08 (0.4-0.5)	10/02/2015	Soil			x								
17	BH09 (0-0.05)	10/02/2015	Soil			x								
18	BH09 (0.4-0.5)	10/02/2015	Soil			x								
19	BH10 (0-0.05)	10/02/2015	Soil			x								
20	BH10 (0.4-0.5)	10/02/2015	Soil			x								
21	BH11 (0-0.05)	10/02/2015	Soil			x								
22	BH11 (0.4-0.5)	10/02/2015	Soil			x								
23	BH12 (0-0.05)	10/02/2015	Soil			x								
24	BH12 (0.4-0.5)	10/02/2015	Soil			x								
TOTAL:						12								

Water Container Codes: F = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Air/tight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Air/tight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulfate Soils; B = Unpreserved Bag; LI = Lignals kodina Preserved Bottle; STT = Sterile Sodium Trisulfate Preserved Bottle.



**CHAIN OF CUSTODY**

ALS Laboratory, please tick →

SYDNEY 21 Burro Road Pootah SA 5006  
Ph: 08 8360 0800 E: adelaide@alsglobal.com

MELBOURNE 22 Stuart Street Stafford QLD 4853  
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WELLINGTON 26 Galleonwhai Drive Clifton CT 1 4116  
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BRISBANE 18 Flatfoot Road Mackay QLD 4740  
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MELBOURNE 24 West of Road Springvale VIC 3171  
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PERTH 10 Mac Way Malaga WA 6009  
Ph: 08 9309 7035 E: samples.perth@alsglobal.com

SYDNEY 27-285 Woodstock Road Smithfield NSW 2164  
Ph: 02 8784 2665 E: samples.sydney@alsglobal.com

MELBOURNE 14-15 Desart Court Bohle QLD 4816  
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MELBOURNE 80 Kenny Street Warrington NSW 2200  
Ph: 02 4225 3125 E: warrington@alsglobal.com

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS : <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)		
SITE: Botany		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		Custody Seal Intact? Yes No N/A		
PROJECT: Orica Mercury Independent Review		PROJECT NO.: 45970	ALS QUOTE NO.: SY/1085/14	Free ice / frozen ice bricks present upon receipt? Yes No N/A		
ORDER NUMBER:	PURCHASE ORDER NO.:	COUNTRY OF ORIGIN:		Random Sample Temperature on Receipt °C		
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 977 926		Other comment:		
SAMPLER: AY/PC		SAMPLER MOBILE:		RECEIVED BY:		RECEIVED BY:
COC Emailed to ALS? (NO)		EDD FORMAT (or default):		DATE/TIME:		DATE/TIME:
Email Reports to: colin.mckay@wspgroup.com; phillipa.childs@wspgroup.com		DATE/TIME:		DATE/TIME:		DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME:		DATE/TIME:		DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (un/brnd bottle required) or Dissolved (folic filtered bottle required).							Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable							
25	BH13 (0-0.05)	11/02/2015	Soil			x							
26	BH13 (0.4-0.5)	11/02/2015	Soil			x							
27	BH14 (0-0.05)	11/02/2015	Soil			x							
28	BH14 (0.4-0.5)	11/02/2015	Soil			x							
29	BH15 (0-0.05)	11/02/2015	Soil			x							
30	BH15 (0.4-0.5)	11/02/2015	Soil			x							
31	BH16 (0-0.05)	11/02/2015	Soil			x							
32	BH16 (0.4-0.5)	11/02/2015	Soil			x							
33	BH17 (0-0.05)	11/02/2015	Soil			x							
34	BH17 (0.4-0.5)	11/02/2015	Soil			x							
35	BH18 (0-0.05)	11/02/2015	Soil			x							
36	BH18 (0.2-0.3)	11/02/2015	Soil			x							
TOTAL:					12								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formic/Acetic Preserved Glass;  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Liquid Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles



**CHAIN OF CUSTODY**

ALS Laboratory: please tick →

GLADELIDE 21 Boronia Road Preeton SA 5005  
Ph: 08 8249 0090 E: adelaide@alsglobal.com

DRIBBANG 32 Strand Street St-Ives QLD 4055  
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Ph: 07 7471 5900 E: gladstone@alsglobal.com

McKAY 76 Pittwater Road Mackay QLD 4740  
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ORCA BOURNE 2nd Westcott Road Springvale VIC 3171  
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DRIBBANG 17 Sydney Road Mudgee NSW 2850  
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NEWCASTLE 5500 Maitland Road Mayfield West NSW 2304  
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NEWCASTLE 413 Geary Place North Sydney NSW 2060  
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PERTH 10 Hod Way Malaga WA 6095  
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SYDNEY 277-289 Woodpark Road Smithfield NSW 2104  
Ph: 02 8704 8661 E: samples.sydney@alsglobal.com

WOLLONGONG 14-15 Desara Court Botme QLD 4818  
Ph: 07 4706 0000 E: wollongong@alsglobal.com

WOLLONGONG 99 Kenny Street Wollongong NSW 2503  
Ph: 02 4225 9126 E: wollongong@alsglobal.com

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)		
SITE: Botany		(Standard TAT may be longer for some tests e.g., Ultra Trace Organics)		Custody Seal Intact? Yes No N/A		
PROJECT: Orca Mercury Independent Review	PROJECT NO.: 45970	ALS QUOTE NO.: SY1085/14	COC SEQUENCE NUMBER (Circle)			Free Ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:	PURCHASE ORDER NO.:	COUNTRY OF ORIGIN:	COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C		
PROJECT MANAGER: Colin McKay	CONTACT PH: 0448 977 926		OF: 1 2 3 4 5 6 7	Other comment:		
SAMPLER: AY/PC	SAMPLER MOBILE:	RELINQUISHED BY:	RECEIVED BY: Frank ALS		RELINQUISHED BY:	RECEIVED BY:
COC Emailed to ALS? (NO)	EDD FORMAT (or default):	DATE/TIME:	DATE/TIME: 12/2/15 11:40		DATE/TIME:	DATE/TIME:
Email Reports to: colin.mckay@wspgroup.com; phillipa.childs@wspgroup.com						
Email Invoice to (will default to PM if no other addresses are listed):						

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)							Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable							
37	BH19 (0-0.05)	11/02/2015	Soil			x							
38	BH19 (0.4-0.5)	11/02/2015	Soil			x							
39	BH20 (0-0.05)	11/02/2015	Soil			x							
40	BH20 (0.2-0.3)	11/02/2015	Soil			x							
41	BH21 (0-0.05)	11/02/2015	Soil			x							
42	BH21 (0.4-0.5)	11/02/2015	Soil			x							
43	BH22 (0-0.05)	11/02/2015	Soil			x							
44	BH22 (0.4-0.5)	11/02/2015	Soil			x							
45	BH23 (0-0.05)	11/02/2015	Soil			x							
46	BH23 (0.4-0.5)	11/02/2015	Soil			x							
47	BH24 (0-0.05)	11/02/2015	Soil			x							
48	BH24 (0.4-0.5)	11/02/2015	Soil			x							
<b>TOTAL</b>						12							

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AS = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulfate Soils; B = Unpreserved Bag; LI = Lugdunum Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles





# CHAIN OF CUSTODY

ALS Laboratory, please tick →

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MACKAY 73 North Main Mackay QLD 4740  
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MELBOURNE 24 Warrill Road Springvale VIC 3171  
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Ph: 02 4014 2500 E: newcastle@alsglobal.com

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SYDNEY 277-280 Woodpark Road Smithfield NSW 2154  
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Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

WAGGA 39 Kemmy Street Wollongong NSW 2500  
Ph: 02 4225 3125 E: wollongong@alsglobal.com

6/7

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS : <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
SITE: Botany		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		Dustody Seal Intact? Yes No N/A	
PROJECT: Orica Mercury Independent Review		PROJECT NO.: 45970		Free Ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER:		PURCHASE ORDER NO.:		Random Sample Temperature on Receipt °C	
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 977 926		Other comment:	
SAMPLER: AY/PC		SAMPLER MOBILE:		RECEIVED BY: Frank ALS	
COC Emailed to ALS? (NO)		EDD FORMAT (or default):		DATE/TIME: 12/2/15 1140	
Email Reports to: colin.mckay@wspgroup.com; phil@pa.chilts@wspgroup.com		RELINQUISHED BY:		RECEIVED BY:	
Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME:		DATE/TIME:	

### COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price)							Additional Information	
	MATRIX: Solid(S) Water(W)	DATE / TIME	MATRIX		Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable							
61	BH31 (0-0.05)	12/02/2015	Soil			x							
62	BH31 (0.4-0.5)	12/02/2015	Soil			x							
63	BH32 (0-0.05)	12/02/2015	Soil			x							
64	BH32 (0.4-0.5)	12/02/2015	Soil			x							
65	BH33 (0-0.05)	12/02/2015	Soil			x							
66	BH33 (0.4-0.5)	12/02/2015	Soil			x							
67	BH34 (0-0.05)	12/02/2015	Soil			x							
68	BH34 (0.2-0.3)	12/02/2015	Soil			x							
69	BH35 (0-0.05)	12/02/2015	Soil			x							
70	BH35 (0.3-0.4)	12/02/2015	Soil			x							
71	BH36 (0-0.05)	12/02/2015	Soil			x							
72	BH36 (0.4-0.5)	12/02/2015	Soil			x							
TOTAL						12							

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulphuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulphuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Spaciation bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass;  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lycopodium Preserved Bottles; STT = Sterile Sodium Thiocyanate Preserved Bottles.



# CHAIN OF CUSTODY

ALS Laboratory, please tick →

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NEWCASTLE 4/13 Geary Place North Newcastle NSW 2314  
Ph: 02 4923 2069 E: newcastle@alsglobal.com

PERTH 16 Hedley Way Perth WA 6000  
Ph: 08 9209 7057 E: perth@alsglobal.com

SYDNEY 277/309 Woodcock Road Smithfield NSW 2164  
Ph: 02 8764 8555 E: sydney@alsglobal.com

WAGGAWAGGA 14-15 Cooma Court Gungahlin ACT 2905  
Ph: 02 4776 0500 E: wagga@alsglobal.com

WOLLONGONG 95 Kenny Street Wollongong NSW 2500  
Ph: 02 4225 9125 E: wollongong@alsglobal.com

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)		
SITE: Botany		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		Custody Seal Intact? Yes No N/A		
PROJECT: Orca Mercury Independent Review		PROJECT NO.: 45970	ALS QUOTE NO.: SY71085/14	Free Ice / frozen ice bricks present upon receipt? Yes No N/A		
ORDER NUMBER:		PURCHASE ORDER NO.:		Random Sample Temperature on Receipt: °C		
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 977 926		Other comment:		
SAMPLER: AY/PC		SAMPLER MOBILE:		RECEIVED BY: Frank MS		RECEIVED BY:
GOC Emailed to ALS? (NO)		EDD FORMAT (or default):		DATE/TIME: 13/12/15 1140		DATE/TIME:
Email Reports to: colin.mckay@wspgroup.com; philippa.childs@wspgroup.com		DATE/TIME:		DATE/TIME:		DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME:		DATE/TIME:		DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)		CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required).							Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable							
73	BH37 (0-0.05)	12/02/2015	Soil			x							
74	BH37 (0.3-0.4)	12/02/2015	Soil			x							
75	BH38 (0-0.05)	12/02/2015	Soil			x							
76	BH38 (0.3-0.4)	12/02/2015	Soil			x							
77	BH39 (0-0.05)	12/02/2015	Soil			x							
78	BH39 (0.3-0.4)	12/02/2015	Soil			x							
79	BH40 (0-0.05)	12/02/2015	Soil			x							
80	BH40 (0.4-0.5)	12/02/2015	Soil			x							
81	DUP1	12/02/2015	Soil			x							
82	DUP2	12/02/2015	Soil			x							
83	DUP3	12/02/2015	Soil			x							
84	DUP4	12/02/2015	Soil			x							
<b>TOTAL</b>						12							

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Sulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial SS = Sulfuric Preserved Amber Glass; H = HCl Preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugol's Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

7/7

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

Work Order : **ES1503556**

Client : **WSP ENVIRONMENTAL PTY LTD**  
Contact : **MR COLIN MCKAY**  
Address : **ENVIRONMENT & ENERGY**  
**LEVEL 1, 41 McLAREN STREET**  
**NORTH SYDNEY NSW, AUSTRALIA**  
**2060**

Laboratory : **Environmental Division Sydney**  
Contact : **Client Services**  
Address : **277-289 Woodpark Road Smithfield**  
**NSW Australia 2164**

E-mail : **colin.mckay@wspgroup.com.au**  
Telephone : **+61 02 8925 6700**  
Facsimile : **+61 02 8925 6799**

E-mail : **sydney@alsglobal.com**  
Telephone : **+61-2-8784 8555**  
Facsimile : **+61-2-8784 8500**

Project : **ORICA MERCURY INDEPENDENT**  
**REVIEW 45970**

Page : **1 of 4**

Order number : **45970**  
C-O-C number : **----**  
Site : **Botany**  
Sampler : **AY/PC**

Quote number : **ES2015WSPENV0359 (SY/1085/14)**

QC Level : **NEPM 2013 Schedule B(3) and ALS**  
**QCS3 requirement**

### Dates

Date Samples Received : **13-FEB-2015**  
Client Requested Due Date : **20-FEB-2015**

Issue Date : **13-FEB-2015 16:17**  
Scheduled Reporting Date : **20-FEB-2015**

### Delivery Details

Mode of Delivery : **Carrier**  
No. of coolers/boxes : **3 ESKIES**  
Security Seal : **Intact.**

Temperature : **22.3'C - Ice bricks present**  
No. of samples received : **84**  
No. of samples analysed : **84**

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EG035T (solids) Total Mercury by FIMS
ES1503556-001	10-FEB-2015 15:00	BH01 (0-0.05)	✓	✓
ES1503556-002	10-FEB-2015 15:00	BH01 (0.4-0.5)	✓	✓
ES1503556-003	10-FEB-2015 15:00	BH02 (0-0.05)	✓	✓
ES1503556-004	10-FEB-2015 15:00	BH02 (0.4-0.5)	✓	✓
ES1503556-005	10-FEB-2015 15:00	BH03 (0-0.05)	✓	✓
ES1503556-006	10-FEB-2015 15:00	BH03 (0.4-0.5)	✓	✓
ES1503556-007	10-FEB-2015 15:00	BH04 (0-0.05)	✓	✓
ES1503556-008	10-FEB-2015 15:00	BH04 (0.4-0.5)	✓	✓
ES1503556-009	10-FEB-2015 15:00	BH05 (0-0.05)	✓	✓
ES1503556-010	10-FEB-2015 15:00	BH05 (0.4-0.5)	✓	✓
ES1503556-011	10-FEB-2015 15:00	BH06 (0-0.05)	✓	✓
ES1503556-012	10-FEB-2015 15:00	BH06 (0.4-0.5)	✓	✓
ES1503556-013	10-FEB-2015 15:00	BH07 (0-0.05)	✓	✓
ES1503556-014	10-FEB-2015 15:00	BH07 (0.4-0.5)	✓	✓
ES1503556-015	10-FEB-2015 15:00	BH08 (0-0.05)	✓	✓
ES1503556-016	10-FEB-2015 15:00	BH08 (0.4-0.5)	✓	✓
ES1503556-017	10-FEB-2015 15:00	BH09 (0-0.05)	✓	✓
ES1503556-018	10-FEB-2015 15:00	BH09 (0.4-0.5)	✓	✓
ES1503556-019	10-FEB-2015 15:00	BH10 (0-0.05)	✓	✓
ES1503556-020	10-FEB-2015 15:00	BH10 (0.4-0.5)	✓	✓
ES1503556-021	10-FEB-2015 15:00	BH11 (0-0.05)	✓	✓
ES1503556-022	10-FEB-2015 15:00	BH11 (0.4-0.5)	✓	✓
ES1503556-023	10-FEB-2015 15:00	BH12 (0-0.05)	✓	✓
ES1503556-024	10-FEB-2015 15:00	BH12 (0.4-0.5)	✓	✓
ES1503556-025	11-FEB-2015 15:00	BH13 (0-0.05)	✓	✓
ES1503556-026	11-FEB-2015 15:00	BH13 (0.4-0.5)	✓	✓
ES1503556-027	11-FEB-2015 15:00	BH14 (0-0.05)	✓	✓
ES1503556-028	11-FEB-2015 15:00	BH14 (0.4-0.5)	✓	✓
ES1503556-029	11-FEB-2015 15:00	BH15 (0-0.05)	✓	✓
ES1503556-030	11-FEB-2015 15:00	BH15 (0.4-0.5)	✓	✓
ES1503556-031	11-FEB-2015 15:00	BH16 (0-0.05)	✓	✓
ES1503556-032	11-FEB-2015 15:00	BH16 (0.4-0.5)	✓	✓
ES1503556-033	11-FEB-2015 15:00	BH17 (0-0.05)	✓	✓
ES1503556-034	11-FEB-2015 15:00	BH17 (0.4-0.5)	✓	✓
ES1503556-035	11-FEB-2015 15:00	BH18 (0-0.05)	✓	✓



			SOIL - EA055-103 Moisture Content	SOIL - EG035T (solids) Total Mercury by FIMS
ES1503556-036	11-FEB-2015 15:00	BH18 (0.2-0.3)	✓	✓
ES1503556-037	11-FEB-2015 15:00	BH19 (0-0.05)	✓	✓
ES1503556-038	11-FEB-2015 15:00	BH19 (0.4-0.5)	✓	✓
ES1503556-039	11-FEB-2015 15:00	BH20 (0-0.05)	✓	✓
ES1503556-040	11-FEB-2015 15:00	BH20 (0.2-0.3)	✓	✓
ES1503556-041	11-FEB-2015 15:00	BH21 (0-0.05)	✓	✓
ES1503556-042	11-FEB-2015 15:00	BH21 (0.4-0.5)	✓	✓
ES1503556-043	11-FEB-2015 15:00	BH22 (0-0.05)	✓	✓
ES1503556-044	11-FEB-2015 15:00	BH22 (0.4-0.5)	✓	✓
ES1503556-045	11-FEB-2015 15:00	BH23 (0-0.05)	✓	✓
ES1503556-046	11-FEB-2015 15:00	BH23 (0.4-0.5)	✓	✓
ES1503556-047	11-FEB-2015 15:00	BH24 (0-0.05)	✓	✓
ES1503556-048	11-FEB-2015 15:00	BH24 (0.4-0.5)	✓	✓
ES1503556-049	11-FEB-2015 15:00	BH25 (0-0.05)	✓	✓
ES1503556-050	11-FEB-2015 15:00	BH25 (0.4-0.5)	✓	✓
ES1503556-051	11-FEB-2015 15:00	BH26 (0-0.05)	✓	✓
ES1503556-052	11-FEB-2015 15:00	BH26 (0.4-0.5)	✓	✓
ES1503556-053	11-FEB-2015 15:00	BH27 (0-0.05)	✓	✓
ES1503556-054	11-FEB-2015 15:00	BH27 (0.4-0.5)	✓	✓
ES1503556-055	12-FEB-2015 15:00	BH28 (0-0.05)	✓	✓
ES1503556-056	12-FEB-2015 15:00	BH28 (0.2-0.3)	✓	✓
ES1503556-057	12-FEB-2015 15:00	BH29 (0-0.05)	✓	✓
ES1503556-058	12-FEB-2015 15:00	BH29 (0.4-0.5)	✓	✓
ES1503556-059	12-FEB-2015 15:00	BH30 (0-0.05)	✓	✓
ES1503556-060	12-FEB-2015 15:00	BH30 (0.4-0.5)	✓	✓
ES1503556-061	12-FEB-2015 15:00	BH31 (0-0.05)	✓	✓
ES1503556-062	12-FEB-2015 15:00	BH31 (0.4-0.5)	✓	✓
ES1503556-063	12-FEB-2015 15:00	BH32 (0-0.05)	✓	✓
ES1503556-064	12-FEB-2015 15:00	BH32 (0.4-0.5)	✓	✓
ES1503556-065	12-FEB-2015 15:00	BH33 (0-0.05)	✓	✓
ES1503556-066	12-FEB-2015 15:00	BH33 (0.4-0.5)	✓	✓
ES1503556-067	12-FEB-2015 15:00	BH34 (0-0.05)	✓	✓
ES1503556-068	12-FEB-2015 15:00	BH34 (0.2-0.3)	✓	✓
ES1503556-069	12-FEB-2015 15:00	BH35 (0-0.05)	✓	✓
ES1503556-070	12-FEB-2015 15:00	BH35 (0.3-0.4)	✓	✓
ES1503556-071	12-FEB-2015 15:00	BH36 (0-0.05)	✓	✓
ES1503556-072	12-FEB-2015 15:00	BH36 (0.4-0.5)	✓	✓
ES1503556-073	12-FEB-2015 15:00	BH37 (0-0.05)	✓	✓
ES1503556-074	12-FEB-2015 15:00	BH37 (0.3-0.4)	✓	✓
ES1503556-075	12-FEB-2015 15:00	BH38 (0-0.05)	✓	✓
ES1503556-076	12-FEB-2015 15:00	BH38 (0.3-0.4)	✓	✓



## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES1503556</b> <b>Client</b> : <b>WSP ENVIRONMENTAL PTY LTD</b> <b>Contact</b> : <b>MR COLIN MCKAY</b> <b>Address</b> : <b>ENVIRONMENT &amp; ENERGY</b> <b>LEVEL 1, 41 McLAREN STREET</b> <b>NORTH SYDNEY NSW, AUSTRALIA 2060</b>  <b>E-mail</b> : <b>colin.mckay@wspgroup.com.au</b> <b>Telephone</b> : <b>+61 02 8925 6700</b> <b>Facsimile</b> : <b>+61 02 8925 6799</b> <b>Project</b> : <b>ORICA MERCURY INDEPENDENT REVIEW 45970</b> <b>Order number</b> : <b>45970</b> <b>C-O-C number</b> : <b>----</b> <b>Sampler</b> : <b>AY/PC</b> <b>Site</b> : <b>Botany</b>  <b>Quote number</b> : <b>SY/1085/14</b>	<b>Page</b> : 1 of 19  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : Client Services <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : sydney@alsglobal.com <b>Telephone</b> : +61-2-8784 8555 <b>Facsimile</b> : +61-2-8784 8500 <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement  <b>Date Samples Received</b> : 13-FEB-2015 <b>Issue Date</b> : 20-FEB-2015  <b>No. of samples received</b> : 84 <b>No. of samples analysed</b> : 84
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



## **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH01 (0-0.05)	BH01 (0.4-0.5)	BH02 (0-0.05)	BH02 (0.4-0.5)	BH03 (0-0.05)
				10-FEB-2015 15:00				
				ES1503556-001	ES1503556-002	ES1503556-003	ES1503556-004	ES1503556-005
Compound	CAS Number	LOR	Unit					
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	1.1	2.3	7.4	4.0	5.0
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH03 (0.4-0.5)	BH04 (0-0.05)	BH04 (0.4-0.5)	BH05 (0-0.05)	BH05 (0.4-0.5)
				10-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503556-006	ES1503556-007	ES1503556-008	ES1503556-009	ES1503556-010
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	3.9	13.7	10.2	9.0	11.1
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.2	0.2	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH06 (0-0.05)	BH06 (0.4-0.5)	BH07 (0-0.05)	BH07 (0.4-0.5)	BH08 (0-0.05)
				10-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503556-011	ES1503556-012	ES1503556-013	ES1503556-014	ES1503556-015
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	3.2	2.3	11.7	14.6	9.6
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.1	<0.1	<0.1	0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH08 (0.4-0.5)	BH09 (0-0.05)	BH09 (0.4-0.5)	BH10 (0-0.05)	BH10 (0.4-0.5)
				10-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503556-016	ES1503556-017	ES1503556-018	ES1503556-019	ES1503556-020
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	4.8	10.2	4.7	3.5	3.3
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH11 (0-0.05)	BH11 (0.4-0.5)	BH12 (0-0.05)	BH12 (0.4-0.5)	BH13 (0-0.05)
				10-FEB-2015 15:00	10-FEB-2015 15:00	10-FEB-2015 15:00	10-FEB-2015 15:00	11-FEB-2015 15:00
Compound	CAS Number	LOR	Unit	ES1503556-021	ES1503556-022	ES1503556-023	ES1503556-024	ES1503556-025
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	1.4	2.8	5.8	3.0	5.2
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH13 (0.4-0.5)	BH14 (0-0.05)	BH14 (0.4-0.5)	BH15 (0-0.05)	BH15 (0.4-0.5)
				11-FEB-2015 15:00				
				ES1503556-026	ES1503556-027	ES1503556-028	ES1503556-029	ES1503556-030
Compound	CAS Number	LOR	Unit					
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	3.8	22.5	4.3	13.2	4.0
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH16 (0-0.05)	BH16 (0.4-0.5)	BH17 (0-0.05)	BH17 (0.4-0.5)	BH18 (0-0.05)
				11-FEB-2015 15:00				
				ES1503556-031	ES1503556-032	ES1503556-033	ES1503556-034	ES1503556-035
Compound	CAS Number	LOR	Unit					
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	8.0	<1.0	13.6	4.0	11.9
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH18 (0.2-0.3)	BH19 (0-0.05)	BH19 (0.4-0.5)	BH20 (0-0.05)	BH20 (0.2-0.3)
				11-FEB-2015 15:00				
				ES1503556-036	ES1503556-037	ES1503556-038	ES1503556-039	ES1503556-040
Compound	CAS Number	LOR	Unit					
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	4.8	9.8	2.2	1.0	1.5
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH21 (0-0.05)	BH21 (0.4-0.5)	BH22 (0-0.05)	BH22 (0.4-0.5)	BH23 (0-0.05)
				11-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503556-041	ES1503556-042	ES1503556-043	ES1503556-044	ES1503556-045
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	1.4	3.3	14.0	3.4	20.6
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.4	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH23 (0.4-0.5)	BH24 (0-0.05)	BH24 (0.4-0.5)	BH25 (0-0.05)	BH25 (0.4-0.5)
				11-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503556-046	ES1503556-047	ES1503556-048	ES1503556-049	ES1503556-050
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	5.9	2.6	2.0	3.0	<1.0
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH26 (0-0.05)	BH26 (0.4-0.5)	BH27 (0-0.05)	BH27 (0.4-0.5)	BH28 (0-0.05)
				11-FEB-2015 15:00	11-FEB-2015 15:00	11-FEB-2015 15:00	11-FEB-2015 15:00	12-FEB-2015 15:00
Compound	CAS Number	LOR	Unit	ES1503556-051	ES1503556-052	ES1503556-053	ES1503556-054	ES1503556-055
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	3.0	4.0	17.8	3.8	21.8
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.1	<0.1	0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH28 (0.2-0.3)	BH29 (0-0.05)	BH29 (0.4-0.5)	BH30 (0-0.05)	BH30 (0.4-0.5)
				12-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503556-056	ES1503556-057	ES1503556-058	ES1503556-059	ES1503556-060
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	8.8	5.3	3.3	1.4	1.4
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH31 (0-0.05)	BH31 (0.4-0.5)	BH32 (0-0.05)	BH32 (0.4-0.5)	BH33 (0-0.05)
				12-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503556-061	ES1503556-062	ES1503556-063	ES1503556-064	ES1503556-065
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	2.2	2.3	3.6	<1.0	1.6
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH33 (0.4-0.5)	BH34 (0-0.05)	BH34 (0.2-0.3)	BH35 (0-0.05)	BH35 (0.3-0.4)
				12-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503556-066	ES1503556-067	ES1503556-068	ES1503556-069	ES1503556-070
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	1.9	13.2	7.0	20.2	7.9
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.1	0.6	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH36 (0-0.05)	BH36 (0.4-0.5)	BH37 (0-0.05)	BH37 (0.3-0.4)	BH38 (0-0.05)
				12-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503556-071	ES1503556-072	ES1503556-073	ES1503556-074	ES1503556-075
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	9.1	3.0	7.7	7.7	5.2
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH38 (0.3-0.4)	BH39 (0-0.05)	BH39 (0.3-0.4)	BH40 (0-0.05)	BH40 (0.4-0.5)
				12-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503556-076	ES1503556-077	ES1503556-078	ES1503556-079	ES1503556-080
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	7.1	3.2	5.3	6.6	4.8
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				DUP1	DUP2	DUP3	DUP4	----
				12-FEB-2015 15:00	12-FEB-2015 15:00	12-FEB-2015 15:00	12-FEB-2015 15:00	----
				ES1503556-081	ES1503556-082	ES1503556-083	ES1503556-084	----
Compound	CAS Number	LOR	Unit					
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	1.5	3.3	1.9	6.5	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	0.1	----



QUALITY CONTROL REPORT

Table with 4 columns: Field Name, Value, Field Name, Value. Includes Work Order (ES1503556), Client (WSP ENVIRONMENTAL PTY LTD), Laboratory (Environmental Division Sydney), and various contact and project details.

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



NATA Accredited Laboratory 825

Accredited for compliance with ISO/IEC 17025.

Signatories

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

Table with 3 columns: Signatories, Position, Accreditation Category. Lists Pabi Subba (Senior Organic Chemist) and Wisam Marassa (Inorganics Coordinator).



### **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

Key :            Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
                  CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
                  LOR = Limit of reporting  
                  RPD = Relative Percentage Difference  
                  # = Indicates failed QC



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3825032)</b>									
ES1503544-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	28.0	29.0	3.6	0% - 20%
ES1503556-010	BH05 (0.4-0.5)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	11.1	11.2	1.2	0% - 50%
<b>EA055: Moisture Content (QC Lot: 3825033)</b>									
ES1503556-019	BH10 (0-0.05)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	3.5	1.6	71.5	No Limit
ES1503556-030	BH15 (0.4-0.5)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	4.0	3.8	6.4	No Limit
<b>EA055: Moisture Content (QC Lot: 3825034)</b>									
ES1503556-039	BH20 (0-0.05)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	1.0	1.8	49.7	No Limit
ES1503556-050	BH25 (0.4-0.5)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	<1.0	<1.0	0.0	No Limit
<b>EA055: Moisture Content (QC Lot: 3825035)</b>									
ES1503556-059	BH30 (0-0.05)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	1.4	1.9	27.5	No Limit
ES1503556-070	BH35 (0.3-0.4)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	7.9	8.0	0.0	No Limit
<b>EA055: Moisture Content (QC Lot: 3825036)</b>									
ES1503556-079	BH40 (0-0.05)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	6.6	7.0	5.8	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3826725)</b>									
ES1503556-001	BH01 (0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1503556-011	BH06 (0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	0.1	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3826726)</b>									
ES1503556-021	BH11 (0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1503556-031	BH16 (0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3826727)</b>									
ES1503556-041	BH21 (0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1503556-051	BH26 (0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	0.1	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3826728)</b>									
ES1503556-061	BH31 (0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1503556-071	BH36 (0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3827909)</b>									
ES1503556-081	DUP1	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit



### Method Blank (MB) and Laboratory Control Spike (LCS) Report

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

Sub-Matrix: SOIL

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3826725)</b>								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	88.3	70	105
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3826726)</b>								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	92.1	70	105
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3826727)</b>								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	84.8	70	105
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3826728)</b>								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	89.5	70	105
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3827909)</b>								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	89.0	70	105

### Matrix Spike (MS) Report

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

Sub-Matrix: SOIL

				Matrix Spike (MS) Report				
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%) Low High		
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3826725)</b>								
ES1503556-001	BH01 (0-0.05)	EG035T: Mercury	7439-97-6	5 mg/kg	97.2	70	130	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3826726)</b>								
ES1503556-021	BH11 (0-0.05)	EG035T: Mercury	7439-97-6	5 mg/kg	99.8	70	130	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3826727)</b>								
ES1503556-041	BH21 (0-0.05)	EG035T: Mercury	7439-97-6	5 mg/kg	104	70	130	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3826728)</b>								
ES1503556-061	BH31 (0-0.05)	EG035T: Mercury	7439-97-6	5 mg/kg	99.7	70	130	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3827909)</b>								
ES1503556-081	DUP1	EG035T: Mercury	7439-97-6	5 mg/kg	96.1	70	130	

### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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



Sub-Matrix: **SOIL**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3826725)</b>											
ES1503556-001	BH01 (0-0.05)	EG035T: Mercury	7439-97-6	5 mg/kg	97.2	----	70	130	----	----	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3826726)</b>											
ES1503556-021	BH11 (0-0.05)	EG035T: Mercury	7439-97-6	5 mg/kg	99.8	----	70	130	----	----	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3826727)</b>											
ES1503556-041	BH21 (0-0.05)	EG035T: Mercury	7439-97-6	5 mg/kg	104	----	70	130	----	----	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3826728)</b>											
ES1503556-061	BH31 (0-0.05)	EG035T: Mercury	7439-97-6	5 mg/kg	99.7	----	70	130	----	----	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3827909)</b>											
ES1503556-081	DUP1	EG035T: Mercury	7439-97-6	5 mg/kg	96.1	----	70	130	----	----	

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1503556</b>	Page	: 1 of 8
Client	: WSP ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR COLIN MCKAY	Contact	: Client Services
Address	: ENVIRONMENT & ENERGY LEVEL 1, 41 McLAREN STREET NORTH SYDNEY NSW, AUSTRALIA 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: colin.mckay@wspgroup.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 8925 6700	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8925 6799	Facsimile	: +61-2-8784 8500
Project	: ORICA MERCURY INDEPENDENT REVIEW 45970	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: Botany	Date Samples Received	: 13-FEB-2015
C-O-C number	: ----	Issue Date	: 20-FEB-2015
Sampler	: AY/PC	No. of samples received	: 84
Order number	: 45970	No. of samples analysed	: 84
Quote number	: SY/1085/14		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



## Analysis Holding Time Compliance

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

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

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

Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA055: Moisture Content</b>								
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>								
BH01 (0-0.05), BH02 (0-0.05), BH03 (0-0.05), BH04 (0-0.05), BH05 (0-0.05), BH06 (0-0.05), BH07 (0-0.05), BH08 (0-0.05), BH09 (0-0.05), BH10 (0-0.05), BH11 (0-0.05), BH12 (0-0.05),	BH01 (0.4-0.5), BH02 (0.4-0.5), BH03 (0.4-0.5), BH04 (0.4-0.5), BH05 (0.4-0.5), BH06 (0.4-0.5), BH07 (0.4-0.5), BH08 (0.4-0.5), BH09 (0.4-0.5), BH10 (0.4-0.5), BH11 (0.4-0.5), BH12 (0.4-0.5)	10-FEB-2015	----	----	----	16-FEB-2015	24-FEB-2015	✓
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>								
BH13 (0-0.05), BH14 (0-0.05), BH15 (0-0.05), BH16 (0-0.05), BH17 (0-0.05), BH18 (0-0.05), BH19 (0-0.05), BH20 (0-0.05), BH21 (0-0.05), BH22 (0-0.05), BH23 (0-0.05), BH24 (0-0.05), BH25 (0-0.05), BH26 (0-0.05), BH27 (0-0.05),	BH13 (0.4-0.5), BH14 (0.4-0.5), BH15 (0.4-0.5), BH16 (0.4-0.5), BH17 (0.4-0.5), BH18 (0.2-0.3), BH19 (0.4-0.5), BH20 (0.2-0.3), BH21 (0.4-0.5), BH22 (0.4-0.5), BH23 (0.4-0.5), BH24 (0.4-0.5), BH25 (0.4-0.5), BH26 (0.4-0.5), BH27 (0.4-0.5)	11-FEB-2015	----	----	----	16-FEB-2015	25-FEB-2015	✓
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>								



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EA055: Moisture Content - Continued</b>									
BH28 (0-0.05), BH29 (0-0.05), BH30 (0-0.05), BH31 (0-0.05), BH32 (0-0.05), BH33 (0-0.05), BH34 (0-0.05), BH35 (0-0.05), BH36 (0-0.05), BH37 (0-0.05), BH38 (0-0.05), BH39 (0-0.05), BH40 (0-0.05), DUP1, DUP3,	BH28 (0.2-0.3), BH29 (0.4-0.5), BH30 (0.4-0.5), BH31 (0.4-0.5), BH32 (0.4-0.5), BH33 (0.4-0.5), BH34 (0.2-0.3), BH35 (0.3-0.4), BH36 (0.4-0.5), BH37 (0.3-0.4), BH38 (0.3-0.4), BH39 (0.3-0.4), BH40 (0.4-0.5), DUP2, DUP4	12-FEB-2015	----	----	----	16-FEB-2015	26-FEB-2015	✓	



Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
<b>Soil Glass Jar - Unpreserved (EG035T)</b>								
BH01 (0-0.05), BH02 (0-0.05), BH03 (0-0.05), BH04 (0-0.05), BH05 (0-0.05), BH06 (0-0.05), BH07 (0-0.05), BH08 (0-0.05), BH09 (0-0.05), BH10 (0-0.05), BH11 (0-0.05), BH12 (0-0.05),	BH01 (0.4-0.5), BH02 (0.4-0.5), BH03 (0.4-0.5), BH04 (0.4-0.5), BH05 (0.4-0.5), BH06 (0.4-0.5), BH07 (0.4-0.5), BH08 (0.4-0.5), BH09 (0.4-0.5), BH10 (0.4-0.5), BH11 (0.4-0.5), BH12 (0.4-0.5)	10-FEB-2015	17-FEB-2015	10-MAR-2015	✓	19-FEB-2015	10-MAR-2015	✓
<b>Soil Glass Jar - Unpreserved (EG035T)</b>								
BH13 (0-0.05), BH14 (0-0.05), BH15 (0-0.05), BH16 (0-0.05), BH17 (0-0.05), BH18 (0-0.05), BH19 (0-0.05), BH20 (0-0.05),	BH13 (0.4-0.5), BH14 (0.4-0.5), BH15 (0.4-0.5), BH16 (0.4-0.5), BH17 (0.4-0.5), BH18 (0.2-0.3), BH19 (0.4-0.5), BH20 (0.2-0.3)	11-FEB-2015	17-FEB-2015	11-MAR-2015	✓	19-FEB-2015	11-MAR-2015	✓
<b>Soil Glass Jar - Unpreserved (EG035T)</b>								
BH21 (0-0.05), BH22 (0-0.05), BH23 (0-0.05), BH24 (0-0.05), BH25 (0-0.05), BH26 (0-0.05), BH27 (0-0.05),	BH21 (0.4-0.5), BH22 (0.4-0.5), BH23 (0.4-0.5), BH24 (0.4-0.5), BH25 (0.4-0.5), BH26 (0.4-0.5), BH27 (0.4-0.5)	11-FEB-2015	17-FEB-2015	11-MAR-2015	✓	20-FEB-2015	11-MAR-2015	✓
<b>Soil Glass Jar - Unpreserved (EG035T)</b>								



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EG035T: Total Recoverable Mercury by FIMS - Continued</b>									
BH28 (0-0.05), BH29 (0-0.05), BH30 (0-0.05), BH31 (0-0.05), BH32 (0-0.05), BH33 (0-0.05), BH34 (0-0.05), BH35 (0-0.05), BH36 (0-0.05), BH37 (0-0.05), BH38 (0-0.05), BH39 (0-0.05), BH40 (0-0.05),	BH28 (0.2-0.3), BH29 (0.4-0.5), BH30 (0.4-0.5), BH31 (0.4-0.5), BH32 (0.4-0.5), BH33 (0.4-0.5), BH34 (0.2-0.3), BH35 (0.3-0.4), BH36 (0.4-0.5), BH37 (0.3-0.4), BH38 (0.3-0.4), BH39 (0.3-0.4), BH40 (0.4-0.5)	12-FEB-2015	17-FEB-2015	12-MAR-2015	✓	20-FEB-2015	12-MAR-2015	✓	
<b>Soil Glass Jar - Unpreserved (EG035T)</b> DUP1, DUP3,	DUP2, DUP4	12-FEB-2015	18-FEB-2015	12-MAR-2015	✓	19-FEB-2015	12-MAR-2015	✓	



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	9	88	10.2	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	9	84	10.7	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
Total Mercury by FIMS	EG035T	5	84	6.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
Total Mercury by FIMS	EG035T	5	84	6.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
Total Mercury by FIMS	EG035T	5	84	6.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Moisture Content	EA055-103	SOIL	In-house. A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)



## **Summary of Outliers**

### **Outliers : Quality Control Samples**

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

#### **Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes**

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

#### **Regular Sample Surrogates**

- For all regular sample matrices, no surrogate recovery outliers occur.

### **Outliers : Analysis Holding Time Compliance**

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

### **Outliers : Frequency of Quality Control Samples**

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.
-



# CHAIN OF CUSTODY

ALS Laboratory: please tick →

APPROVED FOR USE BY: [Signature]

DATE: 13/02/2015

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS : <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
SITE: Botany		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		Custody Seal Intact? Yes No N/A	
PROJECT: Orica Mercury Independent Review PROJECT NO.: 45970		ALS QUOTE NO.: SY1085/14		Free ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER:		PURCHASE ORDER NO.:		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 977 926		Other comment:	
SAMPLER: AY/PC		SAMPLER MOBILE:		RECEIVED BY: Ravi	
COC Emailed to ALS? (NO)		EDD FORMAT (or default):		RECEIVED BY:	
Email Reports to: colin.mckay@wspgroup.com; philippa.chilts@wspgroup.com		RELINQUISHED BY: Philippa Chilts		RECEIVED BY:	
Email Invoice to (will default to PM if no other addressees are listed):		DATE/TIME: 16/2/15		DATE/TIME: 16/2/15 15:15	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price)							Additional Information		
	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Where Metals are required, specify Total (unfiltered bottles required) or Dissolved (field filtered bottles required)								
							Mercury - Total Recoverable								
1	BH41 (0-0.05)	13/02/2015	Soil				X								
2	BH41 (0.4-0.5)	13/02/2015	Soil				X								
3	BH42 (0-0.05)	13/02/2015	Soil				X								
4	BH42 (0.4-0.5)	13/02/2015	Soil				X								
5	BH43 (0-0.05)	13/02/2015	Soil				X								
6	BH43 (0.4-0.5)	13/02/2015	Soil				X								
7	BH44 (0-0.05)	13/02/2015	Soil				X								
8	BH44 (0.4-0.5)	13/02/2015	Soil				X								
9	BH45 (0-0.05)	13/02/2015	Soil				X								
10	BH45 (0.4-0.5)	13/02/2015	Soil				X								
4	BH46 (0-0.05)	13/02/2015	Soil				X								
12	BH46 (0.4-0.5)	13/02/2015	Soil				X								
TOTAL							12								

Environmental Division  
Sydney  
Work Order  
**ES1503682**



Telephone : +61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisphosphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.





# CHAIN OF CUSTODY

ALS Laboratory: please tick →

LABORATORY: ALS Environmental Pty Ltd  
100 St Albans Road, St Albans, Vic 3023  
Tel: 03 9479 7000 Fax: 03 9479 7001

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100 St Albans Road, St Albans, Vic 3023  
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LABORATORY: ALS Environmental Pty Ltd  
100 St Albans Road, St Albans, Vic 3023  
Tel: 03 9479 7000 Fax: 03 9479 7001

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
SITE: Botany		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		Custody Seal Intact? Yes No N/A	
PROJECT: Orica Mercury Independent Review		PROJECT NO.: 45970	ALS QUOTE NO.: SY1085/14	Frag Ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER:	PURCHASE ORDER NO.:	COUNTRY OF ORIGIN:		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 977 926		Other comment:	
SAMPLER: AY/PC		SAMPLER MOBILE:		RECEIVED BY: <i>Ram</i>	
COC Emailed to ALS? (NO)		EDD FORMAT (or default):		DATE/TIME: 16/2/15 15:15	
Email Reports to: colin.mckay@wspgroup.com; phillipa.chilids@wspgroup.com		RELINQUISHED BY: <i>Phillippa Chilids</i>		DATE/TIME: 16/2/15 15:15	
Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME: 16/2/15		DATE/TIME:	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)		CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Matrix are required, specify Total (unfiltered bottle required) or Dissolved (50ml filtered bottle required).					Additional Information	
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable					
25	BH53 (0.0-0.05)	13/02/2015	Soil			x					
26	BH53 (0.4-0.5)	13/02/2015	Soil			x					
27	BH54 (0.0-0.05)	13/02/2015	Soil			x					
28	BH54 (0.4-0.5)	13/02/2015	Soil			x					
29	BH55 (0.0-0.05)	13/02/2015	Soil			x					
30	BH55 (0.4-0.5)	13/02/2015	Soil			x					
31	BH56 (0.0-0.05)	13/02/2015	Soil			x					
32	BH56 (0.3-0.4)	13/02/2015	Soil			x					
33	BH57 (0.0-0.05)	13/02/2015	Soil			x					
34	BH57 (0.4-0.5)	13/02/2015	Soil			x					
35	BH58 (0.0-0.05)	13/02/2015	Soil			x					
36	BH58 (0.4-0.5)	13/02/2015	Soil			x					
TOTAL						12					

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulfate Salts; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottle.



## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

Work Order : **ES1503682**

Client : **WSP ENVIRONMENTAL PTY LTD**  
Contact : **MR COLIN MCKAY**  
Address : **ENVIRONMENT & ENERGY**  
**LEVEL 1, 41 McLAREN STREET**  
**NORTH SYDNEY NSW, AUSTRALIA**  
**2060**

Laboratory : Environmental Division Sydney  
Contact : Client Services  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : colin.mckay@wspgroup.com.au  
Telephone : +61 02 8925 6700  
Facsimile : +61 02 8925 6799

E-mail : sydney@alsglobal.com  
Telephone : +61-2-8784 8555  
Facsimile : +61-2-8784 8500

Project : **ORICA MERCURY INDEPENDANT**  
**REVIEW 45970**

Page : 1 of 3

Order number : ----  
C-O-C number : ----  
Site : ----  
Sampler : AY,PC

Quote number : ES2015WSPENV0359 (SY/1085/14)

QC Level : NEPM 2013 Schedule B(3) and ALS  
QCS3 requirement

### Dates

Date Samples Received : 16-FEB-2015  
Client Requested Due Date : 23-FEB-2015

Issue Date : 18-FEB-2015 08:09  
Scheduled Reporting Date : **23-FEB-2015**

### Delivery Details

Mode of Delivery : Carrier  
No. of coolers/boxes : 2 ESKYS  
Security Seal : Intact.

Temperature : 20.1'C - Ice bricks present  
No. of samples received : 45  
No. of samples analysed : 45

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EG035T (solids) Total Mercury by FIMS	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only
ES1503682-001	13-FEB-2015 15:00	BH41(0-0.05)	✓	✓	✓		
ES1503682-002	13-FEB-2015 15:00	BH41(0.4-0.5)	✓		✓		
ES1503682-003	13-FEB-2015 15:00	BH42(0-0.05)	✓		✓		
ES1503682-004	13-FEB-2015 15:00	BH42(0.4-0.5)	✓		✓		
ES1503682-005	13-FEB-2015 15:00	BH43(0-0.05)	✓		✓		
ES1503682-006	13-FEB-2015 15:00	BH43(0.4-0.5)	✓		✓		
ES1503682-007	13-FEB-2015 15:00	BH44(0-0.05)	✓		✓		
ES1503682-008	13-FEB-2015 15:00	BH44(0.4-0.5)	✓		✓		
ES1503682-009	13-FEB-2015 15:00	BH45(0-0.05)	✓		✓		
ES1503682-010	13-FEB-2015 15:00	BH45(0.4-0.5)	✓		✓		
ES1503682-011	13-FEB-2015 15:00	BH46(0-0.05)	✓		✓		
ES1503682-012	13-FEB-2015 15:00	BH46(0.4-0.5)	✓		✓		
ES1503682-013	13-FEB-2015 15:00	BH47(0-0.05)	✓		✓		
ES1503682-014	13-FEB-2015 15:00	BH47(0.4-0.5)	✓		✓		
ES1503682-015	13-FEB-2015 15:00	BH48(0-0.05)	✓		✓		
ES1503682-016	13-FEB-2015 15:00	BH48(0.1-0.2)	✓		✓		
ES1503682-017	13-FEB-2015 15:00	BH49(0-0.05)	✓		✓		
ES1503682-018	13-FEB-2015 15:00	BH49(0.4-0.5)	✓		✓		
ES1503682-019	13-FEB-2015 15:00	BH50(0-0.05)	✓		✓		
ES1503682-020	13-FEB-2015 15:00	BH50(0.4-0.5)	✓		✓		
ES1503682-021	13-FEB-2015 15:00	BH51(0-0.05)	✓		✓		
ES1503682-022	13-FEB-2015 15:00	BH51(0.4-0.5)	✓		✓		
ES1503682-023	13-FEB-2015 15:00	BH52(0-0.05)	✓		✓		
ES1503682-024	13-FEB-2015 15:00	BH52(0.4-0.5)	✓		✓		
ES1503682-025	13-FEB-2015 15:00	BH53(0-0.05)	✓		✓		
ES1503682-026	13-FEB-2015 15:00	BH53(0.4-0.5)	✓		✓		
ES1503682-027	13-FEB-2015 15:00	BH54(0-0.05)	✓		✓		
ES1503682-028	13-FEB-2015 15:00	BH54(0.4-0.5)	✓		✓		
ES1503682-029	13-FEB-2015 15:00	BH55(0-0.05)	✓		✓		
ES1503682-030	13-FEB-2015 15:00	BH55(0.4-0.5)	✓		✓		
ES1503682-031	13-FEB-2015 15:00	BH56(0-0.05)	✓		✓		
ES1503682-032	13-FEB-2015 15:00	BH56(0.3-0.4)	✓		✓		
ES1503682-033	13-FEB-2015 15:00	BH57(0-0.05)	✓		✓		
ES1503682-034	13-FEB-2015 15:00	BH57(0.4-0.5)	✓		✓		
ES1503682-035	13-FEB-2015 15:00	BH58(0-0.05)	✓		✓		



			SOIL - EA055-103 Moisture Content	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EG035T (solids) Total Mercury by FIMS	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only
ES1503682-036	13-FEB-2015 15:00	BH58(0.4-0.5)	✓		✓		
ES1503682-037	13-FEB-2015 15:00	BH59(0-0.05)	✓	✓	✓	✓	✓
ES1503682-038	13-FEB-2015 15:00	BH59(0.4-0.5)	✓		✓		
ES1503682-039	13-FEB-2015 15:00	BH60(0-0.05)	✓	✓	✓	✓	✓
ES1503682-040	13-FEB-2015 15:00	BH60(0.1 -0.2)	✓		✓		
ES1503682-041	13-FEB-2015 15:00	BH61(0-0.05)	✓	✓	✓	✓	✓
ES1503682-042	13-FEB-2015 15:00	BH61(0.4-0.5)	✓		✓		
ES1503682-043	13-FEB-2015 15:00	BH62(0-0.05)	✓	✓	✓	✓	✓
ES1503682-044	13-FEB-2015 15:00	BH62(0.4-0.5)	✓		✓		
ES1503682-045	13-FEB-2015 15:00	DUP5	✓		✓		

### Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

### Requested Deliverables

#### MR COLIN MCKAY

- *AU Certificate of Analysis - NATA ( COA )	Email	colin.mckay@wspgroup.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	colin.mckay@wspgroup.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	colin.mckay@wspgroup.com.au
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	colin.mckay@wspgroup.com.au
- A4 - AU Tax Invoice ( INV )	Email	colin.mckay@wspgroup.com.au
- Chain of Custody (CoC) ( COC )	Email	colin.mckay@wspgroup.com.au
- EDI Format - ENMRG ( ENMRG )	Email	colin.mckay@wspgroup.com.au
- EDI Format - ESDAT ( ESDAT )	Email	colin.mckay@wspgroup.com.au

#### PHILIPPA CHILDS

- *AU Certificate of Analysis - NATA ( COA )	Email	philippa.childs@wspgroup.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) ( QCI )	Email	philippa.childs@wspgroup.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA ( QC )	Email	philippa.childs@wspgroup.com
- A4 - AU Sample Receipt Notification - Environmental HT ( SRN )	Email	philippa.childs@wspgroup.com
- Chain of Custody (CoC) ( COC )	Email	philippa.childs@wspgroup.com
- EDI Format - ENMRG ( ENMRG )	Email	philippa.childs@wspgroup.com
- EDI Format - ESDAT ( ESDAT )	Email	philippa.childs@wspgroup.com

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES1503682</b> <b>Client</b> : <b>WSP ENVIRONMENTAL PTY LTD</b> <b>Contact</b> : MR COLIN MCKAY <b>Address</b> : ENVIRONMENT & ENERGY LEVEL 1, 41 McLAREN STREET NORTH SYDNEY NSW, AUSTRALIA 2060  <b>E-mail</b> : colin.mckay@wspgroup.com.au <b>Telephone</b> : +61 02 8925 6700 <b>Facsimile</b> : +61 02 8925 6799 <b>Project</b> : ORICA MERCURY INDEPENDANT REVIEW 45970 <b>Order number</b> : 45970 <b>C-O-C number</b> : ---- <b>Sampler</b> : AY,PC <b>Site</b> : ----  <b>Quote number</b> : SY/1085/14	<b>Page</b> : 1 of 14  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : Client Services <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : sydney@alsglobal.com <b>Telephone</b> : +61-2-8784 8555 <b>Facsimile</b> : +61-2-8784 8500 <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement  <b>Date Samples Received</b> : 16-FEB-2015 <b>Issue Date</b> : 23-FEB-2015  <b>No. of samples received</b> : 45 <b>No. of samples analysed</b> : 45
---	---

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



## General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

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

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

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

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

- **Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.**



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH41(0-0.05)	BH41(0.4-0.5)	BH42(0-0.05)	BH42(0.4-0.5)	BH43(0-0.05)
				13-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503682-001	ES1503682-002	ES1503682-003	ES1503682-004	ES1503682-005
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	9.2	1.5	12.1	2.8	4.0
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	0.3



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH43(0.4-0.5)	BH44(0-0.05)	BH44(0.4-0.5)	BH45(0-0.05)	BH45(0.4-0.5)
				13-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503682-006	ES1503682-007	ES1503682-008	ES1503682-009	ES1503682-010
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	1.5	8.7	<1.0	<1.0	1.0
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH46(0-0.05)	BH46(0.4-0.5)	BH47(0-0.05)	BH47(0.4-0.5)	BH48(0-0.05)
				13-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503682-011	ES1503682-012	ES1503682-013	ES1503682-014	ES1503682-015
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	17.7	11.7	2.1	4.2	2.8
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH48(0.1-0.2)	BH49(0-0.05)	BH49(0.4-0.5)	BH50(0-0.05)	BH50(0.4-0.5)
				13-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503682-016	ES1503682-017	ES1503682-018	ES1503682-019	ES1503682-020
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	6.4	7.7	5.8	8.9	6.3
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH51(0-0.05)	BH51(0.4-0.5)	BH52(0-0.05)	BH52(0.4-0.5)	BH53(0-0.05)
				13-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503682-021	ES1503682-022	ES1503682-023	ES1503682-024	ES1503682-025
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	4.4	3.0	6.4	10.7	5.4
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH53(0.4-0.5)	BH54(0-0.05)	BH54(0.4-0.5)	BH55(0-0.05)	BH55(0.4-0.5)
				13-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503682-026	ES1503682-027	ES1503682-028	ES1503682-029	ES1503682-030
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	7.2	9.1	5.2	3.5	8.3
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.1	0.3	0.1	0.8	0.4



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH56(0-0.05)	BH56(0.3-0.4)	BH57(0-0.05)	BH57(0.4-0.5)	BH58(0-0.05)
				13-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503682-031	ES1503682-032	ES1503682-033	ES1503682-034	ES1503682-035
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	16.6	15.4	31.8	14.7	3.1
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.8	0.2	4.7	0.7	0.8



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH58(0.4-0.5)	BH59(0-0.05)	BH59(0.4-0.5)	BH60(0-0.05)	BH60(0.1 -0.2)
				13-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503682-036	ES1503682-037	ES1503682-038	ES1503682-039	ES1503682-040
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	3.8	8.5	2.5	3.9	3.0
<b>EG005T: Total Metals by ICP-AES</b>								
Chromium	7440-47-3	2	mg/kg	----	10	----	2	----
Lead	7439-92-1	5	mg/kg	----	64	----	21	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	0.2	0.1
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	----	<0.1	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	----	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	----	1.2	----
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	----	103	----	78.0	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	----	91.8	----	89.8	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH58(0.4-0.5)	BH59(0-0.05)	BH59(0.4-0.5)	BH60(0-0.05)	BH60(0.1 -0.2)
				13-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503682-036	ES1503682-037	ES1503682-038	ES1503682-039	ES1503682-040
<b>EP075(SIM)S: Phenolic Compound Surrogates - Continued</b>								
2-Chlorophenol-D4	93951-73-6	0.1	%	----	96.4	----	93.9	----
2.4.6-Tribromophenol	118-79-6	0.1	%	----	74.9	----	86.0	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	----	99.8	----	100	----
Anthracene-d10	1719-06-8	0.1	%	----	102	----	92.9	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	75.8	----	98.5	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH61(0-0.05)	BH61(0.4-0.5)	BH62(0-0.05)	BH62(0.4-0.5)	DUP5
				13-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503682-041	ES1503682-042	ES1503682-043	ES1503682-044	ES1503682-045
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	11.3	8.7	10.6	8.9	12.0
<b>EG005T: Total Metals by ICP-AES</b>								
Chromium	7440-47-3	2	mg/kg	5	----	6	----	----
Lead	7439-92-1	5	mg/kg	80	----	52	----	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	<0.1	<0.1	0.4
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	<0.1	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	1.2	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	1.8	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	2.0	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	0.9	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	0.8	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	1.0	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	0.8	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	0.7	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	9.2	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	1.0	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	1.3	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	1.6	----	----
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	67.0	----	72.0	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	88.0	----	88.0	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH61(0-0.05)	BH61(0.4-0.5)	BH62(0-0.05)	BH62(0.4-0.5)	DUP5
				13-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503682-041	ES1503682-042	ES1503682-043	ES1503682-044	ES1503682-045
<b>EP075(SIM)S: Phenolic Compound Surrogates - Continued</b>								
2-Chlorophenol-D4	93951-73-6	0.1	%	97.8	----	95.8	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	75.3	----	102	----	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	104	----	112	----	----
Anthracene-d10	1719-06-8	0.1	%	96.5	----	96.9	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	96.8	----	89.8	----	----



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP066S: PCB Surrogate</b>			
Decachlorobiphenyl	2051-24-3	39	149
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129

## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>ES1503682</b>	Page	: 1 of 7
<b>Client</b>	: <b>WSP ENVIRONMENTAL PTY LTD</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: MR COLIN MCKAY	<b>Contact</b>	: Client Services
<b>Address</b>	: ENVIRONMENT & ENERGY LEVEL 1, 41 McLAREN STREET NORTH SYDNEY NSW, AUSTRALIA 2060	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: colin.mckay@wspgroup.com.au	<b>E-mail</b>	: sydney@alsglobal.com
<b>Telephone</b>	: +61 02 8925 6700	<b>Telephone</b>	: +61-2-8784 8555
<b>Facsimile</b>	: +61 02 8925 6799	<b>Facsimile</b>	: +61-2-8784 8500
<b>Project</b>	: ORICA MERCURY INDEPENDANT REVIEW 45970	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	: ----	<b>Date Samples Received</b>	: 16-FEB-2015
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 23-FEB-2015
<b>Sampler</b>	: AY,PC	<b>No. of samples received</b>	: 45
<b>Order number</b>	: 45970	<b>No. of samples analysed</b>	: 45
<b>Quote number</b>	: SY/1085/14		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



### **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3826849)</b>									
ES1503682-001	BH41(0-0.05)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	9.2	9.6	3.7	No Limit
ES1503682-012	BH46(0.4-0.5)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	11.7	11.9	1.7	0% - 50%
<b>EA055: Moisture Content (QC Lot: 3826850)</b>									
ES1503682-021	BH51(0-0.05)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	4.4	5.2	15.8	No Limit
ES1503682-032	BH56(0.3-0.4)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	15.4	17.2	11.2	0% - 50%
<b>EA055: Moisture Content (QC Lot: 3826851)</b>									
ES1503682-041	BH61(0-0.05)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	11.3	10.7	5.6	0% - 50%
ES1503781-007	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	16.5	15.7	4.6	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3830142)</b>									
ES1503682-037	BH59(0-0.05)	EG005T: Chromium	7440-47-3	2	mg/kg	10	12	16.9	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	64	78	19.3	0% - 50%
ES1503686-002	Anonymous	EG005T: Chromium	7440-47-3	2	mg/kg	90	92	1.6	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	16	16	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3829536)</b>									
ES1503682-001	BH41(0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1503682-011	BH46(0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.4	41.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3829537)</b>									
ES1503682-021	BH51(0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1503682-031	BH56(0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.8	0.6	18.7	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3830143)</b>									
ES1503682-037	BH59(0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3828367)</b>									
ES1503068-025	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3828369)</b>									
ES1503068-025	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

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Sub-Matrix: <b>SOIL</b>				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3828369) - continued</b>									
ES1503068-025	Anonymous	EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



## Method Blank (MB) and Laboratory Control Spike (LCS) Report

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

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3830142)</b>									
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	89.6	80	136	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	86.3	86	124	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3829536)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	81.8	70	105	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3829537)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	78.4	70	105	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3830143)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	78.5	70	105	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3828367)</b>									
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	102	57.4	117	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3828369)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	93.0	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	87.4	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	86.6	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	88.4	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	88.2	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	92.0	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	80.2	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	79.6	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	84.0	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	88.6	81	123	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	80.4	70	118	
	205-82-3								
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	89.0	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	86.4	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	77.8	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	84.6	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	90.2	72.4	114	

## Matrix Spike (MS) Report

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



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Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3830143) - continued</b>										
ES1503682-037	BH59(0-0.05)	EG035T: Mercury	7439-97-6	5 mg/kg	86.4	----	70	130	----	----

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1503682</b>	Page	: 1 of 6
Client	: WSP ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR COLIN MCKAY	Contact	: Client Services
Address	: ENVIRONMENT & ENERGY LEVEL 1, 41 McLAREN STREET NORTH SYDNEY NSW, AUSTRALIA 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: colin.mckay@wspgroup.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 8925 6700	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8925 6799	Facsimile	: +61-2-8784 8500
Project	: ORICA MERCURY INDEPENDANT REVIEW 45970	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 16-FEB-2015
C-O-C number	: ----	Issue Date	: 23-FEB-2015
Sampler	: AY,PC	No. of samples received	: 45
Order number	: 45970	No. of samples analysed	: 45
Quote number	: SY/1085/14		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



## Analysis Holding Time Compliance

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

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

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

Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA055: Moisture Content</b>								
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>								
BH41(0-0.05), BH42(0-0.05), BH43(0-0.05), BH44(0-0.05), BH45(0-0.05), BH46(0-0.05), BH47(0-0.05), BH48(0-0.05), BH49(0-0.05), BH50(0-0.05), BH51(0-0.05), BH52(0-0.05), BH53(0-0.05), BH54(0-0.05), BH55(0-0.05), BH56(0-0.05), BH57(0-0.05), BH58(0-0.05), BH59(0-0.05), BH60(0-0.05), BH61(0-0.05), BH62(0-0.05),	BH41(0.4-0.5), BH42(0.4-0.5), BH43(0.4-0.5), BH44(0.4-0.5), BH45(0.4-0.5), BH46(0.4-0.5), BH47(0.4-0.5), BH48(0.1-0.2), DUP5, BH49(0.4-0.5), BH50(0.4-0.5), BH51(0.4-0.5), BH52(0.4-0.5), BH53(0.4-0.5), BH54(0.4-0.5), BH55(0.4-0.5), BH56(0.3-0.4), BH57(0.4-0.5), BH58(0.4-0.5), BH59(0.4-0.5), BH60(0.1-0.2), BH61(0.4-0.5), BH62(0.4-0.5)	13-FEB-2015	----	----	----	17-FEB-2015	27-FEB-2015	✓
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>								
BH59(0-0.05), BH61(0-0.05),	BH60(0-0.05), BH62(0-0.05)	13-FEB-2015	----	----	----	18-FEB-2015	27-FEB-2015	✓
<b>EG005T: Total Metals by ICP-AES</b>								
<b>Soil Glass Jar - Unpreserved (EG005T)</b>								
BH59(0-0.05), BH61(0-0.05),	BH60(0-0.05), BH62(0-0.05)	13-FEB-2015	19-FEB-2015	12-AUG-2015	✓	21-FEB-2015	12-AUG-2015	✓



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
<b>Soil Glass Jar - Unpreserved (EG035T)</b>								
BH41(0-0.05), BH42(0-0.05), BH43(0-0.05), BH44(0-0.05), BH45(0-0.05), BH46(0-0.05), BH47(0-0.05), BH48(0-0.05), BH49(0-0.05), BH50(0-0.05), BH51(0-0.05), BH52(0-0.05), BH53(0-0.05), BH54(0-0.05), BH55(0-0.05), BH56(0-0.05), BH57(0-0.05), BH58(0-0.05), BH59(0-0.05), BH60(0-0.05), BH61(0-0.05), BH62(0-0.05),	BH41(0.4-0.5), BH42(0.4-0.5), BH43(0.4-0.5), BH44(0.4-0.5), BH45(0.4-0.5), BH46(0.4-0.5), BH47(0.4-0.5), BH48(0.1-0.2), DUP5, BH49(0.4-0.5), BH50(0.4-0.5), BH51(0.4-0.5), BH52(0.4-0.5), BH53(0.4-0.5), BH54(0.4-0.5), BH55(0.4-0.5), BH56(0.3-0.4), BH57(0.4-0.5), BH58(0.4-0.5), BH59(0.4-0.5), BH60(0.1 -0.2), BH61(0.4-0.5), BH62(0.4-0.5)	13-FEB-2015	19-FEB-2015	13-MAR-2015	✓	23-FEB-2015	13-MAR-2015	✓
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
<b>Soil Glass Jar - Unpreserved (EP066)</b>								
BH59(0-0.05), BH61(0-0.05),	BH60(0-0.05), BH62(0-0.05)	13-FEB-2015	18-FEB-2015	27-FEB-2015	✓	19-FEB-2015	30-MAR-2015	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b>								
BH59(0-0.05), BH61(0-0.05),	BH60(0-0.05), BH62(0-0.05)	13-FEB-2015	18-FEB-2015	27-FEB-2015	✓	18-FEB-2015	30-MAR-2015	✓



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	6	60	10.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	20.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	5	47	10.6	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	20	10.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	20.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	47	6.4	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	20.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	47	6.4	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	5	20.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	47	6.4	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	In-house. A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 21st ed., 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Tumbler Extraction of Solids	ORG17	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.



## **Summary of Outliers**

### **Outliers : Quality Control Samples**

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

#### **Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes**

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

#### **Regular Sample Surrogates**

- For all regular sample matrices, no surrogate recovery outliers occur.

### **Outliers : Analysis Holding Time Compliance**

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

### **Outliers : Frequency of Quality Control Samples**

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.
-



# CHAIN OF CUSTODY

ALS Laboratory: please tick →

DADELAIDE 21 Europa Road Roselea SA 5096  
Ph: 08 8359 8900 E: a.creda@alsglobal.com

BRISBANE 12 Strand Street St. Lucia QLD 4053  
Ph: 07 3249 7222 E: samples.brisbane@alsglobal.com

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Ph: 07 7471 2600 E: gladstone@alsglobal.com

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Ph: 02 4964 0177 E: machay@alsglobal.com

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Ph: 03 8548 0600 E: samples.melbourne@alsglobal.com

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NEWCASTLE 12955 Macdonald Road Mayfield NSW 2304  
Ph: 02 4014 2300 E: samples.newcastle@alsglobal.com

WARRAWONG 41-3 Gungah Place North Narran NSW 2591  
Ph: 02 4024 2600 E: north@alsglobal.com

PERTH 10 Peel Way Mirrabooka WA 6100  
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SYDNEY 27-28B Woodgrove Road Presland NSW 2167  
Ph: 02 8764 8350 E: samples.syd@alsglobal.com

TOWNSHILL 14-15 Desma-Court Drive QLD 4810  
Ph: 07 4786 0500 E: towncourt@environmental.alsglobal.com

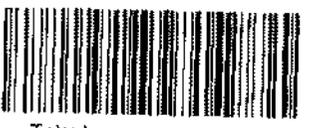
WOLLONGONG 99 Kenny Street Wollongong NSW 2500  
Ph: 02 4225 3120 E: wollongong@alsglobal.com

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date):				FOR LABORATORY USE ONLY (Circle)			
SITE: Botany		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)				Custody Seal Intact? Yes No N/A			
PROJECT: Orca Mercury Independent Review		PROJECT NO.: 45970		ALS QUOTE NO.: SY/1005/14		Free Ice / Frozen Ice Bricks present upon receipt? Yes No N/A			
ORDER NUMBER:		PURCHASE ORDER NO.:		COUNTRY OF ORIGIN:		Random Sample Temperature on Receipt: °C			
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 977 926				Other comment:			
SAMPLER: AY/PC		SAMPLER MOBILE:		RELINQUISHED BY:		RECEIVED BY:		RECEIVED BY:	
COC Emailed to ALS? (NO)		EDD FORMAT (or default):		DATE/TIME:		DATE/TIME:		DATE/TIME:	
Email Reports to: colin.mckay@wspgroup.com; phil@ipa.chilids@wspgroup.com						Frank MS 18/02/15 1500			
Email Invoice to (will default to PM if no other addresses are listed):									

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUTES (NB, Suite Codes must be listed to attract suite price)					Additional Information	
	MATRIX: Solid(S) Water(W)					Where Metals are required, specify Total (unfiltered) or Dissolved (filtered) (both filtered bottles required).						
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable	Chromium - Total	Lead - Total	PAH	PCB		
1	BH63 (0-0.05)	17/02/2015	Soil			x						
2	BH63 (0.4-0.5)	17/02/2015	Soil			x						
3	BH64 (0-0.05)	17/02/2015	Soil			x						
4	BH64 (0.4-0.5)	17/02/2015	Soil			x						
5	BH65 (0-0.05)	17/02/2015	Soil			x						
6	BH65 (0.4-0.5)	17/02/2015	Soil			x						
7	BH66 (0-0.05)	17/02/2015	Soil			x						
8	BH66 (0.4-0.5)	17/02/2015	Soil			x						
9	BH67 (0-0.05)	17/02/2015	Soil			x						
10	BH67 (0.4-0.5)	17/02/2015	Soil			x						
11	BH68 (0-0.05)	17/02/2015	Soil			x						
12	BH68 (0.4-0.5)	17/02/2015	Soil			x						
TOTAL						12						

Environmental Division  
Sydney  
Work Order  
**ES1503946**



Telephone : +61-2-8784 8555

**Water Container Codes:** P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airflight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airflight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Special bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugol's Iodine Preserved Bottles; STT = Sterile Sodium Titro sulfate Preserved Bottles.



# CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road, PO Box 1000 SA 5000  
Ph: 08 8259 0890 E: ade@als.com.au

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Ph: 07 3243 7222 E: samples.burbank@als.com.au

GLADSTONE 45 Callinan Road, Gladstone QLD 4850  
Ph: 07 7471 5000 E: glad@als.com.au

MACKAY 781 Harbour Road, Mackay QLD 4730  
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Ph: 03 8540 9600 E: samples.melbourne@als.com.au

MURDOCH 27 Sydney Road, Murdoch NSW 2050  
Ph: 02 4672 0735 E: murdoch@als.com.au

NEWCASTLE 5585 Maitland Road, Newcastle NSW 2304  
Ph: 02 4314 2500 E: samples.newcastle@als.com.au

NOYRA 4713 Gentry Place, North Newcastle NSW 2311  
Ph: 02 4423 2053 E: noyra@als.com.au

PERTH 10 Kings Way, Perth WA 6000  
Ph: 08 9260 7055 E: samples.perth@als.com.au

SYDNEY 277-268 Woodfern Road, Smithfield NSW 2164  
Ph: 02 8764 8552 E: samples.sydney@als.com.au

TOWNSVILLE 14-15 Deane Court, Bunde QLD 4814  
Ph: 07 4776 0200 E: towncove@als.com.au

WOLLONGONG 90 Kenny Street, Wollongong NSW 2507  
Ph: 02 4225 3125 E: wollongong@als.com.au

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS : <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle):	
SITE: Botany		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		Custody Seal Intact? Yes No N/A	
PROJECT: Orica Mercury Independent Review		PROJECT NO.: 45970		Free ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER:		PURCHASE ORDER NO.:		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 877 826		Other comment:	
SAMPLER: AY/PC		SAMPLER MOBILE:		RECEIVED BY: Frank AS	
COC Emailed to ALS? (NO)		EDD FORMAT (or default):		DATE/TIME: 18/2/15 15:00	
Email Reports to: colin.mckay@wspgroup.com; philipa.chilids@wspgroup.com		RELINQUISHED BY:		RECEIVED BY:	
Email Invoice to (w/ default to PM if no other addresses are listed):		DATE/TIME:		DATE/TIME:	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price)					Additional Information	
	MATRIX: Solid(S) Water(W)					Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required).						
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable	Chromium - Total	Lead - Total	PAH	PCB		
13	BH69 (0-0.05)	17/02/2015	Soil			X						
14	BH69 (0.4-0.5)	17/02/2015	Soil			X						
15	BH70 (0-0.05)	17/02/2015	Soil			X						
16	BH70 (0.3-0.4)	17/02/2015	Soil			X						
17	BH71 (0-0.05)	17/02/2015	Soil			X						
18	BH71 (0.4-0.5)	17/02/2015	Soil			X						
19	BH72 (0-0.05)	17/02/2015	Soil			X						
20	BH72 (0.4-0.5)	17/02/2015	Soil			X						
21	BH73 (0-0.05)	17/02/2015	Soil			X						
22	BH73 (0.4-0.5)	17/02/2015	Soil			X						
23	BH74 (0-0.05)	17/02/2015	Soil			X						
24	BH74 (0.4-0.5)	17/02/2015	Soil			X						
TOTAL						12						

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Specimen bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Botles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Solts; B = Unpreserved Bag; LI = Lugol's Iodine Preserved Botles; STT = Sterile Sodium Thiosulfate Preserved Botles.



# CHAIN OF CUSTODY

ALS Laboratory: please tick →

GLADSTONE 41 Roma Road Gladstone SA 5055  
Ph: 08 8558 0990 E: [adeflate@alsglad.com](mailto:adeflate@alsglad.com)

BRISBANE 22 Shaw Street Stafford QLD 4063  
Ph: 07 2219 7200 E: [sample@alsbrs.com](mailto:sample@alsbrs.com)

GLADSTONE 46 Cirkemardal Drive Clinton QLD 4680  
Ph: 07 7471 9830 E: [gladstone@alsglad.com](mailto:gladstone@alsglad.com)

MILKAY 19 Harbour Road Mackay QLD 4740  
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BOURNE 44 Westall Road Springvale VIC 3171  
Ph: 03 8540 9600 E: [sample.melbourne@alsmq.com](mailto:sample.melbourne@alsmq.com)

WODJEE 27 Sydney Road Wodjess NSW 2550  
Ph: 02 8372 8730 E: [wodjess.mel@alsmq.com](mailto:wodjess.mel@alsmq.com)

WAGGA 5555 Mainland Road Wagga Wagga NSW 2650  
Ph: 02 4014 2500 E: [sample.wagga@alsmq.com](mailto:sample.wagga@alsmq.com)

WARR 4/13 Geary Place North Warr NSW 2541  
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PERTH 10 Has Way Albany WA 6170  
Ph: 08 9220 7802 E: [sample.perth@alsmq.com](mailto:sample.perth@alsmq.com)

SYDNEY 2177 Macleay Street Smithfield NSW 2164  
Ph: 02 8764 8255 E: [sample.sydney@alsmq.com](mailto:sample.sydney@alsmq.com)

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Ph: 07 3700 0000 E: [berala@alsmq.com](mailto:berala@alsmq.com)

WOLLONGONG 66 Kenny Street Wollongong NSW 2500  
Ph: 02 4225 3125 E: [wollongong@alsmq.com](mailto:wollongong@alsmq.com)

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS : <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
SITE: Botany		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		Custody Seal Intact? Yes No N/A	
PROJECT: Orica Mercury Independent Review		PROJECT NO.: 45970		Fres ice / frozen ice blocks present upon receipt? Yes No N/A	
ORDER NUMBER:		PURCHASE ORDER NO.:		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 977 926		Other comment:	
SAMPLER: AY/PC		SAMPLER MOBILE:		RECEIVED BY: Frank MS	
COC Emailed to ALS? (NO)		EDD FORMAT (or default):		DATE/TIME: 18/11/15 1500	
Email Reports to: <a href="mailto:colin.mckay@wspgroup.com">colin.mckay@wspgroup.com</a> ; <a href="mailto:phillipa.chilids@wspgroup.com">phillipa.chilids@wspgroup.com</a>		RELINQUISHED BY:		RECEIVED BY:	
Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME:		DATE/TIME:	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be ticked to attract suite price) Where Matrix are required, specify Total (unfrozen bottle required) or Dissolved (frozen bottle required):					Additional Information	
	LAB ID	SAMPLE ID	DATE / TIME		MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable	Chromium - Total		Lead - Total
25	BH75 (0-0.05)	17/02/2015	Solt			x					
26	BH75 (0.4-0.5)	17/02/2015	Solt			x					
27	BH76 (0-0.05)	17/02/2015	Solt			x					
28	BH76 (0.4-0.5)	17/02/2015	Solt			x					
29	Sed01	16/02/2015	Sediment			x					
30	Sed02	16/02/2015	Sediment			x					
31	Sed03	16/02/2015	Sediment			x					
32	Sed04	16/02/2015	Sediment			x					
33	Sed05	16/02/2015	Sediment			x					
34	Sed06	16/02/2015	Sediment			x					
35	Sed07	16/02/2015	Sediment			x					
36	Sed08	16/02/2015	Sediment			x					
TOTAL						12					

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulphuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulphuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass;  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LJ = Lugdunum Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.



# CHAIN OF CUSTODY

ALS Laboratory, please tick →

DADEB ADE 21 Buena Road Rowville SA 5007  
Ph: 08 8359 0800 E: ade@alsglobal.com

UNBRIKANE 32 Chand Street Stafford QLD 4059  
Ph: 07 3743 7222 E: unbr@alsglobal.com

GLADSTONE 48 Callamontfish Drive Carter Ct 11 KGR  
Ph: 07 7471 5603 E: glad@alsglobal.com

MACRAY 78 Hawes Road Mackay QLD 4740  
Ph: 07 4044 0177 E: macray@alsglobal.com

QUEENSLAND 2-4 Westall Park Springfield QLD 4111  
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Ph: 07 4011 2500 E: newcastle@alsglobal.com

NOOWARA 4113 Quarry Place North Nowra NSW 2541  
Ph: 02 4423 2093 E: noowara@alsglobal.com

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TOWNSVILLE 14 14 Queens Court Beith QLD 4618  
Ph: 07 4786 3020 E: townsville@alsglobal.com

WOLLONGONG 98 Kerby Street Wollongong NSW 2500  
Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY: (Circle)	
SITE: Botany		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		Custody Seal intact? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
PROJECT: Orca Mercury Independent Review		PROJECT NO.: 45970		Free/ice / frozen ice bricks present upon receipt? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
ORDER NUMBER:		PURCHASE ORDER NO.:		Random Sample Temperature on Receipt: C	
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 977 926		Other comment:	
SAMPLER: AYPC		SAMPLER MOBILE:		RECEIVED BY: Frank MS	
COC Emailed to ALS? (NO)		ADD FORMAT (or default):		DATE/TIME: 18/11/15 1500	
Email Reports to: colin.mckay@wspgroup.com; phil@pa.chkids@wspgroup.com		RELINQUISHED BY:		RECEIVED BY:	
Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME:		DATE/TIME:	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price)					Additional information
	MATRIX: Solid(S) Water(W)				Where Metals are required, specify Total (unbarred bottle required) or Dissolved (field filtered bottle required):					
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable	Chromium - Total	Lead - Total	PAH	PCB
37	Sed09	16/02/2015	Sediment			x				
38	Sed10	16/02/2015	Sediment			x				
39	Sed11	16/02/2015	Sediment			x				
40	Sed12	16/02/2015	Sediment			x				
41	Sed13	16/02/2015	Sediment			x				
42	Sed14	16/02/2015	Sediment			x				
43	Sed15	16/02/2015	Sediment			x				
44	Sed16	16/02/2015	Sediment			x				
45	Sed17	16/02/2015	Sediment			x				
46	Sed18	16/02/2015	Sediment			x				
47	Sed19	16/02/2015	Sediment			x				
48	Sed20	16/02/2015	Sediment			x				
TOTAL						12				

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soln; B = Unpreserved Bag; LI = Urea/Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.



## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

Work Order : **ES1503946**

Client : **WSP ENVIRONMENTAL PTY LTD**  
Contact : **MR COLIN MCKAY**  
Address : **ENVIRONMENT & ENERGY  
LEVEL 1, 41 McLAREN STREET  
NORTH SYDNEY NSW, AUSTRALIA  
2060**

Laboratory : Environmental Division Sydney  
Contact : Client Services  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : colin.mckay@wspgroup.com.au  
Telephone : +61 02 8925 6700  
Facsimile : +61 02 8925 6799

E-mail : sydney@alsglobal.com  
Telephone : +61-2-8784 8555  
Facsimile : +61-2-8784 8500

Project : 45970 ORICA MERCURY  
INDEPENDANT REVIEW

Page : 1 of 3

Order number : ----

C-O-C number : ----

Site : ----

Sampler : AY/PC

Quote number : ES2015WSPENV0359 (SY/1085/14)

QC Level : NEPM 2013 Schedule B(3) and ALS  
QCS3 requirement

### Dates

Date Samples Received : 18-FEB-2015  
Client Requested Due Date : 25-FEB-2015

Issue Date : 18-FEB-2015 18:49  
Scheduled Reporting Date : **25-FEB-2015**

### Delivery Details

Mode of Delivery : Carrier  
No. of coolers/boxes : 3 ESKIES  
Security Seal : Not intact.

Temperature : 18.4'C - Ice present  
No. of samples received : 51  
No. of samples analysed : 50

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Received extra sample DUP7 placed on hold, Please confirm.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL	No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EG035T (solids) Total Mercury by FIMS
ES1503946-001	17-FEB-2015 15:00	BH63(0-0.05)			✓	✓
ES1503946-002	17-FEB-2015 15:00	BH63(0.4-0.5)			✓	✓
ES1503946-003	17-FEB-2015 15:00	BH64(0-0.05)			✓	✓
ES1503946-004	17-FEB-2015 15:00	BH64(0.4-0.5)			✓	✓
ES1503946-005	17-FEB-2015 15:00	BH65(0-0.05)			✓	✓
ES1503946-006	17-FEB-2015 15:00	BH65(0.4-0.5)			✓	✓
ES1503946-007	17-FEB-2015 15:00	BH66(0-0.05)			✓	✓
ES1503946-008	17-FEB-2015 15:00	BH66(0.4-0.5)			✓	✓
ES1503946-009	17-FEB-2015 15:00	BH67(0-0.05)			✓	✓
ES1503946-010	17-FEB-2015 15:00	BH67(0.4-0.5)			✓	✓
ES1503946-011	17-FEB-2015 15:00	BH68(0-0.05)			✓	✓
ES1503946-012	17-FEB-2015 15:00	BH68(0.4-0.5)			✓	✓
ES1503946-013	17-FEB-2015 15:00	BH69(0-0.05)			✓	✓
ES1503946-014	17-FEB-2015 15:00	BH69(0.4-0.5)			✓	✓
ES1503946-015	17-FEB-2015 15:00	BH70(0-0.05)			✓	✓
ES1503946-016	17-FEB-2015 15:00	BH70(0.3-0.4)			✓	✓
ES1503946-017	17-FEB-2015 15:00	BH71(0-0.05)			✓	✓
ES1503946-018	17-FEB-2015 15:00	BH71(0.4-0.5)			✓	✓
ES1503946-019	17-FEB-2015 15:00	BH72(0-0.05)			✓	✓
ES1503946-020	17-FEB-2015 15:00	BH72(0.4-0.5)			✓	✓
ES1503946-021	17-FEB-2015 15:00	BH73(0-0.05)			✓	✓
ES1503946-022	17-FEB-2015 15:00	BH73(0.4-0.5)			✓	✓
ES1503946-023	17-FEB-2015 15:00	BH74(0-0.05)			✓	✓
ES1503946-024	17-FEB-2015 15:00	BH74(0.4-0.5)			✓	✓
ES1503946-025	17-FEB-2015 15:00	BH75(0-0.05)			✓	✓
ES1503946-026	17-FEB-2015 15:00	BH75(0.4-0.5)			✓	✓
ES1503946-027	17-FEB-2015 15:00	BH76(0-0.05)			✓	✓
ES1503946-028	17-FEB-2015 15:00	BH76(0.4-0.5)			✓	✓
ES1503946-029	16-FEB-2015 15:00	SED01			✓	✓
ES1503946-030	16-FEB-2015 15:00	SED02			✓	✓
ES1503946-031	16-FEB-2015 15:00	SED03			✓	✓
ES1503946-032	16-FEB-2015 15:00	SED04			✓	✓
ES1503946-033	16-FEB-2015 15:00	SED05			✓	✓
ES1503946-034	16-FEB-2015 15:00	SED06			✓	✓
ES1503946-035	16-FEB-2015 15:00	SED07			✓	✓



## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES1503946</b> <b>Client</b> : <b>WSP ENVIRONMENTAL PTY LTD</b> <b>Contact</b> : MR COLIN MCKAY <b>Address</b> : ENVIRONMENT & ENERGY LEVEL 1, 41 McLAREN STREET NORTH SYDNEY NSW, AUSTRALIA 2060  <b>E-mail</b> : colin.mckay@wspgroup.com.au <b>Telephone</b> : +61 02 8925 6700 <b>Facsimile</b> : +61 02 8925 6799 <b>Project</b> : 45970 ORICA MERCURY INDEPENDANT REVIEW <b>Order number</b> : ---- <b>C-O-C number</b> : ---- <b>Sampler</b> : AY/PC <b>Site</b> : ----  <b>Quote number</b> : SY/1085/14	<b>Page</b> : 1 of 12  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : Client Services <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : sydney@alsglobal.com <b>Telephone</b> : +61-2-8784 8555 <b>Facsimile</b> : +61-2-8784 8500 <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement  <b>Date Samples Received</b> : 18-FEB-2015 <b>Issue Date</b> : 25-FEB-2015  <b>No. of samples received</b> : 51 <b>No. of samples analysed</b> : 50
--	---

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### *Signatories*

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Shobhna Chandra	Metals Coordinator	Sydney Inorganics



## **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH63(0-0.05)	BH63(0.4-0.5)	BH64(0-0.05)	BH64(0.4-0.5)	BH65(0-0.05)
				17-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503946-001	ES1503946-002	ES1503946-003	ES1503946-004	ES1503946-005
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	4.5	2.4	5.0	3.0	6.8
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH65(0.4-0.5)	BH66(0-0.05)	BH66(0.4-0.5)	BH67(0-0.05)	BH67(0.4-0.5)
				17-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503946-006	ES1503946-007	ES1503946-008	ES1503946-009	ES1503946-010
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	3.8	8.5	3.9	3.4	<1.0
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH68(0-0.05)	BH68(0.4-0.5)	BH69(0-0.05)	BH69(0.4-0.5)	BH70(0-0.05)
				17-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503946-011	ES1503946-012	ES1503946-013	ES1503946-014	ES1503946-015
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	5.1	2.5	2.8	1.8	2.4
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.3	<0.1	0.2	0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH70(0.3-0.4)	BH71(0-0.05)	BH71(0.4-0.5)	BH72(0-0.05)	BH72(0.4-0.5)
				17-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503946-016	ES1503946-017	ES1503946-018	ES1503946-019	ES1503946-020
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	8.3	5.5	1.2	25.1	17.0
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.1	1.7	<0.1	0.2	2.7



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH73(0-0.05)	BH73(0.4-0.5)	BH74(0-0.05)	BH74(0.4-0.5)	BH75(0-0.05)
				17-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503946-021	ES1503946-022	ES1503946-023	ES1503946-024	ES1503946-025
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	6.5	3.1	1.9	<1.0	1.4
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH75(0.4-0.5)	BH76(0-0.05)	BH76(0.4-0.5)	SED01	SED02
				17-FEB-2015 15:00	17-FEB-2015 15:00	17-FEB-2015 15:00	16-FEB-2015 15:00	16-FEB-2015 15:00
Compound	CAS Number	LOR	Unit	ES1503946-026	ES1503946-027	ES1503946-028	ES1503946-029	ES1503946-030
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	<1.0	1.4	3.7	25.8	37.2
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				SED03	SED04	SED05	SED06	SED07
				16-FEB-2015 15:00				
				ES1503946-031	ES1503946-032	ES1503946-033	ES1503946-034	ES1503946-035
Compound	CAS Number	LOR	Unit					
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	54.0	58.0	46.1	57.0	64.9
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.2	0.1	0.1	0.3	0.3



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				SED08	SED09	SED10	SED11	SED12
				16-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1503946-036	ES1503946-037	ES1503946-038	ES1503946-039	ES1503946-040
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	24.0	22.2	61.9	57.2	20.7
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.3	0.3	0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				SED13	SED14	SED15	SED16	SED17
				16-FEB-2015 15:00				
				ES1503946-041	ES1503946-042	ES1503946-043	ES1503946-044	ES1503946-045
Compound	CAS Number	LOR	Unit					
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	61.3	22.4	18.8	22.8	21.1
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.9	0.2	<0.1	0.1	0.4



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				SED18	SED19	SED20	DUP6	SEDDUP1
				16-FEB-2015 15:00	16-FEB-2015 15:00	16-FEB-2015 15:00	17-FEB-2015 15:00	16-FEB-2015 15:00
				ES1503946-046	ES1503946-047	ES1503946-048	ES1503946-049	ES1503946-050
Compound	CAS Number	LOR	Unit					
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	23.0	21.2	20.9	5.3	62.0
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.5	<0.1	<0.1	0.1	0.3

## QUALITY CONTROL REPORT

<b>Work Order</b>	: <b>ES1503946</b>	Page	: 1 of 5
<b>Client</b>	: <b>WSP ENVIRONMENTAL PTY LTD</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: MR COLIN MCKAY	<b>Contact</b>	: Client Services
<b>Address</b>	: ENVIRONMENT & ENERGY LEVEL 1, 41 McLAREN STREET NORTH SYDNEY NSW, AUSTRALIA 2060	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	: colin.mckay@wspgroup.com.au	<b>E-mail</b>	: sydney@alsglobal.com
<b>Telephone</b>	: +61 02 8925 6700	<b>Telephone</b>	: +61-2-8784 8555
<b>Facsimile</b>	: +61 02 8925 6799	<b>Facsimile</b>	: +61-2-8784 8500
<b>Project</b>	: 45970 ORICA MERCURY INDEPENDANT REVIEW	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	: ----	<b>Date Samples Received</b>	: 18-FEB-2015
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 25-FEB-2015
<b>Sampler</b>	: AY/PC	<b>No. of samples received</b>	: 51
<b>Order number</b>	: ----	<b>No. of samples analysed</b>	: 50
<b>Quote number</b>	: SY/1085/14		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



NATA Accredited  
Laboratory 825  
  
Accredited for  
compliance with  
ISO/IEC 17025.

### Signatories

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

<u>Signatories</u>	<u>Position</u>	<u>Accreditation Category</u>
Shobhna Chandra	Metals Coordinator	Sydney Inorganics



### **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

Key :  
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
RPD = Relative Percentage Difference  
# = Indicates failed QC



### Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3829939)</b>									
ES1503772-033	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	29.5	29.1	1.3	0% - 20%
ES1503797-019	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	7.4	7.6	2.2	No Limit
<b>EA055: Moisture Content (QC Lot: 3829940)</b>									
ES1503946-009	BH67(0-0.05)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	3.4	3.3	4.1	No Limit
ES1503946-020	BH72(0.4-0.5)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	17.0	17.7	4.2	0% - 50%
<b>EA055: Moisture Content (QC Lot: 3829941)</b>									
ES1503946-029	SED01	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	25.8	27.1	4.6	0% - 20%
ES1503946-040	SED12	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	20.7	22.5	8.0	0% - 20%
<b>EA055: Moisture Content (QC Lot: 3829942)</b>									
ES1503946-049	DUP6	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	5.3	4.7	11.5	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3832465)</b>									
ES1503946-001	BH63(0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1503946-011	BH68(0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.3	0.3	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3832466)</b>									
ES1503946-021	BH73(0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1503946-031	SED03	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3834329)</b>									
ES1503946-039	SED11	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.3	0.2	0.0	No Limit
ES1503946-049	DUP6	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	0.1	0.0	No Limit



### Method Blank (MB) and Laboratory Control Spike (LCS) Report

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

Sub-Matrix: SOIL

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
				Result	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit			LCS	Low	High
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3832465)</b>								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	82.7	70	105
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3832466)</b>								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	80.4	70	105
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3834329)</b>								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	78.6	70	105

### Matrix Spike (MS) Report

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

Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	Low	High
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3832465)</b>							
ES1503946-001	BH63(0-0.05)	EG035T: Mercury	7439-97-6	5 mg/kg	96.7	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3832466)</b>							
ES1503946-021	BH73(0-0.05)	EG035T: Mercury	7439-97-6	5 mg/kg	98.0	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3834329)</b>							
ES1503946-039	SED11	EG035T: Mercury	7439-97-6	5 mg/kg	88.0	70	130

### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: SOIL

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	MSD	Low	High	Value	Control Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3832465)</b>										
ES1503946-001	BH63(0-0.05)	EG035T: Mercury	7439-97-6	5 mg/kg	96.7	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3832466)</b>										
ES1503946-021	BH73(0-0.05)	EG035T: Mercury	7439-97-6	5 mg/kg	98.0	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3834329)</b>										



Sub-Matrix: SOIL

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3834329) - continued</b>										
ES1503946-039	SED11	EG035T: Mercury	7439-97-6	5 mg/kg	88.0	----	70	130	----	----

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1503946</b>	Page	: 1 of 6
Client	: WSP ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR COLIN MCKAY	Contact	: Client Services
Address	: ENVIRONMENT & ENERGY LEVEL 1, 41 McLAREN STREET NORTH SYDNEY NSW, AUSTRALIA 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: colin.mckay@wspgroup.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 8925 6700	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8925 6799	Facsimile	: +61-2-8784 8500
Project	: 45970 ORICA MERCURY INDEPENDANT REVIEW	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 18-FEB-2015
C-O-C number	: ----	Issue Date	: 25-FEB-2015
Sampler	: AY/PC	No. of samples received	: 51
Order number	: ----	No. of samples analysed	: 50
Quote number	: SY/1085/14		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



## Analysis Holding Time Compliance

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

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

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

Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA055: Moisture Content</b>								
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>								
SED01, SED03, SED05, SED07, SED09, SED11, SED13, SED15, SED17, SED19, SEDDUP1	SED02, SED04, SED06, SED08, SED10, SED12, SED14, SED16, SED18, SED20,	16-FEB-2015	----	----	----	19-FEB-2015	02-MAR-2015	✓
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>								
BH63(0-0.05), BH64(0-0.05), BH65(0-0.05), BH66(0-0.05), BH67(0-0.05), BH68(0-0.05), BH69(0-0.05), BH70(0-0.05), BH71(0-0.05), BH72(0-0.05), BH73(0-0.05), BH74(0-0.05), BH75(0-0.05), BH76(0-0.05),	BH63(0.4-0.5), BH64(0.4-0.5), BH65(0.4-0.5), BH66(0.4-0.5), BH67(0.4-0.5), BH68(0.4-0.5), BH69(0.4-0.5), BH70(0.3-0.4), DUP6, BH71(0.4-0.5), BH72(0.4-0.5), BH73(0.4-0.5), BH74(0.4-0.5), BH75(0.4-0.5), BH76(0.4-0.5)	17-FEB-2015	----	----	----	19-FEB-2015	03-MAR-2015	✓



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
<b>Soil Glass Jar - Unpreserved (EG035T)</b> SED01, SED03, SED05, SED07, SED09, SED02, SED04, SED06, SED08, SED10	16-FEB-2015	21-FEB-2015	16-MAR-2015	✓	24-FEB-2015	16-MAR-2015	✓	
<b>Soil Glass Jar - Unpreserved (EG035T)</b> SED11, SED13, SED15, SED17, SED19, SEDDUP1, SED12, SED14, SED16, SED18, SED20,	16-FEB-2015	24-FEB-2015	16-MAR-2015	✓	24-FEB-2015	16-MAR-2015	✓	
<b>Soil Glass Jar - Unpreserved (EG035T)</b> BH63(0-0.05), BH64(0-0.05), BH65(0-0.05), BH66(0-0.05), BH67(0-0.05), BH68(0-0.05), BH69(0-0.05), BH70(0-0.05), BH71(0-0.05), BH72(0-0.05), BH73(0-0.05), BH74(0-0.05), BH75(0-0.05), BH76(0-0.05), BH63(0.4-0.5), BH64(0.4-0.5), BH65(0.4-0.5), BH66(0.4-0.5), BH67(0.4-0.5), BH68(0.4-0.5), BH69(0.4-0.5), BH70(0.3-0.4), BH71(0.4-0.5), BH72(0.4-0.5), BH73(0.4-0.5), BH74(0.4-0.5), BH75(0.4-0.5), BH76(0.4-0.5)	17-FEB-2015	21-FEB-2015	17-MAR-2015	✓	24-FEB-2015	17-MAR-2015	✓	
<b>Soil Glass Jar - Unpreserved (EG035T)</b> DUP6	17-FEB-2015	24-FEB-2015	17-MAR-2015	✓	24-FEB-2015	17-MAR-2015	✓	



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	7	65	10.8	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	6	48	12.5	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
Total Mercury by FIMS	EG035T	3	48	6.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
Total Mercury by FIMS	EG035T	3	48	6.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
Total Mercury by FIMS	EG035T	3	48	6.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Moisture Content	EA055-103	SOIL	In-house. A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)



## **Summary of Outliers**

### **Outliers : Quality Control Samples**

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

#### **Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes**

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

#### **Regular Sample Surrogates**

- For all regular sample matrices, no surrogate recovery outliers occur.

### **Outliers : Analysis Holding Time Compliance**

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

### **Outliers : Frequency of Quality Control Samples**

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.



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CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
SITE: Botany		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		Custody Seal Intact? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="text"/> N/A	
PROJECT: Orca Mercury Independent Review		PROJECT NO.: 45970		Free ice / frozen ice bricks present upon receipt? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="text"/> N/A	
ORDER NUMBER:		PURCHASE ORDER NO.:		Random Sample Temperature on Receipt: 7.8 °C	
PROJECT MANAGER: Collin McKay		CONTACT PH: 0448 877 926		Other comment:	
SAMPLER: AY/PC		SAMPLER MOBILE:		RECEIVED BY: <i>SG</i>	
COC Emailed to ALS? (NO)		EDD FORMAT (or default):		RECEIVED BY: <i>SG</i>	
Email Reports to: <a href="mailto:collin.mckay@wspgroup.com">collin.mckay@wspgroup.com</a> ; <a href="mailto:phillipa.chilids@wspgroup.com">phillipa.chilids@wspgroup.com</a>		RELINQUISHED BY: <i>Collin McKay</i>		DATE/TIME: 20/12/15 17:50	
Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME: 20/12/15		DATE/TIME:	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed in extract suite price)					Additional information	
	MATRIX: Solid(S) Water(W)	DATE / TIME	MATRIX		Where Metals are required, specify Total (Unfiltered bottle required) or Dissolved (Filtered bottle required).						
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable	Chromium - Total	Lead - Total	PAH	PCB	
1	BH77 (0-0.05)	19/02/2015	Soil			x					
2	BH77 (0.3-0.4)	19/02/2015	Soil			x					
3	BH78 (0-0.05)	19/02/2015	Soil			x					
4	BH78 (0.4-0.5)	19/02/2015	Soil			x					
5	BH79 (0-0.05)	19/02/2015	Soil			x					
6	BH79 (0.4-0.5)	19/02/2015	Soil			x					
7	BH80(0-0.05)	19/02/2015	Soil			x					
8	BH80 (0.4-0.5)	19/02/2015	Soil			x					
9	BH81 (0-0.05)	19/02/2015	Soil			x	x	x	x	x	
10	BH81 (0.4-0.5)	19/02/2015	Soil			x					
11	BH82 (0-0.05)	19/02/2015	Soil			x	x	x	x	x	
12	BH82 (0.4-0.5)	19/02/2015	Soil			x					
TOTAL						12	2	2	2	2	

Environmental Division  
Sydney  
Work Order  
**ES1504242**



Telephone : +61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial; SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Spaciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulfate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.



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CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS : <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
TE: Botany		(Standard TAT may be longer for some tests e.g., Ultra Trace Organics)		Custody Seal Intact? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	
PROJECT: Orica Mercury Independent Review		PROJECT NO.: 45970		Free Ice / frozen ice bricks present upon receipt? <input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A	
ALB QUOTE NO.: SYH085/14		COC SEQUENCE NUMBER (Circle)		Random Sample Temperature on Receipt: 7.8 °C	
ORDER NUMBER:		PURCHASE ORDER NO.:		Other comment:	
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 977 926			
AMPLER: AY/PC		SAMPLER MOBILE:		RELINQUISHED BY:	
DC Emailed to ALS? (NO)		EOD FORMAT (or default):		RECEIVED BY: <i>Soy...</i>	
mail Reports to: colin.mckay@wspgroup.com; philippa.childs@wspgroup.com		mail Invoice to (will default to PM if no other addresses are listed):		DATE/TIME: 20/1/15	
				DATE/TIME: 20/2/15 17:50	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price)					Additional Information	
	MATRIX: Solid(S) Water(W)					Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (Seal Filtered bottle required).						
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable	Chromium - Total	Lead - Total	PAH	PCB		
13	BH83 (0-0.05)	19/02/2015	Soil			X	X	X	X	X		
14	BH83 (0.3-0.4)	19/02/2015	Soil			X						
15	BH84 (0-0.05)	19/02/2015	Soil			X	X	X	X	X		
16	BH84 (0.4-0.5)	19/02/2015	Soil			X						
17	BH85 (0-0.05)	19/02/2015	Soil			X						
18	BH85 (0.4-0.5)	19/02/2015	Soil			X						
19	BH86 (0-0.05)	19/02/2015	Soil			X	X	X	X	X		
20	BH86 (0.4-0.5)	19/02/2015	Soil			X						
21	BH87 (0-0.05)	19/02/2015	Soil			X						
22	BH87 (0.4-0.5)	19/02/2015	Soil			X						
23	BH88 (0-0.05)	19/02/2015	Soil			X						
24	BH88 (0.4-0.5)	19/02/2015	Soil			X						
TOTAL						22	3	3	3	3		

After Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airflight Unpreserved Plastic  
 = VQA Vial HCl Preserved; VB = VQA Vial Sodium Bisulfate Preserved; VS = VQA Vial Sulfuric Preserved; AV = Airflight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;  
 = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulfate Solids; B = Unpreserved Bag; LI = Lignin Iodine Preserved Bottle; STT = Sterile Sodium Thiosulfate Preserved Bottles.



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Ph: 07 4786 0800 E: townsville@alsglobal.com  
LINDY/SA 89 Kenner Street Adelaide NSW 2206  
Ph: 02 4222 3125 E: wofkong@alsglobal.com

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date): -		FOR LABORATORY USE ONLY (Circle)	
SITE: Botany		(Standard TAT may be longer for some tests e.g., Ultra Trace Organics)		Custody Seal intact? <span style="float:right">Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A</span>	
PROJECT: Orica Mercury Independent Review		PROJECT NO.: 45970	ALS QUOTE NO.: SY1085/14	Free ice / frozen ice bricks present upon receipt? <span style="float:right">Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A</span>	
ORDER NUMBER:	PURCHASE ORDER NO.:	COUNTRY OF ORIGIN:		Random Sample Temperature on Receipt: <span style="float:right">°C</span>	
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 977 926		Other comment: <span style="float:right">7.8</span>	
SAMPLER: AY/PC		SAMPLER MOBILE:		RECEIVED BY: <i>Sally Taylor</i>	
COC Emailed to ALS? (NO)		EDD FORMAT (or default):		RELINQUISHED BY: <i>Colin McKay</i>	
Email Reports to: colin.mckay@wspgroup.com; philippa.childe@wspgroup.com		DATE/TIME: <i>20/1/15</i>		DATE/TIME: <i>20/1/15 17:50</i>	
Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME:		DATE/TIME:	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price)					Additional Information	
	MATRIX: Solid(S) Water(W)					Where Metals are required, specify Total (Unfiltered solids required) or Dissolved (Bottled filtered solids required)						
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable	Chromium - Total	Lead - Total	PAN	PCB		
25	BH89 (0-0.05)	19/02/2015	Soil			x						
26	BH89 (0.3-0.4)	19/02/2015	Soil			x						
27	BH90 (0-0.05)	19/02/2015	Soil			x						
28	BH90 (0.4-0.5)	19/02/2015	Soil			x						
29	BH91 (0-0.05)	19/02/2015	Soil			x						
30	BH91 (0.4-0.5)	19/02/2015	Soil			x						
31	BH92 (0-0.05)	19/02/2015	Soil			x	x	x	x	x		
32	BH92 (0.4-0.5)	19/02/2015	Soil			x						
33	BH93 (0-0.05)	19/02/2015	Soil			x						
34	BH93 (0.4-0.5)	19/02/2015	Soil			x						
35	BH94 (0-0.05)	19/02/2015	Soil			x						
36	BH94 (0.4-0.5)	19/02/2015	Soil			x						
TOTAL:						12	1	1	1	1		

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Specialisation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Ligo's Iodine Preserved Bottle; STT = Sterile Sodium Thiosulfate Preserved Bottles.





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SYDNEY 4-13 Quay Place North Sydney NSW 2058  
Ph: 02 4423 2051 E: nsw@alsglobal.com

PERTH 10 Red Way Malpas WA 6000  
Ph: 08 9207 7655 E: samples.perth@alsglobal.com

WOLLONGONG 277-285 Woodcock Road Shellharbour NSW 2514  
Ph: 02 6784 6557 E: samples.wollongong@alsglobal.com

WOLLONGONG 14-16 Desma Court Gungahlin ACT 2916  
Ph: 02 4996 0890 E: wollongong.environmental@alsglobal.com

WOLLONGONG 66 Kenny Street Wollongong NSW 2500  
Ph: 02 4725 3175 E: wollongong@alsglobal.com

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS : <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
SITE: Botany		[Standard TAT may be longer for some tests e.g. Ultra Trace Organics]		Custody Seal intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <span style="float:right">N/A</span>	
PROJECT: Orica Mercury Independent Review		PROJECT NO.: 45970		Free (ice) frozen ice bricks present upon receipt? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <span style="float:right">N/A</span>	
ORDER NUMBER:		PURCHASE ORDER NO.:		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 977 826		Other comment: 7.8	
SAMPLER: AY/PC		SAMPLER MOBILE:		RECEIVED BY: <i>Soy...</i>	
COG Emailed to ALS? (NO)		EDD FORMAT (or default):		RELINQUISHED BY: <i>Colin McKay</i>	
Email Reports to: colin.mckay@wspgroup.com; philipa.chilids@wspgroup.com		Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME: 20/1/15	
				DATE/TIME: 20/2/15 17:50	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottles required) or Dissolved (filtered bottles required).					Additional Information		
	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable	Chromium - Total	Lead - Total	PAH		PCB	
49	BH101 (0-0.05)	20/02/2015	Soil				x						
50	BH101 (0.4-0.5)	20/02/2015	Soil				x						
51	BH102 (0-0.05)	20/02/2015	Soil				x						
52	BH102 (0.4-0.5)	20/02/2015	Soil				x						
53	BH103 (0-0.05)	20/02/2015	Soil				x						
54	BH103 (0.4-0.5)	20/02/2015	Soil				x						
55	BH104 (0-0.05)	20/02/2015	Soil				x						
56	BH104 (0.4-0.5)	20/02/2015	Soil				x						
57	BH105 (0-0.05)	20/02/2015	Soil				x						
58	BH105 (0.2-0.3)	20/02/2015	Soil				x						
59	BH106 (0-0.05)	20/02/2015	Soil				x						
60	BH106 (0.4-0.5)	20/02/2015	Soil				x						
TOTAL							12						

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airtight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;  
 Z = Zinc Ascorbic Preserved Bottle; E = EDTA Preserved Bottles; ST = Steele Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lippold Iodine Preserved Bottles; STT = Steele Sodium Thiosulfate Preserved Bottles.



# CHAIN OF CUSTODY

ALS Laboratory, please tick →

ADLAIDE 21 Burnside Road Prospect SA 5062  
Ph: 08 8350 0810 E: adelaide@alsglobal.com

BRISBANE 32 Strand Street Stallard QLD 4053  
Ph: 07 3243 7202 E: samplesbrisbane@alsglobal.com

GLD ABSTON 35 Coffmanville Drive Kilsnoe QLD 4069  
Ph: 07 3471 2200 E: goldstone@alsglobal.com

MCKAY 78 Harbour Road Mackay QLD 4740  
Ph: 07 4944 0177 E: mackay@alsglobal.com

MELBOURNE 2-4 Wharf Road Springvale VIC 3171  
Ph: 03 8549 6000 E: samplesmelbourne@alsglobal.com

SYDNEY 27 Sydney Road Murgah NSW 2206  
Ph: 02 9372 6745 E: mudgee-mel@alsglobal.com

NEWCASTLE 5085 Marlband Road Mayfield NSW 2324  
Ph: 02 4914 2500 E: samplesnewcastle@alsglobal.com

PERTH 4/13 Geary Place North Perth WA 6006  
Ph: 02 4423 2063 E: perth@alsglobal.com

PERTH 13 Red Bay Mudgee WA 6000  
Ph: 02 9372 6745 E: samplesperth@alsglobal.com

SYDNEY 277-287 Woodland Road Bembury NSW 2164  
Ph: 02 8754 8563 E: samplessydney@alsglobal.com

TOWNSVILLE 14-15 Desha Court Bribie QLD 4613  
Ph: 07 4706 0600 E: towsville@alsglobal.com

WOLLONGONG 29 Kutty Street Wollongong NSW 2520  
Ph: 02 4229 3125 E: wollongong@alsglobal.com

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
SITE: Botany		(Standard TAT may be longer for some tests e.g. Ultra Trace, Ochratoxin)		Custody Seal Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
PROJECT: Orica Mercury Independent Review		PROJECT NO.: 45970		Free ice / frozen ice bricks present upon receipt? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
ORDER NUMBER:		PURCHASE ORDER NO.:		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: Collin McKay		CONTACT PH: 0446 977 926		Other comment: 7-8	
SAMPLER: AYIPC		SAMPLER MOBILE:		RECEIVED BY: <i>[Signature]</i>	
COC Emailed to ALS? (NO)		EDD FORMAT (or default):		RECEIVED BY:	
Email Reports to: collin.mckay@wspgroup.com; philipa.chlids@wspgroup.com		RELINQUISHED BY: <i>[Signature]</i>		DATE/TIME: 20/12/15 17:50	
Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME: 20/1/15		DATE/TIME:	

### COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price)						Additional Information	
	MATRIX	Solid(S) Water(W)			Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (acid filtered bottle required):							
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable	Chromium - Total	Lead - Total	PAH	PCB	BTEX	
61	Dup 5	19/02/2015	Soil			x	x	x	x	x		
62	Trip Spike	20/02/2015	Soil								x	
63	Trip Blank	20/02/2015	Soil								x	
64	Rhsate Blank	20/02/2015	Soil			x	x	x	x	x		
65	TSC											
TOTAL						2	2	2	2	2	2	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugdunum Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

Work Order : **ES1504242**

Client : **WSP ENVIRONMENTAL PTY LTD**  
Contact : **MR COLIN MCKAY**  
Address : **ENVIRONMENT & ENERGY**  
**LEVEL 1, 41 McLAREN STREET**  
**NORTH SYDNEY NSW, AUSTRALIA**  
**2060**

Laboratory : Environmental Division Sydney  
Contact : Client Services  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : colin.mckay@wspgroup.com.au  
Telephone : +61 02 8925 6700  
Facsimile : +61 02 8925 6799

E-mail : sydney@alsglobal.com  
Telephone : +61-2-8784 8555  
Facsimile : +61-2-8784 8500

Project : **ORICA MERCURY INDEPENDENT**  
**REVIEW**

Page : 1 of 4

Order number : 45970

C-O-C number : ----

Site : ----

Sampler : AY/PC

Quote number : ES2015WSPENV0359 (SY/1085/14)

QC Level : NEPM 2013 Schedule B(3) and ALS  
QCS3 requirement

### Dates

Date Samples Received : 20-FEB-2015  
Client Requested Due Date : 02-MAR-2015

Issue Date : 23-FEB-2015 13:19  
Scheduled Reporting Date : **02-MAR-2015**

### Delivery Details

Mode of Delivery : Carrier  
No. of coolers/boxes : 3 HARDS  
Security Seal : Intact.

Temperature : 7.8°C - Ice present  
No. of samples received : 65  
No. of samples analysed : 65

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EG035T (solids) Total Mercury by FIMS	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - EP080 BTEXN
ES1504242-001	19-FEB-2015 15:00	BH77(0-0.05)	✓		✓			
ES1504242-002	19-FEB-2015 15:00	BH77(0.3-0.4)	✓		✓			
ES1504242-003	19-FEB-2015 15:00	BH78(0-0.05)	✓		✓			
ES1504242-004	19-FEB-2015 15:00	BH78(0.4-0.5)	✓		✓			
ES1504242-005	19-FEB-2015 15:00	BH79(0-0.05)	✓		✓			
ES1504242-006	19-FEB-2015 15:00	BH79(0.4-0.5)	✓		✓			
ES1504242-007	19-FEB-2015 15:00	BH80(0-0.05)	✓		✓			
ES1504242-008	19-FEB-2015 15:00	BH80(0.4-0.5)	✓		✓			
ES1504242-009	19-FEB-2015 15:00	BH81(0-0.05)	✓	✓	✓	✓	✓	
ES1504242-010	19-FEB-2015 15:00	BH81(0.4-0.5)	✓		✓			
ES1504242-011	19-FEB-2015 15:00	BH82(0-0.05)	✓	✓	✓	✓	✓	
ES1504242-012	19-FEB-2015 15:00	BH82(0.4-0.5)	✓		✓			
ES1504242-013	19-FEB-2015 15:00	BH83(0-0.05)	✓	✓	✓	✓	✓	
ES1504242-014	19-FEB-2015 15:00	BH83(0.3-0.4)	✓		✓			
ES1504242-015	19-FEB-2015 15:00	BH84(0-0.05)	✓	✓	✓	✓	✓	
ES1504242-016	19-FEB-2015 15:00	BH84(0.4-0.5)	✓		✓			
ES1504242-017	19-FEB-2015 15:00	BH85(0-0.05)	✓		✓			
ES1504242-018	19-FEB-2015 15:00	BH85(0.4-0.5)	✓		✓			
ES1504242-019	19-FEB-2015 15:00	BH86(0-0.05)	✓	✓	✓	✓	✓	
ES1504242-020	19-FEB-2015 15:00	BH86(0.4-0.5)	✓		✓			
ES1504242-021	19-FEB-2015 15:00	BH87(0-0.05)	✓		✓			
ES1504242-022	19-FEB-2015 15:00	BH87(0.4-0.5)	✓		✓			
ES1504242-023	19-FEB-2015 15:00	BH88(0-0.05)	✓		✓			
ES1504242-024	19-FEB-2015 15:00	BH88(0.4-0.5)	✓		✓			
ES1504242-025	19-FEB-2015 15:00	BH89(0-0.05)	✓		✓			
ES1504242-026	19-FEB-2015 15:00	BH89(0.3-0.4)	✓		✓			
ES1504242-027	19-FEB-2015 15:00	BH90(0-0.05)	✓		✓			
ES1504242-028	19-FEB-2015 15:00	BH90(0.4-0.5)	✓		✓			
ES1504242-029	19-FEB-2015 15:00	BH91(0-0.05)	✓		✓			
ES1504242-030	19-FEB-2015 15:00	BH91(0.4-0.5)	✓		✓			
ES1504242-031	19-FEB-2015 15:00	BH92(0-0.05)	✓	✓	✓	✓	✓	
ES1504242-032	19-FEB-2015 15:00	BH92(0.4-0.5)	✓		✓			
ES1504242-033	19-FEB-2015 15:00	BH93(0-0.05)	✓		✓			
ES1504242-034	19-FEB-2015 15:00	BH93(0.4-0.5)	✓		✓			
ES1504242-035	19-FEB-2015 15:00	BH94(0-0.05)	✓		✓			



			SOIL - EA055-103 Moisture Content	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EG035T (solids) Total Mercury by FIMS	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - EP080 BTEXN
ES1504242-036	19-FEB-2015 15:00	BH94(0.4-0.5)	✓		✓			
ES1504242-037	20-FEB-2015 15:00	BH95(0-0.05)	✓	✓	✓	✓	✓	
ES1504242-038	20-FEB-2015 15:00	BH95(0.4-0.5)	✓		✓			
ES1504242-039	20-FEB-2015 15:00	BH96(0-0.05)	✓		✓			
ES1504242-040	20-FEB-2015 15:00	BH96(0.4-0.5)	✓		✓			
ES1504242-041	20-FEB-2015 15:00	BH97(0-0.05)	✓		✓			
ES1504242-042	20-FEB-2015 15:00	BH97(0.4-0.5)	✓		✓			
ES1504242-043	20-FEB-2015 15:00	BH98(0-0.05)	✓		✓			
ES1504242-044	20-FEB-2015 15:00	BH98(0.4-0.5)	✓		✓			
ES1504242-045	20-FEB-2015 15:00	BH99(0-0.05)	✓		✓			
ES1504242-046	20-FEB-2015 15:00	BH99(0.4-0.5)	✓		✓			
ES1504242-047	20-FEB-2015 15:00	BH100(0-0.05)	✓		✓			
ES1504242-048	20-FEB-2015 15:00	BH100(0.3-0.4)	✓		✓			
ES1504242-049	20-FEB-2015 15:00	BH101(0-0.05)	✓		✓			
ES1504242-050	20-FEB-2015 15:00	BH101(0.4-0.5)	✓		✓			
ES1504242-051	20-FEB-2015 15:00	BH102(0-0.05)	✓		✓			
ES1504242-052	20-FEB-2015 15:00	BH102(0.4-0.5)	✓		✓			
ES1504242-053	20-FEB-2015 15:00	BH103(0-0.05)	✓		✓			
ES1504242-054	20-FEB-2015 15:00	BH103(0.4-0.5)	✓		✓			
ES1504242-055	20-FEB-2015 15:00	BH104(0-0.05)	✓		✓			
ES1504242-056	20-FEB-2015 15:00	BH104(0.4-0.5)	✓		✓			
ES1504242-057	20-FEB-2015 15:00	BH105(0-0.05)	✓		✓			
ES1504242-058	20-FEB-2015 15:00	BH105(0.2-0.3)	✓		✓			
ES1504242-059	20-FEB-2015 15:00	BH106(0-0.05)	✓		✓			
ES1504242-060	20-FEB-2015 15:00	BH106(0.4-0.5)	✓		✓			
ES1504242-061	19-FEB-2015 15:00	DUP 8	✓	✓	✓	✓	✓	
ES1504242-062	20-FEB-2015 15:00	TRIP SPIKE						✓
ES1504242-063	20-FEB-2015 15:00	TRIP BLANK						✓
ES1504242-065	20-FEB-2015 15:00	TSC						✓



## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES1504242</b> <b>Client</b> : <b>WSP ENVIRONMENTAL PTY LTD</b> <b>Contact</b> : MR COLIN MCKAY <b>Address</b> : ENVIRONMENT & ENERGY LEVEL 1, 41 McLAREN STREET NORTH SYDNEY NSW, AUSTRALIA 2060  <b>E-mail</b> : colin.mckay@wspgroup.com.au <b>Telephone</b> : +61 02 8925 6700 <b>Facsimile</b> : +61 02 8925 6799 <b>Project</b> : ORICA MERCURY INDEPENDENT REVIEW <b>Order number</b> : 45970 <b>C-O-C number</b> : ---- <b>Sampler</b> : AY/PC <b>Site</b> : ----  <b>Quote number</b> : SY/1085/14	<b>Page</b> : 1 of 24  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : Client Services <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : sydney@alsglobal.com <b>Telephone</b> : +61-2-8784 8555 <b>Facsimile</b> : +61-2-8784 8500 <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement  <b>Date Samples Received</b> : 20-FEB-2015 <b>Issue Date</b> : 02-MAR-2015  <b>No. of samples received</b> : 65 <b>No. of samples analysed</b> : 65
---	---

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Shobhna Chandra	Metals Coordinator	Sydney Inorganics



## General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

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

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

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

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

- **Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.**
- **Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.**



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH77(0-0.05)	BH77(0.3-0.4)	BH78(0-0.05)	BH78(0.4-0.5)	BH79(0-0.05)
				19-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504242-001	ES1504242-002	ES1504242-003	ES1504242-004	ES1504242-005
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	2.2	4.1	4.1	3.3	3.6
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	1.0	2.0	2.8	2.3	0.7



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH79(0.4-0.5)	BH80(0-0.05)	BH80(0.4-0.5)	BH81(0-0.05)	BH81(0.4-0.5)
				19-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504242-006	ES1504242-007	ES1504242-008	ES1504242-009	ES1504242-010
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	2.7	5.2	2.4	2.4	1.4
<b>EG005T: Total Metals by ICP-AES</b>								
Chromium	7440-47-3	2	mg/kg	----	----	----	3	----
Lead	7439-92-1	5	mg/kg	----	----	----	51	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.7	1.5	0.6	0.5	<0.1
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	----	<0.1	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	1.2	----
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	89.6	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	----	----	----	98.0	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sample ID	BH79(0.4-0.5)	BH80(0-0.05)	BH80(0.4-0.5)	BH81(0-0.05)	BH81(0.4-0.5)
Client sampling date / time	19-FEB-2015 15:00				
Compound	ES1504242-006	ES1504242-007	ES1504242-008	ES1504242-009	ES1504242-010

Compound	CAS Number	LOR	Unit	ES1504242-006	ES1504242-007	ES1504242-008	ES1504242-009	ES1504242-010
<b>EP075(SIM)S: Phenolic Compound Surrogates - Continued</b>								
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	----	100	----
2,4,6-Tribromophenol	118-79-6	0.1	%	----	----	----	77.5	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	----	90.0	----
Anthracene-d10	1719-06-8	0.1	%	----	----	----	84.9	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	----	89.0	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH82(0-0.05)	BH82(0.4-0.5)	BH83(0-0.05)	BH83(0.3-0.4)	BH84(0-0.05)
				19-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504242-011	ES1504242-012	ES1504242-013	ES1504242-014	ES1504242-015
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	3.2	1.2	5.7	3.4	4.2
<b>EG005T: Total Metals by ICP-AES</b>								
Chromium	7440-47-3	2	mg/kg	12	----	5	----	7
Lead	7439-92-1	5	mg/kg	111	----	62	----	124
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.8	<0.1	0.5	0.2	1.2
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	<0.1	----	<0.1
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	0.7	----	<0.5	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	1.0	----	0.5	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	1.0	----	0.5	----	0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	0.6	----	<0.5	----	0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	3.3	----	1.0	----	1.0
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	0.6	----	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	1.2	----	1.2
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	95.9	----	81.2	----	86.1
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	105	----	111	----	107



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH82(0-0.05)	BH82(0.4-0.5)	BH83(0-0.05)	BH83(0.3-0.4)	BH84(0-0.05)
				19-FEB-2015 15:00	19-FEB-2015 15:00	19-FEB-2015 15:00	19-FEB-2015 15:00	19-FEB-2015 15:00
				ES1504242-011	ES1504242-012	ES1504242-013	ES1504242-014	ES1504242-015
Compound	CAS Number	LOR	Unit	Client sampling date / time				
<b>EP075(SIM)S: Phenolic Compound Surrogates - Continued</b>								
2-Chlorophenol-D4	93951-73-6	0.1	%	96.3	----	101	----	96.7
2.4.6-Tribromophenol	118-79-6	0.1	%	84.7	----	95.3	----	84.7
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	90.6	----	88.3	----	86.2
Anthracene-d10	1719-06-8	0.1	%	86.3	----	80.6	----	77.5
4-Terphenyl-d14	1718-51-0	0.1	%	89.6	----	86.3	----	80.9



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH84(0.4-0.5)	BH85(0-0.05)	BH85(0.4-0.5)	BH86(0-0.05)	BH86(0.4-0.5)
				19-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504242-016	ES1504242-017	ES1504242-018	ES1504242-019	ES1504242-020
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	3.8	2.7	2.8	3.0	1.4
<b>EG005T: Total Metals by ICP-AES</b>								
Chromium	7440-47-3	2	mg/kg	----	----	----	5	----
Lead	7439-92-1	5	mg/kg	----	----	----	82	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.1	0.2	<0.1	0.2	<0.1
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	----	<0.1	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	0.8	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	0.9	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	0.6	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	2.8	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	0.6	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	0.9	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	1.2	----
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	83.7	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	----	----	----	94.8	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH84(0.4-0.5)	BH85(0-0.05)	BH85(0.4-0.5)	BH86(0-0.05)	BH86(0.4-0.5)
				19-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504242-016	ES1504242-017	ES1504242-018	ES1504242-019	ES1504242-020
<b>EP075(SIM)S: Phenolic Compound Surrogates - Continued</b>								
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	----	97.0	----
2,4,6-Tribromophenol	118-79-6	0.1	%	----	----	----	79.9	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	----	80.8	----
Anthracene-d10	1719-06-8	0.1	%	----	----	----	76.9	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	----	80.0	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sample ID	BH87(0-0.05)	BH87(0.4-0.5)	BH88(0-0.05)	BH88(0.4-0.5)	BH89(0-0.05)
Client sampling date / time	19-FEB-2015 15:00				

Compound	CAS Number	LOR	Unit	ES1504242-021	ES1504242-022	ES1504242-023	ES1504242-024	ES1504242-025
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	4.7	1.9	4.2	2.9	1.6
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sample ID	BH89(0.3-0.4)	BH90(0-0.05)	BH90(0.4-0.5)	BH91(0-0.05)	BH91(0.4-0.5)
Client sampling date / time	19-FEB-2015 15:00				

Compound	CAS Number	LOR	Unit	ES1504242-026	ES1504242-027	ES1504242-028	ES1504242-029	ES1504242-030
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	1.6	3.7	2.4	2.9	1.6
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.1	2.3	<0.1	0.2	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH92(0-0.05)	BH92(0.4-0.5)	BH93(0-0.05)	BH93(0.4-0.5)	BH94(0-0.05)
				19-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504242-031	ES1504242-032	ES1504242-033	ES1504242-034	ES1504242-035
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	3.1	4.8	2.8	2.8	3.0
<b>EG005T: Total Metals by ICP-AES</b>								
Chromium	7440-47-3	2	mg/kg	3	----	----	----	----
Lead	7439-92-1	5	mg/kg	52	----	----	----	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.2	<0.1	0.3
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	1.3	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	1.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	0.8	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	0.8	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	1.3	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	1.0	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	0.6	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	0.8	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	8.6	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	1.3	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	1.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.8	----	----	----	----
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	97.2	----	----	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	98.0	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sample ID	BH92(0-0.05)	BH92(0.4-0.5)	BH93(0-0.05)	BH93(0.4-0.5)	BH94(0-0.05)
Client sampling date / time	19-FEB-2015 15:00				

Compound	CAS Number	LOR	Unit	ES1504242-031	ES1504242-032	ES1504242-033	ES1504242-034	ES1504242-035
<b>EP075(SIM)S: Phenolic Compound Surrogates - Continued</b>								
2-Chlorophenol-D4	93951-73-6	0.1	%	90.1	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	80.2	----	----	----	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	80.2	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	78.6	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	81.6	----	----	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH94(0.4-0.5)	BH95(0-0.05)	BH95(0.4-0.5)	BH96(0-0.05)	BH96(0.4-0.5)
				19-FEB-2015 15:00	20-FEB-2015 15:00	20-FEB-2015 15:00	20-FEB-2015 15:00	20-FEB-2015 15:00
Compound	CAS Number	LOR	Unit	ES1504242-036	ES1504242-037	ES1504242-038	ES1504242-039	ES1504242-040
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	3.0	1.3	1.7	3.9	2.4
<b>EG005T: Total Metals by ICP-AES</b>								
Chromium	7440-47-3	2	mg/kg	----	8	----	----	----
Lead	7439-92-1	5	mg/kg	----	45	----	----	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	----	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	----	----	----
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	----	80.2	----	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	----	109	----	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH94(0.4-0.5)	BH95(0-0.05)	BH95(0.4-0.5)	BH96(0-0.05)	BH96(0.4-0.5)
				19-FEB-2015 15:00	20-FEB-2015 15:00	20-FEB-2015 15:00	20-FEB-2015 15:00	20-FEB-2015 15:00
Compound	CAS Number	LOR	Unit	ES1504242-036	ES1504242-037	ES1504242-038	ES1504242-039	ES1504242-040
<b>EP075(SIM)S: Phenolic Compound Surrogates - Continued</b>								
2-Chlorophenol-D4	93951-73-6	0.1	%	----	101	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	----	78.5	----	----	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	----	96.0	----	----	----
Anthracene-d10	1719-06-8	0.1	%	----	85.7	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	86.9	----	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH97(0-0.05)	BH97(0.4-0.5)	BH98(0-0.05)	BH98(0.4-0.5)	BH99(0-0.05)
				20-FEB-2015 15:00				
				ES1504242-041	ES1504242-042	ES1504242-043	ES1504242-044	ES1504242-045
Compound	CAS Number	LOR	Unit					
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	3.0	1.3	4.1	4.0	8.9
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH99(0.4-0.5)	BH100(0-0.05)	BH100(0.3-0.4)	BH101(0-0.05)	BH101(0.4-0.5)
				20-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504242-046	ES1504242-047	ES1504242-048	ES1504242-049	ES1504242-050
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	2.5	8.1	8.0	2.0	2.1
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sample ID	BH102(0-0.05)	BH102(0.4-0.5)	BH103(0-0.05)	BH103(0.4-0.5)	BH104(0-0.05)
Client sampling date / time	20-FEB-2015 15:00				

Compound	CAS Number	LOR	Unit	ES1504242-051	ES1504242-052	ES1504242-053	ES1504242-054	ES1504242-055
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	2.0	6.4	2.5	2.1	1.8
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sample ID	BH104(0.4-0.5)	BH105(0-0.05)	BH105(0.2-0.3)	BH106(0-0.05)	BH106(0.4-0.5)
Client sampling date / time	20-FEB-2015 15:00				

Compound	CAS Number	LOR	Unit	ES1504242-056	ES1504242-057	ES1504242-058	ES1504242-059	ES1504242-060
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	<1.0	1.4	2.6	2.4	1.8
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				DUP 8	TRIP SPIKE	TRIP BLANK	TSC	----
				19-FEB-2015 15:00	20-FEB-2015 15:00	20-FEB-2015 15:00	20-FEB-2015 15:00	----
Compound	CAS Number	LOR	Unit	ES1504242-061	ES1504242-062	ES1504242-063	ES1504242-065	----
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	2.2	----	----	----	----
<b>EG005T: Total Metals by ICP-AES</b>								
Chromium	7440-47-3	2	mg/kg	3	----	----	----	----
Lead	7439-92-1	5	mg/kg	43	----	----	----	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.2	----	----	----	----
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	1.4	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	1.6	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	1.6	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	0.8	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	0.7	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	0.8	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.6	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	7.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	0.8	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	1.1	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.4	----	----	----	----
<b>EP080: BTEXN</b>								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	3.6	<0.5	4.8	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	0.7	<0.5	0.8	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				DUP 8	TRIP SPIKE	TRIP BLANK	TSC	----
				19-FEB-2015 15:00	20-FEB-2015 15:00	20-FEB-2015 15:00	20-FEB-2015 15:00	----
Compound	CAS Number	LOR	Unit	ES1504242-061	ES1504242-062	ES1504242-063	ES1504242-065	----
<b>EP080: BTEXN - Continued</b>								
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	4.0	<0.5	4.0	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	1.8	<0.5	1.8	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	5.8	<0.5	5.8	----
^ Sum of BTEX	----	0.2	mg/kg	----	10.1	<0.2	11.4	----
Naphthalene	91-20-3	1	mg/kg	----	<1	<1	<1	----
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	76.7	----	----	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	103	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	92.7	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	80.7	----	----	----	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	79.1	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	78.4	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	83.0	----	----	----	----
<b>EP080S: TPH(V)/BTEX Surrogates</b>								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	87.9	111	112	----
Toluene-D8	2037-26-5	0.1	%	----	105	115	111	----
4-Bromofluorobenzene	460-00-4	0.1	%	----	89.0	115	113	----



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

RINSATE BLANK

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Client sampling date / time

20-FEB-2015 15:00

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Compound	CAS Number	LOR	Unit	ES1504242-064	---	---	---	---
<b>EG020T: Total Metals by ICP-MS</b>								
Chromium	7440-47-3	0.001	mg/L	<0.001	---	---	---	---
Lead	7439-92-1	0.001	mg/L	<0.001	---	---	---	---
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	---	---	---	---
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	1	µg/L	<1	---	---	---	---
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	1.0	µg/L	<1.0	---	---	---	---
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	---	---	---	---
Acenaphthene	83-32-9	1.0	µg/L	<1.0	---	---	---	---
Fluorene	86-73-7	1.0	µg/L	<1.0	---	---	---	---
Phenanthrene	85-01-8	1.0	µg/L	<1.0	---	---	---	---
Anthracene	120-12-7	1.0	µg/L	<1.0	---	---	---	---
Fluoranthene	206-44-0	1.0	µg/L	<1.0	---	---	---	---
Pyrene	129-00-0	1.0	µg/L	<1.0	---	---	---	---
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	---	---	---	---
Chrysene	218-01-9	1.0	µg/L	<1.0	---	---	---	---
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	---	---	---	---
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	---	---	---	---
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	---	---	---	---
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	---	---	---	---
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	---	---	---	---
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	---	---	---	---
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	---	---	---	---
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	---	---	---	---
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	75.1	---	---	---	---
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	29.4	---	---	---	---
2-Chlorophenol-D4	93951-73-6	0.1	%	54.5	---	---	---	---
2.4.6-Tribromophenol	118-79-6	0.1	%	45.0	---	---	---	---
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	31.7	---	---	---	---



### Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Client sample ID

<b>RINSATE BLANK</b>	----	----	----	----
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Client sampling date / time

20-FEB-2015 15:00	----	----	----	----
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Compound	CAS Number	LOR	Unit	ES1504242-064	----	----	----	----
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**EP075(SIM)T: PAH Surrogates - Continued**

<b>Anthracene-d10</b>	1719-06-8	0.1	%	<b>82.8</b>	----	----	----	----
<b>4-Terphenyl-d14</b>	1718-51-0	0.1	%	<b>84.8</b>	----	----	----	----



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP066S: PCB Surrogate</b>			
Decachlorobiphenyl	2051-24-3	39	149
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
<b>EP080S: TPH(V)/BTEX Surrogates</b>			
1.2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP066S: PCB Surrogate</b>			
Decachlorobiphenyl	2051-24-3	28.5	129
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	10.0	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27.4	113
4-Terphenyl-d14	1718-51-0	32	112

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: ES1504242</b>	<b>Page</b>	: 1 of 10
<b>Client</b>	<b>: WSP ENVIRONMENTAL PTY LTD</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	<b>: MR COLIN MCKAY</b>	<b>Contact</b>	: Client Services
<b>Address</b>	<b>: ENVIRONMENT &amp; ENERGY LEVEL 1, 41 McLAREN STREET NORTH SYDNEY NSW, AUSTRALIA 2060</b>	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
<b>E-mail</b>	<b>: colin.mckay@wspgroup.com.au</b>	<b>E-mail</b>	: sydney@alsglobal.com
<b>Telephone</b>	<b>: +61 02 8925 6700</b>	<b>Telephone</b>	: +61-2-8784 8555
<b>Facsimile</b>	<b>: +61 02 8925 6799</b>	<b>Facsimile</b>	: +61-2-8784 8500
<b>Project</b>	<b>: ORICA MERCURY INDEPENDENT REVIEW</b>	<b>QC Level</b>	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Site</b>	<b>: ----</b>	<b>Date Samples Received</b>	: 20-FEB-2015
<b>C-O-C number</b>	<b>: ----</b>	<b>Issue Date</b>	: 02-MAR-2015
<b>Sampler</b>	<b>: AY/PC</b>	<b>No. of samples received</b>	: 65
<b>Order number</b>	<b>: 45970</b>	<b>No. of samples analysed</b>	: 65
<b>Quote number</b>	<b>: SY/1085/14</b>		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



NATA Accredited  
Laboratory 825

Accredited for  
compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Shobhna Chandra	Metals Coordinator	Sydney Inorganics



## **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

Key :

- Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
- CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
- LOR = Limit of reporting
- RPD = Relative Percentage Difference
- # = Indicates failed QC



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3835088)</b>									
ES1504226-015	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	4.0	3.6	9.5	No Limit
ES1504229-007	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	12.0	10.2	16.4	0% - 50%
<b>EA055: Moisture Content (QC Lot: 3835089)</b>									
ES1504242-009	BH81(0-0.05)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	2.4	2.0	16.2	No Limit
ES1504242-020	BH86(0.4-0.5)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	1.4	1.4	0.0	No Limit
<b>EA055: Moisture Content (QC Lot: 3835090)</b>									
ES1504242-029	BH91(0-0.05)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	2.9	2.6	10.8	No Limit
ES1504242-040	BH96(0.4-0.5)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	2.4	2.8	13.5	No Limit
<b>EA055: Moisture Content (QC Lot: 3835091)</b>									
ES1504242-049	BH101(0-0.05)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	2.0	2.4	19.5	No Limit
ES1504242-060	BH106(0.4-0.5)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	1.8	1.4	28.8	No Limit
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3838215)</b>									
ES1504242-009	BH81(0-0.05)	EG005T: Chromium	7440-47-3	2	mg/kg	3	4	28.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	51	54	6.6	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3839446)</b>									
ES1503864-002	Anonymous	EG005T: Chromium	7440-47-3	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
ES1504323-006	Anonymous	EG005T: Chromium	7440-47-3	2	mg/kg	41	37	10.2	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	10	16	39.2	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3837839)</b>									
ES1504242-001	BH77(0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	1.0	1.0	0.0	0% - 50%
ES1504242-014	BH83(0.3-0.4)	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3837840)</b>									
ES1504242-026	BH89(0.3-0.4)	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	0.1	0.0	No Limit
ES1504242-038	BH95(0.4-0.5)	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3838216)</b>									
ES1504242-009	BH81(0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.5	0.5	0.0	No Limit
ES1504242-051	BH102(0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	0.1	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3839447)</b>									
ES1503864-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1504323-006	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3833370)</b>									
ES1503864-002	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EW1500633-004	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3833372)</b>										
ES1503864-002	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit			
	EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EW1500633-004	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			205-82-3							
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit			
	EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
<b>EP080: BTEXN (QC Lot: 3833384)</b>										



Sub-Matrix: <b>SOIL</b>				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
<b>EP080: BTEXN (QC Lot: 3833384) - continued</b>										
ES1503864-002	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit	
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
			106-42-3							
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit	
<b>Sub-Matrix: <b>WATER</b></b>										
Sub-Matrix: <b>WATER</b>				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
<b>EG020T: Total Metals by ICP-MS (QC Lot: 3833432)</b>										
ES1504131-006	Anonymous	EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.009	0.008	0.0	No Limit	
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.030	0.029	0.0	0% - 20%	
ES1504191-001	Anonymous	EG020A-T: Chromium	7440-47-3	0.001	mg/L	2.80	2.78	0.8	0% - 20%	
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit	
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3841155)</b>										
ES1504120-038	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit	
ES1504694-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit	



## Method Blank (MB) and Laboratory Control Spike (LCS) Report

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

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3838215)</b>									
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	105	80	136	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	95.6	86	124	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3839446)</b>									
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	96.2	80	136	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	92.1	86	124	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3837839)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	75.1	70	105	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3837840)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	77.8	70	105	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3838216)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	80.1	70	105	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3839447)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	73.9	70	105	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3833370)</b>									
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	98.5	57.4	117	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3833372)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	86.8	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	87.0	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	80.6	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	80.4	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	86.1	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	94.6	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	84.2	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	95.5	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	79.5	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	81.1	81	123	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	80.6	70	118	
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	81.4	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	82.5	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	71.3	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	73.9	71.7	113	



Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3833372) - continued</b>									
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	75.9	72.4	114	
<b>EP080: BTEXN (QCLot: 3833384)</b>									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	102	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	97.9	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	104	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	101	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	103	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	112	62	138	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG020T: Total Metals by ICP-MS (QCLot: 3833432)</b>									
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	110	84	116	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	108	84	116	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3841155)</b>									
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	96.5	77	115	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3833650)</b>									
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	103	61.6	107	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3833648)</b>									
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	<1.0	5 µg/L	77.5	58.6	119	
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	<1.0	5 µg/L	88.4	63.6	114	
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	<1.0	5 µg/L	81.6	62.2	113	
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	<1.0	5 µg/L	89.9	63.9	115	
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	<1.0	5 µg/L	88.3	62.6	116	
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	<1.0	5 µg/L	87.6	64.3	116	
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	<1.0	5 µg/L	95.8	63.6	118	
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	<1.0	5 µg/L	96.0	63.1	118	
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	<1.0	5 µg/L	91.5	64.1	117	
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	<1.0	5 µg/L	87.8	62.5	116	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.2	µg/L	<1.0	5 µg/L	90.0	61.7	119	
	205-82-3								
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	<1.0	5 µg/L	97.1	61.7	117	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	<0.5	5 µg/L	76.5	63.3	117	
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.2	µg/L	<1.0	5 µg/L	74.4	59.9	118	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	<1.0	5 µg/L	77.3	61.2	117	



Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3833648) - continued</b>								
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	<1.0	5 µg/L	72.3	59.1	118

### Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report		
				Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%) Low High
<b>EG005T: Total Metals by ICP-AES (QCLot: 3838215)</b>						
ES1504242-009	BH81(0-0.05)	EG005T: Chromium	7440-47-3	50 mg/kg	103	70 130
		EG005T: Lead	7439-92-1	250 mg/kg	102	70 130
<b>EG005T: Total Metals by ICP-AES (QCLot: 3839446)</b>						
ES1503864-002	Anonymous	EG005T: Chromium	7440-47-3	50 mg/kg	100	70 130
		EG005T: Lead	7439-92-1	250 mg/kg	91.8	70 130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3837839)</b>						
ES1504242-001	BH77(0-0.05)	EG035T: Mercury	7439-97-6	5 mg/kg	87.9	70 130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3837840)</b>						
ES1504242-026	BH89(0.3-0.4)	EG035T: Mercury	7439-97-6	5 mg/kg	93.3	70 130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3838216)</b>						
ES1504242-009	BH81(0-0.05)	EG035T: Mercury	7439-97-6	5 mg/kg	97.3	70 130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3839447)</b>						
ES1503864-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	89.6	70 130
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3833370)</b>						
ES1503864-002	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	91.2	70 130
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3833372)</b>						
ES1503864-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	96.7	70 130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	93.0	70 130
<b>EP080: BTEXN (QCLot: 3833384)</b>						
ES1503864-002	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	116	70 130
		EP080: Toluene	108-88-3	2.5 mg/kg	109	70 130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	115	70 130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	110	70 130
		EP080: ortho-Xylene	106-42-3 95-47-6	2.5 mg/kg	114	70 130



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EP080: BTEXN (QCLot: 3833384) - continued</b>							
ES1503864-002	Anonymous	EP080: Naphthalene	91-20-3	2.5 mg/kg	116	70	130

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
<b>EG020T: Total Metals by ICP-MS (QCLot: 3833432)</b>							
ES1504132-001	Anonymous	EG020A-T: Chromium	7440-47-3	1 mg/L	112	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	113	70	130
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3841155)</b>							
ES1504120-040	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	93.6	70	130

### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3833370)</b>										
ES1503864-002	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	91.2	----	70	130	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3833372)</b>										
ES1503864-002	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	96.7	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	93.0	----	70	130	----	----
<b>EP080: BTEXN (QCLot: 3833384)</b>										
ES1503864-002	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	116	----	70	130	----	----
		EP080: Toluene	108-88-3	2.5 mg/kg	109	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	115	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	110	----	70	130	----	----
		EP080: ortho-Xylene	106-42-3	2.5 mg/kg	114	----	70	130	----	----
		EP080: Naphthalene	95-47-6	2.5 mg/kg	116	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3837839)</b>										
ES1504242-001	BH77(0-0.05)	EG035T: Mercury	7439-97-6	5 mg/kg	87.9	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3837840)</b>										
ES1504242-026	BH89(0.3-0.4)	EG035T: Mercury	7439-97-6	5 mg/kg	93.3	----	70	130	----	----
<b>EG005T: Total Metals by ICP-AES (QCLot: 3838215)</b>										



Sub-Matrix: **SOIL**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
<b>EG005T: Total Metals by ICP-AES (QCLot: 3838215) - continued</b>										
ES1504242-009	BH81(0-0.05)	EG005T: Chromium	7440-47-3	50 mg/kg	103	----	70	130	----	----
		EG005T: Lead	7439-92-1	250 mg/kg	102	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3838216)</b>										
ES1504242-009	BH81(0-0.05)	EG035T: Mercury	7439-97-6	5 mg/kg	97.3	----	70	130	----	----
<b>EG005T: Total Metals by ICP-AES (QCLot: 3839446)</b>										
ES1503864-002	Anonymous	EG005T: Chromium	7440-47-3	50 mg/kg	100	----	70	130	----	----
		EG005T: Lead	7439-92-1	250 mg/kg	91.8	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3839447)</b>										
ES1503864-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	89.6	----	70	130	----	----

Sub-Matrix: **WATER**

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
				Concentration	MS	MSD	Low	High	Value	Control Limit
<b>EG020T: Total Metals by ICP-MS (QCLot: 3833432)</b>										
ES1504132-001	Anonymous	EG020A-T: Chromium	7440-47-3	1 mg/L	112	----	70	130	----	----
		EG020A-T: Lead	7439-92-1	1 mg/L	113	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3841155)</b>										
ES1504120-040	Anonymous	EG035T: Mercury	7439-97-6	0.010 mg/L	93.6	----	70	130	----	----

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1504242</b>	Page	: 1 of 10
Client	: WSP ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR COLIN MCKAY	Contact	: Client Services
Address	: ENVIRONMENT & ENERGY LEVEL 1, 41 McLAREN STREET NORTH SYDNEY NSW, AUSTRALIA 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: colin.mckay@wspgroup.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 8925 6700	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8925 6799	Facsimile	: +61-2-8784 8500
Project	: ORICA MERCURY INDEPENDENT REVIEW	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 20-FEB-2015
C-O-C number	: ----	Issue Date	: 02-MAR-2015
Sampler	: AY/PC	No. of samples received	: 65
Order number	: 45970	No. of samples analysed	: 65
Quote number	: SY/1085/14		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



## Analysis Holding Time Compliance

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

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

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

Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EA055: Moisture Content</b>								
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>								
BH77(0-0.05), BH78(0-0.05), BH79(0-0.05), BH80(0-0.05), BH81(0-0.05), BH82(0-0.05), BH83(0-0.05), BH84(0-0.05), BH85(0-0.05), BH86(0-0.05), BH87(0-0.05), BH88(0-0.05), BH89(0-0.05), BH90(0-0.05), BH91(0-0.05), BH92(0-0.05), BH93(0-0.05), BH94(0-0.05),	BH77(0.3-0.4), BH78(0.4-0.5), BH79(0.4-0.5), BH80(0.4-0.5), BH81(0.4-0.5), BH82(0.4-0.5), BH83(0.3-0.4), BH84(0.4-0.5), DUP 8, BH85(0.4-0.5), BH86(0.4-0.5), BH87(0.4-0.5), BH88(0.4-0.5), BH89(0.3-0.4), BH90(0.4-0.5), BH91(0.4-0.5), BH92(0.4-0.5), BH93(0.4-0.5), BH94(0.4-0.5)	19-FEB-2015	----	----	----	24-FEB-2015	05-MAR-2015	✓
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>								
BH95(0-0.05), BH96(0-0.05), BH97(0-0.05), BH98(0-0.05), BH99(0-0.05), BH100(0-0.05), BH101(0-0.05), BH102(0-0.05), BH103(0-0.05), BH104(0-0.05), BH105(0-0.05), BH106(0-0.05),	BH95(0.4-0.5), BH96(0.4-0.5), BH97(0.4-0.5), BH98(0.4-0.5), BH99(0.4-0.5), BH100(0.3-0.4), BH101(0.4-0.5), BH102(0.4-0.5), BH103(0.4-0.5), BH104(0.4-0.5), BH105(0.2-0.3), BH106(0.4-0.5)	20-FEB-2015	----	----	----	24-FEB-2015	06-MAR-2015	✓



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EG005T: Total Metals by ICP-AES</b>								
<b>Soil Glass Jar - Unpreserved (EG005T)</b> BH81(0-0.05), BH83(0-0.05), BH86(0-0.05),	BH82(0-0.05), BH84(0-0.05), BH92(0-0.05)	19-FEB-2015	26-FEB-2015	18-AUG-2015	✓	28-FEB-2015	18-AUG-2015	✓
<b>Soil Glass Jar - Unpreserved (EG005T)</b> DUP 8		19-FEB-2015	27-FEB-2015	18-AUG-2015	✓	28-FEB-2015	18-AUG-2015	✓
<b>Soil Glass Jar - Unpreserved (EG005T)</b> BH95(0-0.05)		20-FEB-2015	26-FEB-2015	19-AUG-2015	✓	28-FEB-2015	19-AUG-2015	✓



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
<b>Soil Glass Jar - Unpreserved (EG035T)</b>								
BH77(0-0.05), BH78(0-0.05), BH79(0-0.05), BH80(0-0.05), BH81(0-0.05), BH82(0-0.05), BH83(0-0.05), BH84(0-0.05), BH85(0-0.05), BH86(0-0.05), BH87(0-0.05), BH88(0-0.05), BH89(0-0.05), BH90(0-0.05), BH91(0-0.05), BH92(0-0.05), BH93(0-0.05), BH94(0-0.05),	BH77(0.3-0.4), BH78(0.4-0.5), BH79(0.4-0.5), BH80(0.4-0.5), BH81(0.4-0.5), BH82(0.4-0.5), BH83(0.3-0.4), BH84(0.4-0.5), BH85(0.4-0.5), BH86(0.4-0.5), BH87(0.4-0.5), BH88(0.4-0.5), BH89(0.3-0.4), BH90(0.4-0.5), BH91(0.4-0.5), BH92(0.4-0.5), BH93(0.4-0.5), BH94(0.4-0.5)	19-FEB-2015	26-FEB-2015	19-MAR-2015	✓	01-MAR-2015	19-MAR-2015	✓
<b>Soil Glass Jar - Unpreserved (EG035T)</b> DUP 8								
		19-FEB-2015	27-FEB-2015	19-MAR-2015	✓	01-MAR-2015	19-MAR-2015	✓
<b>Soil Glass Jar - Unpreserved (EG035T)</b>								
BH95(0-0.05), BH96(0-0.05), BH97(0-0.05), BH98(0-0.05), BH99(0-0.05), BH100(0-0.05), BH101(0-0.05), BH102(0-0.05), BH103(0-0.05), BH104(0-0.05), BH105(0-0.05), BH106(0-0.05),	BH95(0.4-0.5), BH96(0.4-0.5), BH97(0.4-0.5), BH98(0.4-0.5), BH99(0.4-0.5), BH100(0.3-0.4), BH101(0.4-0.5), BH102(0.4-0.5), BH103(0.4-0.5), BH104(0.4-0.5), BH105(0.2-0.3), BH106(0.4-0.5)	20-FEB-2015	26-FEB-2015	20-MAR-2015	✓	01-MAR-2015	20-MAR-2015	✓
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
<b>Soil Glass Jar - Unpreserved (EP066)</b>								
BH81(0-0.05), BH83(0-0.05), BH86(0-0.05), DUP 8	BH82(0-0.05), BH84(0-0.05), BH92(0-0.05)	19-FEB-2015	24-FEB-2015	05-MAR-2015	✓	27-FEB-2015	05-APR-2015	✓
<b>Soil Glass Jar - Unpreserved (EP066)</b>								
BH95(0-0.05)		20-FEB-2015	24-FEB-2015	06-MAR-2015	✓	27-FEB-2015	05-APR-2015	✓



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> BH81(0-0.05), BH83(0-0.05), BH86(0-0.05), DUP 8	BH82(0-0.05), BH84(0-0.05), BH92(0-0.05)	19-FEB-2015	24-FEB-2015	05-MAR-2015	✓	27-FEB-2015	05-APR-2015	✓
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> BH95(0-0.05)		20-FEB-2015	24-FEB-2015	06-MAR-2015	✓	27-FEB-2015	05-APR-2015	✓
<b>EP080: BTEXN</b>								
<b>Soil Glass Jar - Unpreserved (EP080)</b> TRIP SPIKE, TSC	TRIP BLANK,	20-FEB-2015	24-FEB-2015	06-MAR-2015	✓	26-FEB-2015	06-MAR-2015	✓

Matrix: **WATER**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
<b>EG020T: Total Metals by ICP-MS</b>								
<b>Clear Plastic Bottle - Nitric Acid; Unspecified (EG020A-T)</b> RINSATE BLANK		20-FEB-2015	23-FEB-2015	19-AUG-2015	✓	23-FEB-2015	19-AUG-2015	✓
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
<b>Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T)</b> RINSATE BLANK		20-FEB-2015	----	----	----	01-MAR-2015	20-MAR-2015	✓
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
<b>Amber Glass Bottle - Unpreserved (EP066)</b> RINSATE BLANK		20-FEB-2015	24-FEB-2015	27-FEB-2015	✓	25-FEB-2015	05-APR-2015	✓
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
<b>Amber Glass Bottle - Unpreserved (EP075(SIM))</b> RINSATE BLANK		20-FEB-2015	24-FEB-2015	27-FEB-2015	✓	24-FEB-2015	05-APR-2015	✓



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	8	80	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	13	15.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	2	17	11.8	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	8	80	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	3	27	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	7	14.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	4	80	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	27	7.4	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	7	14.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	4	80	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	27	7.4	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	7	14.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	17	5.9	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	4	80	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	27	7.4	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TRH Volatiles/BTEX	EP080	1	7	14.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

Evaluation: \* = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Total Mercury by FIMS	EG035T	2	12	16.7	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	7	14.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	8.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Method Blanks (MB)</b>							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	7	14.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	100.0	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	12	8.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	5.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
Total Mercury by FIMS	EG035T	1	12	8.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	19	5.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	In-house. A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 21st ed., 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
---------------------	--------	--------	---------------------



Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.



## **Summary of Outliers**

### **Outliers : Quality Control Samples**

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

#### **Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes**

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

#### **Regular Sample Surrogates**

- For all regular sample matrices, no surrogate recovery outliers occur.

### **Outliers : Analysis Holding Time Compliance**

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

### **Outliers : Frequency of Quality Control Samples**

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.
-



# CHAIN OF CUSTODY

ALS Laboratory: please tick →

LADELSIDE 21 Surma Road Pootra SA 5006  
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Ph: 08 3243 7522 E: samples.lincoln@alsglobal.com

GLADSTONE 36 Edmondah Drive Gladstone QLD 4680  
Ph: 07 7471 5636 E: gladstone@alsglobal.com

MCKAY 78 Adelaide Road Adelaide SA 5000  
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INELBOURNE 240 Oxford Road Springvale VIC 3171  
Ph: 03 9542 3616 E: inelbourne@alsglobal.com

ELCROFT 27 Steeles Road Epping VIC 3103  
Ph: 03 9374 0719 E: elcroft@alsglobal.com

ONEY CASTLE 6565 Makind Road D'Almeida West 2304  
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INOVIRA 413 Greys Place North Melbourne VIC 3211  
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SUPERTR 16108 Way Malaga WA 6150  
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WISNEY 277-269 Woodcock Road Smithfield QLD 4124  
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LITOMINSVILLE 14115 Cooma Court Botolph Claydon QLD 4810  
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WOLLONGONG 69 Kenny Street Wollongong NSW 2500  
Ph: 02 4224 3424 E: wollongong@alsglobal.com

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
SITE: Botany		(Standard TAT may be longer for some tests e.g. Ultra Toxin Organics)		Custody Seal Intact? Yes No N/A	
PROJECT: Orica Mercury Independent Review		PROJECT NO.: 45970		ALS QUOTE NO.: SY10685/14	
ORDER NUMBER:		PURCHASE ORDER NO.:		COC SEQUENCE NUMBER (Circle)	
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 977 928		DOC: 1	
SAMPLER: AY/PC		SAMPLER MOBILE:		DEF: 8	
COC Emailed to ALS? (NO)		EDD FORMAT (or default):		RELINQUISHED BY:	
Email Reports to: colin.mckay@wspgroup.com; philippa.chilids@wspgroup.com		Email Invoice to (will default to PM if no other addresses are listed):		RECEIVED BY: Frank AS	
				DATE/TIME: 27/2/15	
				DATE/TIME: 27/2/15 1700	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NO. Suite Codes must be listed to attract suite price)					Additional Information	
	MATRIX: Solid(S) Water(W)	DATE / TIME	MATRIX		TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable	Chromium - Total	Lead - Total		PAH
1	BH107 (0-0.05)	24/02/2015	Soil		x						
2	BH107 (0.4-0.5)	24/02/2015	Soil		x						
3	BH108 (0-0.05)	24/02/2015	Soil		x	x	x	x	x		
4	BH108 (0.4-0.5)	24/02/2015	Soil		x						
5	BH109 (0-0.05)	24/02/2015	Soil		x						
6	BH109 (0.4-0.5)	24/02/2015	Soil		x						
7	BH110(0-0.05)	24/02/2015	Soil		x	x	x	x	x		
8	BH110 (0.4-0.5)	24/02/2015	Soil		x						
9	BH111 (0-0.05)	24/02/2015	Soil		x	x	x	x	x		
10	BH111 (0.4-0.5)	24/02/2015	Soil		x						
11	BH112 (0-0.05)	24/02/2015	Soil		x	x	x	x	x		
12	BH112 (0.4-0.5)	24/02/2015	Soil		x						
<b>TOTAL</b>					12	2	2	2	2		

Environmental Division  
Sydney  
Work Order  
**ES1504881**



Telephone : +61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulfate Soils; B = Unpreserved Bag; LI = Lugdunum Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.



# CHAIN OF CUSTODY

ALS Laboratory, please tick →

11ADELAIDE 21 Buxton Road Pooraka SA 5000  
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12BIRSBANE 32 Short Street St Leonards NSW 1585  
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13GLACIOSTONE 44 Chalmers Drive Glacioso QLD 4890  
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14MELBOURNE 28 Havelock Road Essendon VIC 3040  
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15PERTH 30 JONES 3-4 West Road Stirling WA 6171  
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16DUNEDIN 27 Goodwood Road Dunedin NZ 9050  
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17NEWCASTLE 5-655 Macleay Road Newfield NSW 2204  
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18SYDNEY 400 Conroy Place North Sydney NSW 1585  
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19PERTH 10 Madway Malaga WA 6000  
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20SYDNEY 377-380 Woodrow Road Sutherland NSW 2154  
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21DUNEDIN 14-15 Otago Drive Balmuccia QLD 4818  
Ph: 07 4790 0800 E: samples.dunedin@alsglobal.com

22WOLLONGONG 88 Kenny Street Wollongong NSW 2500  
Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle):	
SITE: Botany		(Standard TAT may be longer for some tests e.g. Ultra Trace Quantities)		Custody Seal Intact? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
PROJECT: Orica Mercury Independent Review		PROJECT NO.: 45970		Free ice / frozen ice bricks present upon receipt? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
ORDER NUMBER:		PURCHASE ORDER NO.:		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 977 926		Other comment:	
SAMPLER: AYP/C		SAMPLER MOBILE:		RECEIVED BY: Frank O'S	
COC Emailed to ALS? (NO)		EDD FORMAT (or default):		DATE/TIME: 27/2/15 1700	
Email Reports to: colin.mckay@wspgroup.com; philippa.chilks@wspgroup.com		RELINQUISHED BY: <i>[Signature]</i>		RELINQUISHED BY:	
Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME: 27/2/15		DATE/TIME:	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price)					Additional Information	
	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (prefer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable	Chromium - Total	Lead - Total	PAH		PCB
	13	BH113 (0-0.05)	24/02/2015	Soil			x					
	14	BH113 (0.4-0.5)	24/02/2015	Soil			x					
	15	BH114 (0-0.05)	24/02/2015	Soil			x	x	x	x	x	
	16	BH114 (0.4-0.5)	24/02/2015	Soil			x					
	17	BH115 (0-0.05)	24/02/2015	Soil			x					
	18	BH115 (0.3-0.4)	24/02/2015	Soil			x					
	19	BH116 (0-0.05)	24/02/2015	Soil			x	x	x	x	x	
	20	BH117 (0-0.05)	24/02/2015	Soil			x					
	21	BH117 (0.3-0.4)	24/02/2015	Soil			x					
	22	BH118 (0-0.05)	24/02/2015	Soil			x					
	23	BH118 (0.4-0.5)	24/02/2015	Soil			x					
	24	BH118 (0-0.05)	24/02/2015	Soil			x					
TOTAL							12	2	2	2	2	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = HCl Preserved ORC; SH = Sodium Hydroxide Preserved; SP = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Air-tight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulphuric Preserved; AV = Air-tight Unpreserved Vial; SG = Sulphuric Preserved Amber Glass; (I = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulphuric Preserved Plastic; F = Formaldehyde Preserved Glass;  
Z = Zinc/acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugol's Iodine Preserved Bottle; STI = Stable Sodium Thiosulfate Preserved Bottle.



# CHAIN OF CUSTODY

ALS Laboratory: please tick →

1/1 DELFIADE Pt Berna Road, Roerska 54-4000  
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1/2 BIRSAHE 22 Shyrd Street, Stellenbosch 7600  
Ph: 07 2243 7221 E: samples@birsahe.com

1/3 GLOAGTONE 46 De la Motte Street, Grahamstown 6160  
Ph: 07 2471 5670 E: glag@delia.de

1/4 COLBY 20 Humber Road, Pietermaritzburg 3201  
Ph: 07 264 0177 E: msc@colby.co.za

1/5 ELEC 300 RHE 3-4 Westcliff Road, Springville 1517  
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1/8 MWRK 415 Quarry Office, North Street, Midrand 2009  
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1/9 DEER 10 Red Valley Place, Midrand 2009  
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1/10 DONEY 277-285 Woodpark Road, Benoni 1501  
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1/11 DONEY 277-285 Woodpark Road, Benoni 1501  
Ph: 01 8764 5015 E: samp@doner.co.za

1/12 DONEY 277-285 Woodpark Road, Benoni 1501  
Ph: 01 8764 5015 E: samp@doner.co.za

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
SITE: Botany		(Standard TAT may be longer for some tests e.g., Ultra Trace Organic)		Custody Seal Intact? Yes No N/A	
PROJECT: Dfca Mercury Independent Review		PROJECT NO.: 45970		Free ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER:		PURCHASE ORDER NO.:		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 877 926		Other comment:	
SAMPLER: AY/PC		SAMPLER MOBILE:		RECEIVED BY: Frank AHS	
COC Emailed to ALS? (NO)		EDD FORMAT (or default):		RELINQUISHED BY:	
Email Reports to: colin.mckay@wspgroup.com; philippa.chilids@wspgroup.com		RELINQUISHED BY: <i>Colin McKay</i>		RECEIVED BY: Frank AHS	
Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME: 27/2/15		DATE/TIME: 27/2/15 1700	

### COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB: Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required).					Additional Information
	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable	Chromium - Total	Lead - Total	PAH	
25	BH119 (0.4-0.5)	24/02/2015	Soil			x					
26	BH120 (0-0.05)	24/02/2015	Soil			x					
27	BH120 (0.4-0.5)	24/02/2015	Soil			x					
28	BH121 (0-0.05)	24/02/2015	Soil			x					
29	BH121 (0.4-0.5)	24/02/2015	Soil			x					
30	BH122 (0-0.05)	24/02/2015	Soil			x					
31	BH122 (0.4-0.5)	24/02/2015	Soil			x					
32	BH123 (0-0.05)	24/02/2015	Soil			x					
33	BH123 (0.4-0.5)	24/02/2015	Soil			x					
34	BH124 (0-0.05)	24/02/2015	Soil			x					
35	BH124 (0.4-0.5)	24/02/2015	Soil			x					
36	BH125 (0-0.05)	24/02/2015	Soil			x					
TOTAL						12					

Wafar Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial; SB = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Starto Bottle; ASS = Plastic Bag for Acid Sulphate Solts; B = Unpreserved Bag; U = Logo's Isotain Preserved Bottles; STT = Storage Sodium Thiosulfate Preserved Bottles



# CHAIN OF CUSTODY

ALS Laboratory: please tick →

TRADE AID: 21 Ilwaco Road, Koroitika SA 5085  
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CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
SITE: Botany		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		Custody Seal Intact? Yes No N/A	
PROJECT: Orica Mercury Independent Review		PROJECT NO.: 45970		Free Ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER:		PURCHASE ORDER NO.:		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 977 926		Other comment:	
SAMPLER: AY/PC		SAMPLER MOBILE:		RELINQUISHED BY:	
COC Emailed to ALS? (NO)		EDD FORMAT (or default):		RECEIVED BY:	
Email Reports to: colin.mckay@wspgroup.com; phillipa.chilids@wspgroup.com		DATE/TIME: 27/2/15		DATE/TIME: 27/2/15 1700	
Email Invoice to (w/ default to PM if no other addresses are listed):		DATE/TIME:		DATE/TIME:	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suitable price)					Additional Information
	MATRIX: Solid(S) Water(W)				Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (Filtered bottle required)					
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable	Chromium - Total	Lead - Total	PAH	PCB
37	BH125 (0.4-0.5)	24/02/2015	Soil			x				
38	BH126 (0-0.05)	24/02/2015	Soil			x				
39	BH126 (0.4-0.5)	24/02/2015	Soil			x				
40	BH127 (0-0.05)	24/02/2015	Soil			x				
41	BH127 (0.4-0.5)	24/02/2015	Soil			x				
42	BH128 (0-0.05)	26/02/2015	Soil			x				
43	BH128 (0.4-0.5)	26/02/2015	Soil			x				
44	BH129 (0-0.05)	26/02/2015	Soil			x				
45	BH129 (0.3-0.4)	26/02/2015	Soil			x				
46	BH130 (0-0.05)	26/02/2015	Soil			x				
47	BH130 (0.2-0.3)	26/02/2015	Soil			x				
48	BH131 (0-0.05)	26/02/2015	Soil			x				
TOTAL						12				

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic  
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulphate Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Spelation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soln; B = Unpreserved Bag; LJ = Lugol's Iodine Preserved Bottle; STT = Sterile Sodium Thiosulfate Preserved Bottle.



# CHAIN OF CUSTODY

ALS Laboratory, please tick →

ADELAIDE 21 Berna Road Pooka SA 5036  
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WOLLONGONG 20 Kenny Road Wollongong NSW 2500  
Ph: 02 4225 0125 E: wollongong@alsglobal.com

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List rise date): (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		FOR LABORATORY USE ONLY (Circle)	
SITE: Botany		ALS QUOTE NO.: SY/1085/14		Custody Seal Intact? Yes No N/A	
PROJECT: Orica Mercury Independent Review PROJECT NO.: 45970		COC SEQUENCE NUMBER (Circle)		Free ice / frozen ice blocks present upon receipt? Yes No N/A	
ORDER NUMBER: PURCHASE ORDER NO.:		COUNTRY OF ORIGIN:		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: Colin McKay CONTACT PH: 0448 977 928		COC: 5		Other comment:	
SAMPLER: AY/PC SAMPLER MOBILE:		RECEIVED BY: Frank MS		RECEIVED BY:	
COC Emailed to ALS? (NO)		DATE/TIME: 27/2/15		DATE/TIME:	
Email Reports to: colin.mckay@wspgroup.com; phillips.chilids@wspgroup.com		DATE/TIME: 27/2/15 (200)		DATE/TIME:	
Email Invoice to (will default to PM if no other addresses are listed).		DATE/TIME:		DATE/TIME:	

### COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price)					Additional Information
	MATRIX: Solid(S) Water(W)	DATE / TIME	MATRIX		Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required).					
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable	Chromium - Total	Lead - Total	PAH	PCB
49	BH131 (0.4-0.5)	26/02/2015	Soil			x				
50	BH132 (0-0.05)	26/02/2015	Soil			x				
51	BH132 (0.4-0.5)	26/02/2015	Soil			x				
52	BH133 (0-0.05)	26/02/2015	Soil			x				
53	BH133 (0.4-0.5)	26/02/2015	Soil			x				
54	BH134 (0-0.05)	26/02/2015	Soil			x				
55	BH134 (0.4-0.5)	26/02/2015	Soil			x				
56	BH135 (0-0.05)	26/02/2015	Soil			x				
57	BH135 (0.3-0.4)	26/02/2015	Soil			x				
58	BH136 (0-0.05)	26/02/2015	Soil			x				
59	BH136 (0.4-0.5)	26/02/2015	Soil			x				
60	BH137 (0-0.05)	26/02/2015	Soil			x				
<b>TOTAL</b>						12				

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cl Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisphosphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Specialion bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugdic Iodine Preserved Bottle; STT = Sterile Sodium Thiosulfate Preserved Bottle.



# CHAIN OF CUSTODY

ALS Laboratory, please tick →

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Ph: 08 5248 0495 E: laide@alsglobal.com

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Ph: 47 3243 7222 E: conibane@alsglobal.com

GLACSTONE 40 Dale Gardens Drive, Clinton CE 24050  
Ph: 07 7471 5630 E: glacton@alsglobal.com

LAKEVIEW 28 Bunn's Road, Pooraka SA 5095  
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ROBERTSON 10 Hot Way, Geelong VIC 3220  
Ph: 03 5229 7855 E: robertson@alsglobal.com

ROBERTSON 277-279 Woodcock Road, Glen Innes NSW 2161  
Ph: 02 8724 8385 E: robertson@alsglobal.com

TOWNSVILLE 14 15 Deane Court, Baffle QLD 4218  
Ph: 07 4795 0920 E: townsville@alsglobal.com

WOLLONGONG 40 Tenny Street, Wollongong NSW 2520  
Ph: 02 4228 3125 E: wollongong@alsglobal.com

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
SITE: Botany		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		Custody Seal Intact? Yes No N/A	
PROJECT: Orica Mercury Independent Review		PROJECT NO.: 45970	ALS QUOTE NO.: SY1055/14	Free Ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER:		PURCHASE ORDER NO.:	COUNTRY OF ORIGIN:	Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 972 626		Other comment:	
SAMPLER: AY/PC		SAMPLER MOBILE:		RECEIVED BY: Frank ALS	
COC Emailed to ALS? (NO)		EOD FORMAT (or default):		RECEIVED BY:	
Email Reports to: colin.mckay@wspgroup.com; philippa.chilts@wspgroup.com		RELINQUISHED BY: <i>[Signature]</i>		DATE/TIME: 27/2/15	
Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME: 27/2/15		DATE/TIME: 27/2/15 1400	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be ticked to attract site price)					Additional Information		
	MATRIX: Solid(S) Water(W)	LAB ID	SAMPLE ID		DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable		Chromium - Total	Lead - Total
	61	BH137 (0.4-0.5)	26/02/2015	Soil			x					
	62	BH138 (0-0.05)	26/02/2015	Soil			x					
	63	BH138 (0.4-0.5)	26/02/2015	Soil			x					
	64	BH138 (0-0.05)	26/02/2015	Soil			x					
	65	BH139 (0.4-0.5)	26/02/2015	Soil			x					
	66	BH140 (0-0.05)	26/02/2015	Soil			x					
	67	BH140 (0.4-0.5)	26/02/2015	Soil			x					
	68	BH141 (0-0.05)	26/02/2015	Soil			x					
	69	BH141 (0.4-0.5)	26/02/2015	Soil			x					
	70	BH142 (0-0.05)	26/02/2015	Soil			x					
	71	BH142 (0.4-0.5)	26/02/2015	Soil			x					
	72	BH143 (0-0.05)	26/02/2015	Soil			x					
					TOTAL		12					

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/HC1 Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airflight Unpreserved Plastic  
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airflight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass  
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sealed Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lignin Isoline Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles



# CHAIN OF CUSTODY

ALS Laboratory, please tick →

ADAMSBURGH 27 Spring Hill Parkway GA 30154  
Ph: 01 678 933 0000 E: adam@als.com

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Ph: 07 5547 7222 E: brisbane@als.com

GLADSTONE 48 Colerwood Drive Clifton QLD 4573  
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MELBOURNE 78 Spring Hill Melbourne VIC 3000  
Ph: 03 9414 2177 E: melb@als.com

SYDNEY 100 West Street Sydney NSW 2000  
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WELLINGTON 27 Sney Road Wellington 6142  
Ph: 03 772 6725 E: wellington@als.com

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GLADSTONE 48 Colerwood Drive Clifton QLD 4573  
Ph: 07 7571 5000 E: gladstone@als.com

WELLINGTON 27 Sney Road Wellington 6142  
Ph: 03 772 6725 E: wellington@als.com

CLIENT: WSP Environmental Pty Ltd		TURNAROUND REQUIREMENTS: <input type="checkbox"/> Standard TAT (List due date):		FOR LABORATORY USE ONLY (Circle)	
SITE: Botany		(Standard TAT may be longer for some tests e.g., Ultra Trace Organics)		Custody Seal Intact? Yes No N/A	
PROJECT: Orica Mercury Independent Review		PROJECT NO.: 45970		Free ice / frozen ice bricks present upon receipt? Yes No N/A	
ORDER NUMBER:		PURCHASE ORDER NO.:		Random Sample Temperature on Receipt: °C	
PROJECT MANAGER: Colin McKay		CONTACT PH: 0448 977 526		Other comment:	
SAMPLER: AY/PC		SAMPLER MOBILE:		RELINQUISHED BY:	
COC Emailed to ALS? (NO)		EDD FORMAT (or default):		RECEIVED BY: Frank AS	
Email Reports to: colin.mckay@wspgroup.com; philippa.childe@wspgroup.com		RELINQUISHED BY: <i>[Signature]</i>		RECEIVED BY: <i>[Signature]</i>	
Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME: 27/2/15		DATE/TIME: 27/2/15 1700	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED Including SUITES (NB, Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered) or Dissolved (filtered) as required					Additional Information		
	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Mercury - Total Recoverable	Chromium - Total	Lead - Total	PAH		PCB	
73	BH143 (0.4-0.5)	26/02/2015	Soil				x						
74	BH144 (0-0.05)	26/02/2015	Soil				x						
75	BH144 (0.4-0.5)	26/02/2015	Soil				x						
76	BH145 (0-0.05)	26/02/2015	Soil				x						
77	BH145 (0.4-0.5)	26/02/2015	Soil				x						
78	BH146 (0-0.05)	26/02/2015	Soil				x						
79	BH146 (0.4-0.5)	26/02/2015	Soil				x						
80	BH147 (0-0.05)	27/02/2015	Soil				x						
81	BH147 (0.4-0.5)	27/02/2015	Soil				x						
82	BH146 (0-0.05)	27/02/2015	Soil				x						
83	BH148 (0.4-0.5)	27/02/2015	Soil				x						
84	Cup 9	24/02/2015	Soil				x						
TOTAL								12					

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airflight Unpreserved Plastic  
V = VOA Vial (HCl) Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airflight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass  
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulfate Soils; U = Unpreserved Bag; LI = Lugdunum Iodine Preserved Bottle; STT = Sterile Sodium Thiosulfate Preserved Bottle.



# CHAIN OF CUSTODY

ALS Laboratory: please tick →

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Ph: 02 4942 6777 E: w@als.com.au

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Ph: 02 8744 0256 E: sydney@als.com.au

WOLLONGONG 111-115 Princes Highway Wollongong NSW 2520  
Ph: 02 4225 3125 E: w@als.com.au

CLIENT: WSP Environmental Pty Ltd

SYTE: Botany

PROJECT: Orica Mercury Independent Review

PROJECT NO.: 45970

ORDER NUMBER:

PURCHASE ORDER NO.:

PROJECT MANAGER: Colin McKay

CONTACT PH: 0448 977 926

SAMPLER: AY/PC

SAMPLER MOBILE:

COQ Emailed to ALS? (NO)

EDD FORMAT (or default):

Email Reports to: colin.mckay@wspgroup.com; phil@pa.chilids@wspgroup.com

Email Invoice to (will default to PM if no other addresses are listed):

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

### TURNAROUND REQUIREMENTS:

Standard TAT (list due date):

(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)

ALS QUOTE NO.: SY19885/14

COUNTRY OF ORIGIN:

COQ SEQUENCE NUMBER (Circle)

COQ: 8

OP: 8

### FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A

Frozen Ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comment:

RELINQUISHED BY:

*Colin McKay*

DATE/TIME:

27/2/15

RECEIVED BY:

*Frank A25*

DATE/TIME:

27/2/15 1700

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

ALS USE ONLY	SAMPLE DETAILS			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price)					Additional Information	
	LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	When Metals are required, specify Total (undiluted bottle required) or Dissolved (HCl Eluted bottle required)					
							Mercury - Total Recoverable	Chromium - Total	Lead - Total	PAH	PCB	
85	Dup 10	26/02/2015	Soil				x					
86	Dup 11	26/02/2015	Soil				x					
87	Dup 12	26/02/2015	Soil				x					
88	Dup 13	29/02/2015	Soil				x					
89	Dup 14	27/02/2014	Soil				x					
90	DUP 7		Soil				x					Already @ Lab (ES1503946-51)
TOTAL						5						

Water Container Codes: P = Unpreserved Plastic; N = Nitric Acid Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide ORC Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Air-tight Unpreserved Plastic; V = VOA Vial/OCI Preserved; VOA = VOA Vial/OCI Preserved; VS = VOA Vial Sulfuric Preserved; AV = Air-tight Unpreserved Vial; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; S = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soil; B = Unpreserved Bag; LI = Lycopodium Preserved Bottle; STT = Sterile Sodium Thiosulfate Preserved Bottle.

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

Work Order : **ES1504881**

Client : **WSP ENVIRONMENTAL PTY LTD**  
Contact : **MR COLIN MCKAY**  
Address : **ENVIRONMENT & ENERGY  
LEVEL 1, 41 McLAREN STREET  
NORTH SYDNEY NSW, AUSTRALIA  
2060**

Laboratory : Environmental Division Sydney  
Contact : Client Services  
Address : 277-289 Woodpark Road Smithfield  
NSW Australia 2164

E-mail : colin.mckay@wspgroup.com.au  
Telephone : +61 02 8925 6700  
Facsimile : +61 02 8925 6799

E-mail : sydney@alsglobal.com  
Telephone : +61-2-8784 8555  
Facsimile : +61-2-8784 8500

Project : 45970 ORICA MERCURY  
INDEPENDENT REVIEW

Page : 1 of 4

Order number : 45970  
C-O-C number : ----  
Site : ----  
Sampler : AY/PC

Quote number : ES2015WSPENV0359 (SY/1085/14)

QC Level : NEPM 2013 Schedule B(3) and ALS  
QCS3 requirement

### Dates

Date Samples Received : 27-FEB-2015  
Client Requested Due Date : 09-MAR-2015

Issue Date : 02-MAR-2015 18:49  
Scheduled Reporting Date : **09-MAR-2015**

### Delivery Details

Mode of Delivery : Carrier  
No. of coolers/boxes : 3 ESKIES  
Security Seal : Not intact.

Temperature : 7.8°C - Ice present  
No. of samples received : 90  
No. of samples analysed : 90

### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample ID BH135(0.3-0.4) was received labelled as BH135(0.4-0.5) on the jar. Lab will follow sample ID on the jar for analysis.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



## Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

## Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EG035T (solids) Total Mercury by FIMS	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only
ES1504881-001	24-FEB-2015 15:00	BH107(0-0.05)	✓		✓		
ES1504881-002	24-FEB-2015 15:00	BH107(0.4-0.5)	✓		✓		
ES1504881-003	24-FEB-2015 15:00	BH108(0-0.05)	✓	✓	✓	✓	✓
ES1504881-004	24-FEB-2015 15:00	BH108(0.4-0.5)	✓		✓		
ES1504881-005	24-FEB-2015 15:00	BH109(0-0.05)	✓		✓		
ES1504881-006	24-FEB-2015 15:00	BH109(0.4-0.5)	✓		✓		
ES1504881-007	24-FEB-2015 15:00	BH110(0-0.05)	✓	✓	✓	✓	✓
ES1504881-008	24-FEB-2015 15:00	BH110(0.4-0.5)	✓		✓		
ES1504881-009	24-FEB-2015 15:00	BH111(0-0.05)	✓	✓	✓	✓	✓
ES1504881-010	24-FEB-2015 15:00	BH111(0.4-0.5)	✓		✓		
ES1504881-011	24-FEB-2015 15:00	BH112(0-0.05)	✓	✓	✓	✓	✓
ES1504881-012	24-FEB-2015 15:00	BH112(0.4-0.5)	✓		✓		
ES1504881-013	24-FEB-2015 15:00	BH113(0-0.05)	✓		✓		
ES1504881-014	24-FEB-2015 15:00	BH113(0.4-0.5)	✓		✓		
ES1504881-015	24-FEB-2015 15:00	BH114(0-0.05)	✓	✓	✓	✓	✓
ES1504881-016	24-FEB-2015 15:00	BH114(0.4-0.5)	✓		✓		
ES1504881-017	24-FEB-2015 15:00	BH115(0-0.05)	✓		✓		
ES1504881-018	24-FEB-2015 15:00	BH115(0.3-0.4)	✓		✓		
ES1504881-019	24-FEB-2015 15:00	BH116(0-0.05)	✓	✓	✓	✓	✓
ES1504881-020	24-FEB-2015 15:00	BH117(0-0.05)	✓		✓		
ES1504881-021	24-FEB-2015 15:00	BH117(0.3-0.4)	✓		✓		
ES1504881-022	24-FEB-2015 15:00	BH118(0-0.05)	✓		✓		
ES1504881-023	24-FEB-2015 15:00	BH118(0.4-0.5)	✓		✓		
ES1504881-024	24-FEB-2015 15:00	BH119(0-0.05)	✓		✓		
ES1504881-025	24-FEB-2015 15:00	BH119(0.4-0.5)	✓		✓		
ES1504881-026	24-FEB-2015 15:00	BH120(0-0.05)	✓		✓		
ES1504881-027	24-FEB-2015 15:00	BH120(0.4-0.5)	✓		✓		
ES1504881-028	24-FEB-2015 15:00	BH121(0-0.05)	✓		✓		
ES1504881-029	24-FEB-2015 15:00	BH121(0.4-0.5)	✓		✓		
ES1504881-030	24-FEB-2015 15:00	BH122(0-0.05)	✓		✓		
ES1504881-031	24-FEB-2015 15:00	BH122(0.4-0.5)	✓		✓		
ES1504881-032	24-FEB-2015 15:00	BH123(0-0.05)	✓		✓		
ES1504881-033	24-FEB-2015 15:00	BH123(0.4-0.5)	✓		✓		
ES1504881-034	24-FEB-2015 15:00	BH124(0-0.05)	✓		✓		
ES1504881-035	24-FEB-2015 15:00	BH124(0.4-0.5)	✓		✓		



			SOIL - EA055-103 Moisture Content	SOIL - EG005T (solids) Total Metals by ICP-AES	SOIL - EG035T (solids) Total Mercury by FIMS	SOIL - EP066 (solids) Polychlorinated Biphenyls by GCMS	SOIL - EP075 SIM PAH only SIM - PAH only
ES1504881-036	24-FEB-2015 15:00	BH125(0-0.05)	✓	✓	✓		
ES1504881-037	24-FEB-2015 15:00	BH125(0.4-0.5)	✓		✓		
ES1504881-038	24-FEB-2015 15:00	BH126(0-0.05)	✓		✓		
ES1504881-039	24-FEB-2015 15:00	BH126(0.4-0.5)	✓		✓		
ES1504881-040	24-FEB-2015 15:00	BH127(0-0.05)	✓		✓		
ES1504881-041	24-FEB-2015 15:00	BH127(0.4-0.5)	✓		✓		
ES1504881-042	26-FEB-2015 15:00	BH128(0-0.05)	✓		✓		
ES1504881-043	26-FEB-2015 15:00	BH128(0.4-0.5)	✓		✓		
ES1504881-044	26-FEB-2015 15:00	BH129(0-0.05)	✓		✓		
ES1504881-045	26-FEB-2015 15:00	BH129(0.3-0.4)	✓		✓		
ES1504881-046	26-FEB-2015 15:00	BH130(0-0.05)	✓		✓		
ES1504881-047	26-FEB-2015 15:00	BH130(0.2-0.3)	✓		✓		
ES1504881-048	26-FEB-2015 15:00	BH131(0-0.05)	✓		✓		
ES1504881-049	26-FEB-2015 15:00	BH131(0.4-0.5)	✓		✓		
ES1504881-050	26-FEB-2015 15:00	BH132(0-0.05)	✓		✓		
ES1504881-051	26-FEB-2015 15:00	BH132(0.4-0.5)	✓		✓		
ES1504881-052	26-FEB-2015 15:00	BH133(0-0.05)	✓		✓		
ES1504881-053	26-FEB-2015 15:00	BH133(0.4-0.5)	✓		✓		
ES1504881-054	26-FEB-2015 15:00	BH134(0-0.05)	✓		✓		
ES1504881-055	26-FEB-2015 15:00	BH134(0.4-0.5)	✓		✓		
ES1504881-056	26-FEB-2015 15:00	BH135(0-0.05)	✓		✓		
ES1504881-057	26-FEB-2015 15:00	BH135(0.4-0.5))	✓		✓		
ES1504881-058	26-FEB-2015 15:00	BH136(0-0.05)	✓		✓		
ES1504881-059	26-FEB-2015 15:00	BH136(0.4-0.5)	✓		✓		
ES1504881-060	26-FEB-2015 15:00	BH137(0-0.05)	✓		✓		
ES1504881-061	26-FEB-2015 15:00	BH137(0.4-0.5)	✓		✓		
ES1504881-062	26-FEB-2015 15:00	BH138(0-0.05)	✓		✓		
ES1504881-063	26-FEB-2015 15:00	BH138(0.4-0.5)	✓		✓		
ES1504881-064	26-FEB-2015 15:00	BH139(0-0.05)	✓		✓		
ES1504881-065	26-FEB-2015 15:00	BH139(0.4-0.5)	✓		✓		
ES1504881-066	26-FEB-2015 15:00	BH140(0-0.05)	✓		✓		
ES1504881-067	26-FEB-2015 15:00	BH140(0.4-0.5)	✓		✓		
ES1504881-068	26-FEB-2015 15:00	BH141(0-0.05)	✓		✓		
ES1504881-069	26-FEB-2015 15:00	BH141(0.4-0.5)	✓		✓		
ES1504881-070	26-FEB-2015 15:00	BH142(0-0.05)	✓		✓		
ES1504881-071	26-FEB-2015 15:00	BH142(0.4-0.5)	✓		✓		
ES1504881-072	26-FEB-2015 15:00	BH143(0-0.05)	✓		✓		
ES1504881-073	26-FEB-2015 15:00	BH143(0.4-0.5)	✓		✓		
ES1504881-074	26-FEB-2015 15:00	BH144(0-0.05)	✓		✓		
ES1504881-075	26-FEB-2015 15:00	BH144(0.4-0.5)	✓		✓		
ES1504881-076	26-FEB-2015 15:00	BH145(0-0.05)	✓		✓		



## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES1504881</b> <b>Client</b> : <b>WSP ENVIRONMENTAL PTY LTD</b> <b>Contact</b> : MR COLIN MCKAY <b>Address</b> : ENVIRONMENT & ENERGY LEVEL 1, 41 McLAREN STREET NORTH SYDNEY NSW, AUSTRALIA 2060  <b>E-mail</b> : colin.mckay@wspgroup.com.au <b>Telephone</b> : +61 02 8925 6700 <b>Facsimile</b> : +61 02 8925 6799 <b>Project</b> : 45970 ORICA MERCURY INDEPENDENT REVIEW <b>Order number</b> : 45970 <b>C-O-C number</b> : ---- <b>Sampler</b> : AY/PC <b>Site</b> : ----  <b>Quote number</b> : SY/1085/14	<b>Page</b> : 1 of 25  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : Client Services <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : sydney@alsglobal.com <b>Telephone</b> : +61-2-8784 8555 <b>Facsimile</b> : +61-2-8784 8500 <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement  <b>Date Samples Received</b> : 27-FEB-2015 <b>Issue Date</b> : 05-MAR-2015  <b>No. of samples received</b> : 90 <b>No. of samples analysed</b> : 90
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Pabi Subba	Senior Organic Chemist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Shobhna Chandra	Metals Coordinator	Sydney Inorganics



## General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

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

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

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

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

- **Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.**



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH107(0-0.05)	BH107(0.4-0.5)	BH108(0-0.05)	BH108(0.4-0.5)	BH109(0-0.05)
				24-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504881-001	ES1504881-002	ES1504881-003	ES1504881-004	ES1504881-005
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	7.5	1.6	3.5	1.3	6.7
<b>EG005T: Total Metals by ICP-AES</b>								
Chromium	7440-47-3	2	mg/kg	----	----	7	----	----
Lead	7439-92-1	5	mg/kg	----	----	209	----	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.2	<0.1	0.2	<0.1	0.3
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	<0.1	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	1.1	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	3.5	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	3.6	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	1.3	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	1.6	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	2.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	1.0	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	2.0	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	1.3	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	2.0	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	19.9	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	2.6	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	2.9	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	3.1	----	----
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	88.0	----	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	----	----	94.3	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH107(0-0.05)	BH107(0.4-0.5)	BH108(0-0.05)	BH108(0.4-0.5)	BH109(0-0.05)
				24-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504881-001	ES1504881-002	ES1504881-003	ES1504881-004	ES1504881-005
<b>EP075(SIM)S: Phenolic Compound Surrogates - Continued</b>								
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	102	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	----	----	102	----	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	111	----	----
Anthracene-d10	1719-06-8	0.1	%	----	----	97.6	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	93.2	----	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH109(0.4-0.5)	BH110(0-0.05)	BH110(0.4-0.5)	BH111(0-0.05)	BH111(0.4-0.5)
				24-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504881-006	ES1504881-007	ES1504881-008	ES1504881-009	ES1504881-010
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	4.9	2.7	2.9	3.9	3.7
<b>EG005T: Total Metals by ICP-AES</b>								
Chromium	7440-47-3	2	mg/kg	----	3	----	5	----
Lead	7439-92-1	5	mg/kg	----	25	----	35	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.2	<0.1	0.1	<0.1
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	----	<0.1	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	0.6	----	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	1.2	----	1.2	----
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	----	71.0	----	87.0	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	----	90.4	----	114	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH109(0.4-0.5)	BH110(0-0.05)	BH110(0.4-0.5)	BH111(0-0.05)	BH111(0.4-0.5)
				24-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504881-006	ES1504881-007	ES1504881-008	ES1504881-009	ES1504881-010
<b>EP075(SIM)S: Phenolic Compound Surrogates - Continued</b>								
2-Chlorophenol-D4	93951-73-6	0.1	%	----	95.9	----	108	----
2,4,6-Tribromophenol	118-79-6	0.1	%	----	96.1	----	108	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	----	107	----	114	----
Anthracene-d10	1719-06-8	0.1	%	----	94.6	----	98.7	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	108	----	97.2	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				BH112(0-0.05)	BH112(0.4-0.5)	BH113(0-0.05)	BH113(0.4-0.5)	BH114(0-0.05)
				24-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504881-011	ES1504881-012	ES1504881-013	ES1504881-014	ES1504881-015
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	4.4	2.0	2.0	2.8	6.1
<b>EG005T: Total Metals by ICP-AES</b>								
Chromium	7440-47-3	2	mg/kg	5	----	----	----	5
Lead	7439-92-1	5	mg/kg	60	----	----	----	115
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	<0.1
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	1.2
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	83.0	----	----	----	94.0
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	96.3	----	----	----	100



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sample ID	BH112(0-0.05)	BH112(0.4-0.5)	BH113(0-0.05)	BH113(0.4-0.5)	BH114(0-0.05)
Client sampling date / time	24-FEB-2015 15:00				
	ES1504881-011	ES1504881-012	ES1504881-013	ES1504881-014	ES1504881-015

Compound	CAS Number	LOR	Unit	ES1504881-011	ES1504881-012	ES1504881-013	ES1504881-014	ES1504881-015
<b>EP075(SIM)S: Phenolic Compound Surrogates - Continued</b>								
2-Chlorophenol-D4	93951-73-6	0.1	%	96.2	----	----	----	106
2,4,6-Tribromophenol	118-79-6	0.1	%	98.7	----	----	----	99.6
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	129	----	----	----	117
Anthracene-d10	1719-06-8	0.1	%	92.5	----	----	----	99.7
4-Terphenyl-d14	1718-51-0	0.1	%	91.9	----	----	----	97.9



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH114(0.4-0.5)	BH115(0-0.05)	BH115(0.3-0.4)	BH116(0-0.05)	BH117(0-0.05)
				24-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504881-016	ES1504881-017	ES1504881-018	ES1504881-019	ES1504881-020
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	<1.0	9.5	2.5	1.8	6.6
<b>EG005T: Total Metals by ICP-AES</b>								
Chromium	7440-47-3	2	mg/kg	----	----	----	5	----
Lead	7439-92-1	5	mg/kg	----	----	----	75	----
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.2	<0.1	0.2	0.3
<b>EP066: Polychlorinated Biphenyls (PCB)</b>								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	----	<0.1	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	0.6	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	1.2	----
<b>EP066S: PCB Surrogate</b>								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	82.0	----
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>								
Phenol-d6	13127-88-3	0.1	%	----	----	----	98.8	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH114(0.4-0.5)	BH115(0-0.05)	BH115(0.3-0.4)	BH116(0-0.05)	BH117(0-0.05)
				24-FEB-2015 15:00				
				ES1504881-016	ES1504881-017	ES1504881-018	ES1504881-019	ES1504881-020
Compound	CAS Number	LOR	Unit					
<b>EP075(SIM)S: Phenolic Compound Surrogates - Continued</b>								
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	----	98.7	----
2.4.6-Tribromophenol	118-79-6	0.1	%	----	----	----	94.8	----
<b>EP075(SIM)T: PAH Surrogates</b>								
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	----	107	----
Anthracene-d10	1719-06-8	0.1	%	----	----	----	92.2	----
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	----	91.2	----



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH117(0.3-0.4)	BH118(0-0.05)	BH118(0.4-0.5)	BH119(0-0.05)	BH119(0.4-0.5)
				24-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504881-021	ES1504881-022	ES1504881-023	ES1504881-024	ES1504881-025
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	5.1	2.7	4.3	5.8	5.5
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH120(0-0.05)	BH120(0.4-0.5)	BH121(0-0.05)	BH121(0.4-0.5)	BH122(0-0.05)
				24-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504881-026	ES1504881-027	ES1504881-028	ES1504881-029	ES1504881-030
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	2.8	<1.0	7.0	4.7	1.8
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH122(0.4-0.5)	BH123(0-0.05)	BH123(0.4-0.5)	BH124(0-0.05)	BH124(0.4-0.5)
				24-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504881-031	ES1504881-032	ES1504881-033	ES1504881-034	ES1504881-035
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	1.0	6.9	3.5	32.2	19.2
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH125(0-0.05)	BH125(0.4-0.5)	BH126(0-0.05)	BH126(0.4-0.5)	BH127(0-0.05)
				24-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504881-036	ES1504881-037	ES1504881-038	ES1504881-039	ES1504881-040
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	3.5	1.1	4.2	3.0	16.1
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH127(0.4-0.5)	BH128(0-0.05)	BH128(0.4-0.5)	BH129(0-0.05)	BH129(0.3-0.4)
				24-FEB-2015 15:00	26-FEB-2015 15:00	26-FEB-2015 15:00	26-FEB-2015 15:00	26-FEB-2015 15:00
Compound	CAS Number	LOR	Unit	ES1504881-041	ES1504881-042	ES1504881-043	ES1504881-044	ES1504881-045
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	5.6	8.0	3.4	6.7	2.7
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	0.3	0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH130(0-0.05)	BH130(0.2-0.3)	BH131(0-0.05)	BH131(0.4-0.5)	BH132(0-0.05)
				26-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504881-046	ES1504881-047	ES1504881-048	ES1504881-049	ES1504881-050
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	19.3	17.4	11.4	5.2	4.1
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.3	0.2	<0.1	0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH132(0.4-0.5)	BH133(0-0.05)	BH133(0.4-0.5)	BH134(0-0.05)	BH134(0.4-0.5)
				26-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504881-051	ES1504881-052	ES1504881-053	ES1504881-054	ES1504881-055
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	1.5	3.7	7.0	2.4	7.1
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH135(0-0.05)	BH135(0.4-0.5)	BH136(0-0.05)	BH136(0.4-0.5)	BH137(0-0.05)
				26-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504881-056	ES1504881-057	ES1504881-058	ES1504881-059	ES1504881-060
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	3.6	3.2	3.0	<1.0	12.3
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.2	<0.1	0.2	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH137(0.4-0.5)	BH138(0-0.05)	BH138(0.4-0.5)	BH139(0-0.05)	BH139(0.4-0.5)
				26-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504881-061	ES1504881-062	ES1504881-063	ES1504881-064	ES1504881-065
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	4.4	2.6	2.1	8.5	5.2
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sample ID	BH140(0-0.05)	BH140(0.4-0.5)	BH141(0-0.05)	BH141(0.4-0.5)	BH142(0-0.05)
Client sampling date / time	26-FEB-2015 15:00				

Compound	CAS Number	LOR	Unit	ES1504881-066	ES1504881-067	ES1504881-068	ES1504881-069	ES1504881-070
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	3.0	7.8	4.3	3.6	6.3
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.2	<0.1	<0.1	<0.1	0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sample ID	BH142(0.4-0.5)	BH143(0-0.05)	BH143(0.4-0.5)	BH144(0-0.05)	BH144(0.4-0.5)
Client sampling date / time	26-FEB-2015 15:00				

Compound	CAS Number	LOR	Unit	ES1504881-071	ES1504881-072	ES1504881-073	ES1504881-074	ES1504881-075
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	3.1	3.3	4.0	5.6	2.2
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				BH145(0-0.05)	BH145(0.4-0.5)	BH146(0-0.05)	BH146(0.4-0.5)	BH147(0-0.05)
				26-FEB-2015 15:00				
Compound	CAS Number	LOR	Unit	ES1504881-076	ES1504881-077	ES1504881-078	ES1504881-079	ES1504881-080
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	5.5	2.3	2.6	3.8	5.6
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	3.0	1.6	0.1	0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sample ID	BH147(0.4-0.5)	BH148(0-0.05)	BH148(0.4-0.5)	DUP9	DUP10
Client sampling date / time	26-FEB-2015 15:00				

Compound	CAS Number	LOR	Unit	ES1504881-081	ES1504881-082	ES1504881-083	ES1504881-084	ES1504881-085
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	5.8	6.0	4.4	8.7	11.0
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1



## Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				DUP11	DUP12	DUP13	DUP14	DUP7
				26-FEB-2015 15:00	26-FEB-2015 15:00	26-FEB-2015 15:00	27-FEB-2015 15:00	17-FEB-2015 15:00
				ES1504881-086	ES1504881-087	ES1504881-088	ES1504881-089	ES1504881-090
Compound	CAS Number	LOR	Unit					
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	----	1.0	%	5.0	5.3	3.0	5.6	6.2
<b>EG035T: Total Recoverable Mercury by FIMS</b>								
Mercury	7439-97-6	0.1	mg/kg	0.1	<0.1	0.1	<0.1	<0.1



## Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
<b>EP066S: PCB Surrogate</b>			
Decachlorobiphenyl	2051-24-3	39	149
<b>EP075(SIM)S: Phenolic Compound Surrogates</b>			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
<b>EP075(SIM)T: PAH Surrogates</b>			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129



QUALITY CONTROL REPORT

Table with 4 columns: Field Name, Value, Field Name, Value. Includes Work Order (ES1504881), Client (WSP ENVIRONMENTAL PTY LTD), Laboratory (Environmental Division Sydney), and various contact and project details.

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



NATA Accredited Laboratory 825
Accredited for compliance with ISO/IEC 17025.

Signatories

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

Table with 3 columns: Signatories, Position, Accreditation Category. Lists Pabi Subba (Senior Organic Chemist) and Shobhna Chandra (Metals Coordinator).



### **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

Key :            Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot  
                  CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
                  LOR = Limit of reporting  
                  RPD = Relative Percentage Difference  
                  # = Indicates failed QC



## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EA055: Moisture Content (QC Lot: 3843675)</b>									
ES1504837-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	16.6	15.1	9.4	0% - 50%
ES1504837-011	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	24.5	24.4	0.5	0% - 20%
<b>EA055: Moisture Content (QC Lot: 3843676)</b>									
ES1504881-008	BH110(0.4-0.5)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	2.9	3.6	21.4	No Limit
ES1504881-019	BH116(0-0.05)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	1.8	3.2	58.6	No Limit
<b>EA055: Moisture Content (QC Lot: 3843677)</b>									
ES1504881-028	BH121(0-0.05)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	7.0	6.3	10.8	No Limit
ES1504881-039	BH126(0.4-0.5)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	3.0	3.6	17.1	No Limit
<b>EA055: Moisture Content (QC Lot: 3843678)</b>									
ES1504881-048	BH131(0-0.05)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	11.4	10.9	4.2	0% - 50%
ES1504881-059	BH136(0.4-0.5)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	<1.0	1.2	16.6	No Limit
<b>EA055: Moisture Content (QC Lot: 3843680)</b>									
ES1504881-068	BH141(0-0.05)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	4.3	4.6	7.5	No Limit
ES1504881-079	BH146(0.4-0.5)	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	3.8	1.9	65.8	No Limit
<b>EA055: Moisture Content (QC Lot: 3843681)</b>									
ES1504881-088	DUP13	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	3.0	2.3	24.6	No Limit
ES1505016-006	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	13.7	13.6	1.2	0% - 50%
<b>EG005T: Total Metals by ICP-AES (QC Lot: 3845730)</b>									
ES1504257-070	Anonymous	EG005T: Chromium	7440-47-3	2	mg/kg	6	6	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
ES1504881-003	BH108(0-0.05)	EG005T: Chromium	7440-47-3	2	mg/kg	7	7	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	209	228	8.6	0% - 20%
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3843652)</b>									
ES1504881-001	BH107(0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.0	No Limit
ES1504881-016	BH114(0.4-0.5)	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3843653)</b>									
ES1504881-027	BH120(0.4-0.5)	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1504881-037	BH125(0.4-0.5)	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3843654)</b>									
ES1504881-047	BH130(0.2-0.3)	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.0	No Limit
ES1504881-057	BH135(0.4-0.5))	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3843655)</b>									
ES1504881-067	BH140(0.4-0.5)	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.1	0.0	No Limit
ES1504881-077	BH145(0.4-0.5)	EG035T: Mercury	7439-97-6	0.1	mg/kg	1.6	1.5	0.0	0% - 50%



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3845731)</b>									
ES1504257-070	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1504881-003	BH108(0-0.05)	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.0	No Limit
<b>EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3844062)</b>									
ES1504881-003	BH108(0-0.05)	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3844063)</b>									
ES1504881-003	BH108(0-0.05)	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	1.1	0.8	33.7	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	3.5	2.9	18.3	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	3.6	3.1	14.7	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	1.3	1.3	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	1.6	1.6	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	2.5	2.6	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	1.0	1.0	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	2.0	2.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	1.3	1.3	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	2.0	1.9	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	19.9	18.5	7.3	0% - 20%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	2.6	2.6	0.0	No Limit



### Method Blank (MB) and Laboratory Control Spike (LCS) Report

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

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
				Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3845730)</b>									
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	98.2	80	136	
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	111	86	124	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843652)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	78.7	70	105	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843653)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	74.4	70	105	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843654)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	74.9	70	105	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843655)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	90.8	70	105	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3845731)</b>									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	76.6	70	105	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3844062)</b>									
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	95.0	57.4	117	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3844063)</b>									
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	103	80	124	
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	99.8	77	123	
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	101	79	123	
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	119	77	123	
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	102	79	123	
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	102	79	123	
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	114	79	123	
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	113	79	125	
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	98.8	73	121	
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	100	81	123	
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	4 mg/kg	90.4	70	118	



Sub-Matrix: SOIL

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report				
					Spike Concentration	Spike Recovery (%)		Recovery Limits (%)	
						LCS	Low	High	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3844063) - continued</b>									
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	110	77	123	
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	102	76	122	
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	96.1	71	113	
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	93.6	71.7	113	
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	92.8	72.4	114	

### Matrix Spike (MS) Report

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

Sub-Matrix: SOIL

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report				
				Spike Concentration	Spike Recovery(%)		Recovery Limits (%)	
					MS	Low	High	
<b>EG005T: Total Metals by ICP-AES (QCLot: 3845730)</b>								
ES1504257-070	Anonymous	EG005T: Chromium	7440-47-3	50 mg/kg	96.7	70	130	
		EG005T: Lead	7439-92-1	250 mg/kg	114	70	130	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843652)</b>								
ES1504881-001	BH107(0-0.05)	EG035T: Mercury	7439-97-6	5 mg/kg	90.1	70	130	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843653)</b>								
ES1504881-027	BH120(0.4-0.5)	EG035T: Mercury	7439-97-6	5 mg/kg	87.8	70	130	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843654)</b>								
ES1504881-047	BH130(0.2-0.3)	EG035T: Mercury	7439-97-6	5 mg/kg	72.7	70	130	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843655)</b>								
ES1504881-067	BH140(0.4-0.5)	EG035T: Mercury	7439-97-6	5 mg/kg	81.0	70	130	
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3845731)</b>								
ES1504257-070	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	84.5	70	130	
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3844062)</b>								
ES1504881-003	BH108(0-0.05)	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	97.0	70	130	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3844063)</b>								
ES1504881-003	BH108(0-0.05)	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	97.0	70	130	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	120	70	130	

### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report



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

Sub-Matrix: SOIL

					Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843652)</b>										
ES1504881-001	BH107(0-0.05)	EG035T: Mercury	7439-97-6	5 mg/kg	90.1	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843653)</b>										
ES1504881-027	BH120(0.4-0.5)	EG035T: Mercury	7439-97-6	5 mg/kg	87.8	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843654)</b>										
ES1504881-047	BH130(0.2-0.3)	EG035T: Mercury	7439-97-6	5 mg/kg	72.7	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3843655)</b>										
ES1504881-067	BH140(0.4-0.5)	EG035T: Mercury	7439-97-6	5 mg/kg	81.0	----	70	130	----	----
<b>EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3844062)</b>										
ES1504881-003	BH108(0-0.05)	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	97.0	----	70	130	----	----
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3844063)</b>										
ES1504881-003	BH108(0-0.05)	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	97.0	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	120	----	70	130	----	----
<b>EG005T: Total Metals by ICP-AES (QCLot: 3845730)</b>										
ES1504257-070	Anonymous	EG005T: Chromium	7440-47-3	50 mg/kg	96.7	----	70	130	----	----
		EG005T: Lead	7439-92-1	250 mg/kg	114	----	70	130	----	----
<b>EG035T: Total Recoverable Mercury by FIMS (QCLot: 3845731)</b>										
ES1504257-070	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	84.5	----	70	130	----	----

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1504881</b>	Page	: 1 of 8
Client	: WSP ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR COLIN MCKAY	Contact	: Client Services
Address	: ENVIRONMENT & ENERGY LEVEL 1, 41 McLAREN STREET NORTH SYDNEY NSW, AUSTRALIA 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: colin.mckay@wspgroup.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 8925 6700	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8925 6799	Facsimile	: +61-2-8784 8500
Project	: 45970 ORICA MERCURY INDEPENDENT REVIEW	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 27-FEB-2015
C-O-C number	: ----	Issue Date	: 05-MAR-2015
Sampler	: AY/PC	No. of samples received	: 90
Order number	: 45970	No. of samples analysed	: 90
Quote number	: SY/1085/14		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



## Analysis Holding Time Compliance

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

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

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

Matrix: SOIL

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA055: Moisture Content</b>							
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> DUP7	17-FEB-2015	----	----	----	03-MAR-2015	03-MAR-2015	✓
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> BH107(0-0.05), BH108(0-0.05), BH109(0-0.05), BH110(0-0.05), BH111(0-0.05), BH112(0-0.05), BH113(0-0.05), BH114(0-0.05), BH115(0-0.05), BH116(0-0.05), BH117(0.3-0.4), BH118(0.4-0.5), BH119(0.4-0.5), BH120(0.4-0.5), BH121(0.4-0.5), BH122(0.4-0.5), BH123(0.4-0.5), BH124(0.4-0.5), BH125(0.4-0.5), BH126(0.4-0.5), BH127(0.4-0.5), BH107(0.4-0.5), BH108(0.4-0.5), BH109(0.4-0.5), BH110(0.4-0.5), BH111(0.4-0.5), BH112(0.4-0.5), BH113(0.4-0.5), BH114(0.4-0.5), BH115(0.3-0.4), BH117(0-0.05), BH118(0-0.05), BH119(0-0.05), BH120(0-0.05), BH121(0-0.05), BH122(0-0.05), BH123(0-0.05), BH124(0-0.05), BH125(0-0.05), BH126(0-0.05), BH127(0-0.05),	24-FEB-2015	----	----	----	03-MAR-2015	10-MAR-2015	✓
<b>Soil Glass Jar - Unpreserved (EA055-103)</b>							



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EA055: Moisture Content - Continued</b>									
BH128(0-0.05), BH129(0-0.05), BH130(0-0.05), BH131(0-0.05), BH132(0-0.05), BH133(0-0.05), BH134(0-0.05), BH135(0-0.05), BH136(0-0.05), BH137(0-0.05), BH138(0-0.05), BH139(0-0.05), BH140(0-0.05), BH141(0-0.05), BH142(0-0.05), BH143(0-0.05), BH144(0-0.05), BH145(0-0.05), BH146(0-0.05), BH147(0-0.05), BH148(0-0.05), DUP9, DUP11, DUP13	BH128(0.4-0.5), BH129(0.3-0.4), BH130(0.2-0.3), BH131(0.4-0.5), BH132(0.4-0.5), BH133(0.4-0.5), BH134(0.4-0.5), BH135(0.4-0.5), BH136(0.4-0.5), BH137(0.4-0.5), BH138(0.4-0.5), BH139(0.4-0.5), BH140(0.4-0.5), BH141(0.4-0.5), BH142(0.4-0.5), BH143(0.4-0.5), BH144(0.4-0.5), BH145(0.4-0.5), BH146(0.4-0.5), BH147(0.4-0.5), BH148(0.4-0.5), DUP10, DUP12,	26-FEB-2015	----	----	----	03-MAR-2015	12-MAR-2015	✓	
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> DUP14		27-FEB-2015	----	----	----	03-MAR-2015	13-MAR-2015	✓	
<b>EG005T: Total Metals by ICP-AES</b>									
<b>Soil Glass Jar - Unpreserved (EG005T)</b> BH108(0-0.05), BH111(0-0.05), BH114(0-0.05),	BH110(0-0.05), BH112(0-0.05), BH116(0-0.05)	24-FEB-2015	04-MAR-2015	23-AUG-2015	✓	05-MAR-2015	23-AUG-2015	✓	



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EG035T: Total Recoverable Mercury by FIMS</b>							
<b>Soil Glass Jar - Unpreserved (EG035T)</b> DUP7	17-FEB-2015	04-MAR-2015	17-MAR-2015	✓	05-MAR-2015	17-MAR-2015	✓
<b>Soil Glass Jar - Unpreserved (EG035T)</b> BH107(0.4-0.5), BH108(0.4-0.5), BH109(0.4-0.5), BH110(0.4-0.5), BH111(0.4-0.5), BH112(0.4-0.5), BH113(0.4-0.5), BH114(0.4-0.5), BH115(0.3-0.4), BH116(0.3-0.4), BH117(0.3-0.4), BH118(0.4-0.5), BH119(0.4-0.5), BH120(0.4-0.5), BH121(0.4-0.5), BH122(0.4-0.5), BH123(0.4-0.5), BH124(0.4-0.5), BH125(0.4-0.5), BH126(0.4-0.5), BH127(0.4-0.5)	24-FEB-2015	03-MAR-2015	24-MAR-2015	✓	04-MAR-2015	24-MAR-2015	✓
<b>Soil Glass Jar - Unpreserved (EG035T)</b> BH108(0-0.05), BH111(0-0.05), BH114(0-0.05)	24-FEB-2015	04-MAR-2015	24-MAR-2015	✓	05-MAR-2015	24-MAR-2015	✓
<b>Soil Glass Jar - Unpreserved (EG035T)</b>							



Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis				
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation		
<b>EG035T: Total Recoverable Mercury by FIMS - Continued</b>									
BH128(0-0.05), BH129(0-0.05), BH130(0-0.05), BH131(0-0.05), BH132(0-0.05), BH133(0-0.05), BH134(0-0.05), BH135(0-0.05), BH136(0-0.05), BH137(0-0.05), BH138(0-0.05), BH139(0-0.05), BH140(0-0.05), BH141(0-0.05), BH142(0-0.05), BH143(0-0.05), BH144(0-0.05), BH145(0-0.05), BH146(0-0.05), BH147(0-0.05), BH148(0-0.05), DUP9, DUP11	BH128(0.4-0.5), BH129(0.3-0.4), BH130(0.2-0.3), BH131(0.4-0.5), BH132(0.4-0.5), BH133(0.4-0.5), BH134(0.4-0.5), BH135(0.4-0.5), BH136(0.4-0.5), BH137(0.4-0.5), BH138(0.4-0.5), BH139(0.4-0.5), BH140(0.4-0.5), BH141(0.4-0.5), BH142(0.4-0.5), BH143(0.4-0.5), BH144(0.4-0.5), BH145(0.4-0.5), BH146(0.4-0.5), BH147(0.4-0.5), BH148(0.4-0.5), DUP10,	26-FEB-2015	03-MAR-2015	26-MAR-2015	✓	04-MAR-2015	26-MAR-2015	✓	
<b>Soil Glass Jar - Unpreserved (EG035T)</b> DUP12,	DUP13	26-FEB-2015	04-MAR-2015	26-MAR-2015	✓	05-MAR-2015	26-MAR-2015	✓	
<b>Soil Glass Jar - Unpreserved (EG035T)</b> DUP14		27-FEB-2015	04-MAR-2015	27-MAR-2015	✓	05-MAR-2015	27-MAR-2015	✓	
<b>EP066: Polychlorinated Biphenyls (PCB)</b>									
<b>Soil Glass Jar - Unpreserved (EP066)</b> BH108(0-0.05), BH111(0-0.05), BH114(0-0.05),	BH110(0-0.05), BH112(0-0.05), BH116(0-0.05)	24-FEB-2015	03-MAR-2015	10-MAR-2015	✓	04-MAR-2015	12-APR-2015	✓	
<b>EP075(SIM)B: Polynuclear Aromatic Hydrocarbons</b>									
<b>Soil Glass Jar - Unpreserved (EP075(SIM))</b> BH108(0-0.05), BH111(0-0.05), BH114(0-0.05),	BH110(0-0.05), BH112(0-0.05), BH116(0-0.05)	24-FEB-2015	03-MAR-2015	10-MAR-2015	✓	04-MAR-2015	12-APR-2015	✓	



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Moisture Content	EA055-103	12	120	10.0	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	6	16.7	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.7	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	10	98	10.2	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	16	12.5	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	6	16.7	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.7	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	5	98	5.1	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	16	6.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	6	16.7	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.7	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	5	98	5.1	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	16	6.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
PAH/Phenols (SIM)	EP075(SIM)	1	6	16.7	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.7	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	5	98	5.1	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	16	6.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	In-house. A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 21st ed., 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl <sub>2</sub> )(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl <sub>2</sub> which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Tumbler Extraction of Solids	ORG17	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na <sub>2</sub> SO <sub>4</sub> and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.



## Summary of Outliers

### Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

#### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

#### Regular Sample Surrogates

Sub-Matrix: SOIL

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
<b>Samples Submitted</b>							
EP075(SIM)T: PAH Surrogates	ES1504881-011	BH112(0-0.05)	2-Fluorobiphenyl	321-60-8	129 %	70-122 %	Recovery greater than upper data quality objective

### Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

### Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.

5372-379

FAS:   
21/3/15  
1:45pm

**Fadi Soro**

---

**From:** Cindy Suen  
**Sent:** Monday, 9 March 2015 1:24 PM  
**To:** Fadi Soro; Celine Conceicao  
**Subject:** FW: Additional methyl mercury analysis

Hi Fadi,  
Would you please rebatch asap.

Hi Celine,  
Can we report faster than 10 days?

Kind Regards,

**Cindy Suen**

Business Development Manager  
ALS | Environmental Division

M +61 (0) 418 652 886

We are keen for your feedback! [Please click here for your 1 question survey](#)

---

**From:** Cindy Suen  
**Sent:** Monday, 9 March 2015 1:23 PM  
**To:** 'McKay, Colin'  
**Cc:** Sydney  
**Subject:** RE: Additional methyl mercury analysis

Hi Colin,  
No worried, we will get this organised for you.  
Methyl mercury is a specialist tests and the current TAT is 2 weeks.  
I will see if it can be reported a bit earlier.

Environmental Division  
Sydney  
Work Order  
**ES1505565**



Telephone : + 61-2-6784 8555

Kind Regards,

**Cindy Suen**

Business Development Manager  
ALS | Environmental Division

M +61 (0) 418 652 886

We are keen for your feedback! [Please click here for your 1 question survey](#)

---

**From:** McKay, Colin [<mailto:colin.mckay@wsogroup.com>]

**Sent:** Monday, 9 March 2015 12:31 PM

**To:** Cindy Suen

**Cc:** Sydney

**Subject:** Additional methyl mercury analysis

Hi Cindy,

I'm not sure who to contact about this so hoping you can pass it on.

I need two samples from the mercury assessment analysed for methyl mercury.

The samples are:

- ES1503946041 (Sed13); and
- ES1503946046 (Sed18)

Standard TAT should be fine.

Thanks in advance

Colin



**Colin McKay**

Principal Environmental Scientist

Level 1, 41 McLaren Street  
North Sydney NSW 2060  
Australia

T. +61 2 8907 0900

D. +61 2 8925 6724

M. +61 4 4897 7926

[colin.mckay@wspgroup.com](mailto:colin.mckay@wspgroup.com)

[www.wspgroup.com](http://www.wspgroup.com)

[www.pbworld.com](http://www.pbworld.com)

Please consider the environment before printing this document.



WSP HAS ACQUIRED  
PARSONS  
BRINCKERHOFF

ALS Group: Click [here](#) to report this email as spam.

## SAMPLE RECEIPT NOTIFICATION (SRN)

### Comprehensive Report

**Work Order : ES1505565**

Client : **WSP ENVIRONMENTAL PTY LTD**  
 Contact : MR COLIN MCKAY  
 Address : ENVIRONMENT & ENERGY  
 LEVEL 1, 41 McLAREN STREET  
 NORTH SYDNEY NSW, AUSTRALIA  
 2060

Laboratory : Environmental Division Sydney  
 Contact : Client Services  
 Address : 277-289 Woodpark Road Smithfield  
 NSW Australia 2164

E-mail : colin.mckay@wspgroup.com.au  
 Telephone : +61 02 8925 6700  
 Facsimile : +61 02 8925 6799

E-mail : sydney@alsglobal.com  
 Telephone : +61-2-8784 8555  
 Facsimile : +61-2-8784 8500

Project : 45970 ORICA MERCURY  
 INDEPENDANT REVIEW

Page : 1 of 2

Order number : 45970  
 C-O-C number : ----  
 Site : BOTANY  
 Sampler : AY & PC

Quote number : ES2015WSPENV0359 (SY/1085/14)

QC Level : NEPM 2013 Schedule B(3) and ALS  
 QCS3 requirement

#### Dates

Date Samples Received : 09-MAR-2015  
 Client Requested Due Date : 13-MAR-2015

Issue Date : 09-MAR-2015 17:13  
 Scheduled Reporting Date : **13-MAR-2015**

#### Delivery Details

Mode of Delivery : Samples on hand  
 No. of coolers/boxes : ----  
 Security Seal : Intact.

Temperature :  
 No. of samples received : 2  
 No. of samples analysed : 2

#### General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **THIS IS A REBATCH OF ES1503946.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.



## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>ES1505565</b> <b>Client</b> : <b>WSP ENVIRONMENTAL PTY LTD</b> <b>Contact</b> : MR COLIN MCKAY <b>Address</b> : ENVIRONMENT & ENERGY LEVEL 1, 41 McLAREN STREET NORTH SYDNEY NSW, AUSTRALIA 2060  <b>E-mail</b> : colin.mckay@wspgroup.com.au <b>Telephone</b> : +61 02 8925 6700 <b>Facsimile</b> : +61 02 8925 6799 <b>Project</b> : 45970 ORICA MERCURY INDEPENDANT REVIEW <b>Order number</b> : 45970 <b>C-O-C number</b> : ---- <b>Sampler</b> : AY & PC <b>Site</b> : BOTANY  <b>Quote number</b> : SY/1085/14	<b>Page</b> : 1 of 3  <b>Laboratory</b> : Environmental Division Sydney <b>Contact</b> : Client Services <b>Address</b> : 277-289 Woodpark Road Smithfield NSW Australia 2164  <b>E-mail</b> : sydney@alsglobal.com <b>Telephone</b> : +61-2-8784 8555 <b>Facsimile</b> : +61-2-8784 8500 <b>QC Level</b> : NEPM 2013 Schedule B(3) and ALS QCS3 requirement  <b>Date Samples Received</b> : 09-MAR-2015 <b>Issue Date</b> : 13-MAR-2015  <b>No. of samples received</b> : 2 <b>No. of samples analysed</b> : 2
---	--

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### *Signatories*

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



### **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

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

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

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting



## Analytical Results

Sub-Matrix: **SEDIMENT** (Matrix: **SOIL**)

Client sample ID

				SED13	SED18	---	---	---
				16-FEB-2015 15:00	16-FEB-2015 15:00	---	---	---
				ES1505565-001	ES1505565-002	---	---	---
Compound	CAS Number	LOR	Unit					
<b>EA055: Moisture Content</b>								
Moisture Content (dried @ 103°C)	---	1.0	%	61.3	23.0	---	---	---
<b>EG036: Methyl Mercury</b>								
Methyl mercury	22967-92-6	0.10	mg/kg	<0.10	<0.10	---	---	---



QUALITY CONTROL REPORT

Table with 4 columns: Field Name, Value, Field Name, Value. Includes Work Order (ES1505565), Client (WSP ENVIRONMENTAL PTY LTD), Laboratory (Environmental Division Sydney), and various contact and project details.

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

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



Signatories

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

Table with 3 columns: Signatories, Position, Accreditation Category. Row 1: Wisam Marassa, Inorganics Coordinator, Sydney Inorganics



### **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

Key :

- Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
- CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
- LOR = Limit of reporting
- RPD = Relative Percentage Difference
- # = Indicates failed QC



### Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
<b>EG036: Methyl Mercury (QC Lot: 3852115)</b>									
EM1502274-001	Anonymous	EG036: Methyl mercury	22967-92-6	0.10	mg/kg	<0.10	<0.10	0.0	No Limit



### Method Blank (MB) and Laboratory Control Spike (LCS) Report

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

Sub-Matrix: SOIL

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
<b>EG036: Methyl Mercury (QCLot: 3852115)</b>								
EG036: Methyl mercury	22967-92-6	0.1	mg/kg	<0.10	5.0 mg/kg	94.8	70	130

### Matrix Spike (MS) Report

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

Sub-Matrix: SOIL

				Matrix Spike (MS) Report			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%) MS	Recovery Limits (%) Low High	
<b>EG036: Methyl Mercury (QCLot: 3852115)</b>							
EM1502274-001	Anonymous	EG036: Methyl mercury	22967-92-6	5.0 mg/kg	103	70	130

### Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

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

Sub-Matrix: SOIL

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%) MS MSD		Recovery Limits (%) Low High		RPDs (%) Value Control Limit	
<b>EG036: Methyl Mercury (QCLot: 3852115)</b>										
EM1502274-001	Anonymous	EG036: Methyl mercury	22967-92-6	5.0 mg/kg	103	----	70	130	----	----

## INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: <b>ES1505565</b>	Page	: 1 of 5
Client	: WSP ENVIRONMENTAL PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR COLIN MCKAY	Contact	: Client Services
Address	: ENVIRONMENT & ENERGY LEVEL 1, 41 McLAREN STREET NORTH SYDNEY NSW, AUSTRALIA 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: colin.mckay@wspgroup.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 8925 6700	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 8925 6799	Facsimile	: +61-2-8784 8500
Project	: 45970 ORICA MERCURY INDEPENDANT REVIEW	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: BOTANY	Date Samples Received	: 09-MAR-2015
C-O-C number	: ----	Issue Date	: 13-MAR-2015
Sampler	: AY & PC	No. of samples received	: 2
Order number	: 45970	No. of samples analysed	: 2
Quote number	: SY/1085/14		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



## Analysis Holding Time Compliance

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

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

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

Matrix: **SOIL**

Evaluation: \* = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
<b>EA055: Moisture Content</b>							
<b>Soil Glass Jar - Unpreserved (EA055-103)</b> SED13, SED18	16-FEB-2015	----	----	----	10-MAR-2015	02-MAR-2015	*
<b>EG036: Methyl Mercury</b>							
<b>Soil Glass Jar - Unpreserved (EG036)</b> SED13, SED18	16-FEB-2015	----	----	----	10-MAR-2015	28-MAR-2015	✓



## Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Reaular	Actual	Expected	Evaluation	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Methyl Mercury in Soil by IC/ICPMS	EG036	1	3	33.3	10.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Laboratory Control Samples (LCS)</b>							
Methyl Mercury in Soil by IC/ICPMS	EG036	1	3	33.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Method Blanks (MB)</b>							
Methyl Mercury in Soil by IC/ICPMS	EG036	1	3	33.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
<b>Matrix Spikes (MS)</b>							
Methyl Mercury in Soil by IC/ICPMS	EG036	1	3	33.3	5.0	✔	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



## Brief Method Summaries

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

<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Moisture Content	EA055-103	SOIL	In-house. A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Methyl Mercury in Soil by IC/ICPMS	EG036	SOIL	In-house



## Summary of Outliers

### Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

#### Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

#### Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

### Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: SOIL

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
<b>EA055: Moisture Content</b>						
Soil Glass Jar - Unpreserved SED13, SED18	----	----	----	10-MAR-2015	02-MAR-2015	8

### Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.

# CHAIN OF CUSTODY - Client



## ENVIROLAB SERVICES

<b>Client:</b> NSW EPA	<b>Client Project Name and Number:</b>	<b>Envirolab Services</b> 12 Ashley St, Chatswood, NSW, 2067  Phone: 02 9910 6200 Fax: 02 9910 6201 E-mail: ahie@envirolabservices.com.au Contact: Aileen Hie
<b>Project Mgr:</b> Colln McKay	45970 - Orica Botany Mercury Independent Review	
<b>Sampler:</b> AY/PC	<b>PO No.:</b>	
<b>Address:</b> Botany	<b>Envirolab Services Quote No. :</b>	
<b>Email:</b> colin.mckay@wspgroup.com	<b>Date results required:</b>	
<b>Phone:</b> 0448 977 926 <b>Fax:</b>	<b>Or choose: standard / 1 day / 2 day / 3 day</b>	
	<i>Note: Inform lab in advance if urgent turnaround is required - surcharge applies</i>	

Sample Information				Tests Required										Comments			
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Mercury													Provide as much information about the sample as you can
1	Trip1	11/12/2015		X													
2	Trip2	11/12/2015		X													
3	Trip3	12/02/2015		X													
4	Trip4	13/02/2015		X													

Envirolab Services  
 12 Ashley St  
 Chatswood NSW 2067  
 Ph: (02) 9910 6200  
 Job No: 123535  
 Date Received: 13/2/15  
 Time Received: 13:15  
 Received by: JYH  
 Temp: Cool/Ambient  
 Coding: Ice/Icepack  
 Security: Intact/Broken/None

<b>Relinquished by (company):</b>	<b>Received by (company):</b> ELS	<b>Samples Received: Cool or Ambient (circle one)</b> Temperature Recieved at: 8.0. (if applicable) Transported by: Hand delivered / courier Page No:
<b>Print Name:</b> Colin McKay	<b>Print Name:</b> JYH	
<b>Date &amp; Time:</b> 12/02/2015	<b>Date &amp; Time:</b> 13/2/15 13:15	
<b>Signature:</b> <i>[Signature]</i>	<b>Signature:</b> <i>[Signature]</i>	



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

### **SAMPLE RECEIPT ADVICE**

#### **Client:**

WSP Environmental Pty Ltd  
Level 1, 41 McLaren St  
North Sydney NSW 2060

ph: 8925 6700  
Fax: 8925 6799

Attention: Colin McKay

#### **Sample log in details:**

Your reference:	<b>45970, Orica Botany Mercury Independent Rev.</b>
Envirolab Reference:	<b>123535</b>
Date received:	13/2/2015
Date results expected to be reported:	<b>20/02/15</b>

Samples received in appropriate condition for analysis:	YES
No. of samples provided	4 Soils
Turnaround time requested:	Standard
Temperature on receipt (°C)	8.0
Cooling Method:	Ice Pack
Sampling Date Provided:	YES

#### **Comments:**

If there is sufficient sample after testing, samples will be held for the following time frames from date of receipt of samples:  
Water samples - 1 month  
Soil and other solid samples - 2 months  
Samples collected in canisters - 1 week. Canisters will then be cleaned.  
All other samples are not retained after analysis  
If you require samples to be retained for longer periods then retention fees will apply as per our pricelist.

#### **Contact details:**

Please direct any queries to Aileen Hie or Jacinta Hurst  
ph: 02 9910 6200 fax: 02 9910 6201  
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

**CERTIFICATE OF ANALYSIS**

**123535**

**Client:**

**WSP Environmental Pty Ltd**

Level 1, 41 McLaren St  
North Sydney  
NSW 2060

**Attention:** Colin McKay

**Sample log in details:**

Your Reference:	<b><u>45970, Orica Botany Mercury Independent Rev.</u></b>
No. of samples:	4 Soils
Date samples received / completed instructions received	13/2/2015 / 13/2/2015

**Analysis Details:**

Please refer to the following pages for results, methodology summary and quality control data.  
Samples were analysed as received from the client. Results relate specifically to the samples as received.  
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

***Please refer to the last page of this report for any comments relating to the results.***

**Report Details:**

Date results requested by: / Issue Date: 20/02/15 / 18/02/15  
Date of Preliminary Report: Not Issued

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

**Results Approved By:**



Jacinta Hurst  
Laboratory Manager

Acid Extractable metals in soil					
Our Reference:	UNITS	123535-1	123535-2	123535-3	123535-4
Your Reference	-----	Trip 1	Trip 2	Trip 3	Trip 4
Date Sampled	-----	11/02/2015	11/02/2015	12/02/2015	13/02/2015
Type of sample		Soil	Soil	Soil	Soil
Date digested	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Mercury	mg/kg	<0.1	<0.1	<0.1	0.1

Moisture					
Our Reference:	UNITS	123535-1	123535-2	123535-3	123535-4
Your Reference	-----	Trip 1	Trip 2	Trip 3	Trip 4
Date Sampled	-----	11/02/2015	11/02/2015	12/02/2015	13/02/2015
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	16/02/2015	16/02/2015	16/02/2015	16/02/2015
Date analysed	-	17/02/2015	17/02/2015	17/02/2015	17/02/2015
Moisture	%	1.8	3.4	2.8	4.6

Method ID	Methodology Summary
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.

**Client Reference: 45970, Orica Botany Mercury Independent Rev.**

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Date digested	-			16/02/2015	123535-1	16/02/2015    16/02/2015	LCS-2	16/02/2015
Date analysed	-			16/02/2015	123535-1	16/02/2015    16/02/2015	LCS-2	16/02/2015
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	123535-1	<0.1    <0.1	LCS-2	113%

**Report Comments:**

Asbestos ID was analysed by Approved Identifier: Not applicable for this job  
Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test

PQL: Practical Quantitation Limit

NT: Not tested

NA: Test not required

RPD: Relative Percent Difference

NA: Test not required

<: Less than

>: Greater than

LCS: Laboratory Control Sample

### Quality Control Definitions

**Blank:** This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

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**LCS (Laboratory Control Sample):** This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

**Surrogate Spike:** Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

### Laboratory Acceptance Criteria

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

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Spikes for Physical and Aggregate Tests are not applicable.

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Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

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When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.



## SAMPLE RECEIPT ADVICE

Client Details	
<b>Client</b>	WSP Environmental Pty Ltd
<b>Attention</b>	Colin McKay

Sample Login Details	
<b>Your Reference</b>	45970-Orica Botany Mercury Independent Review
<b>EnviroLab Reference</b>	123620
<b>Date Sample Received</b>	16/02/2015
<b>Date Instructions Received</b>	16/02/2015
<b>Date Results Expected to be Reported</b>	23/02/2015

Sample Condition	
<b>Samples received in appropriate condition for analysis</b>	YES
<b>No. of Samples Provided</b>	1 Soil
<b>Turnaround Time Requested</b>	Standard
<b>Temperature on receipt (°C)</b>	13.9
<b>Cooling Method</b>	Ice Pack
<b>Sampling Date Provided</b>	YES

Comments	
Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples	

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	Phone: 02 9910 6200
Fax: 02 9910 6201	Fax: 02 9910 6201
Email: ahie@envirolabservices.com.au	Email: jhurst@envirolabservices.com.au

*Sample and Testing Details on following page*



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

<i>Sample Id</i>	<i>Acid Extractable metals in soil</i>
Trip 5	✓

**CERTIFICATE OF ANALYSIS**

**123620**

**Client:**

**WSP Environmental Pty Ltd**

Level 1, 41 McLaren St  
North Sydney  
NSW 2060

**Attention:** Colin McKay

**Sample log in details:**

Your Reference:	<b><u>45970-Orica Botany Mercury Independent Review</u></b>
No. of samples:	1 Soil
Date samples received / completed instructions received	16/02/2015 / 16/02/2015

**Analysis Details:**

Please refer to the following pages for results, methodology summary and quality control data.  
Samples were analysed as received from the client. Results relate specifically to the samples as received.  
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

***Please refer to the last page of this report for any comments relating to the results.***

**Report Details:**

Date results requested by: / Issue Date: 23/02/15 / 19/02/15  
Date of Preliminary Report: Not Issued

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

**Results Approved By:**



Jacinta Hurst  
Laboratory Manager

Acid Extractable metals in soil		
Our Reference:	UNITS	123620-1
Your Reference	-----	Trip 5
Date Sampled	-----	13/02/2015
Type of sample		Soil
Date digested	-	17/02/2015
Date analysed	-	17/02/2015
Mercury	mg/kg	0.4

Moisture		
Our Reference:	UNITS	123620-1
Your Reference	-----	Trip 5
Date Sampled	-----	13/02/2015
Type of sample		Soil
Date prepared	-	17/02/2015
Date analysed	-	18/02/2015
Moisture	%	11

Method ID	Methodology Summary
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.

**Client Reference: 45970-Orica Botany Mercury Independent Review**

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Date digested	-			17/02/2015	[NT]	[NT]	LCS-10	17/02/2015
Date analysed	-			17/02/2015	[NT]	[NT]	LCS-10	17/02/2015
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	LCS-10	93%

**Report Comments:**

Asbestos ID was analysed by Approved Identifier: Not applicable for this job  
Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test

PQL: Practical Quantitation Limit

NT: Not tested

NA: Test not required

RPD: Relative Percent Difference

NA: Test not required

<: Less than

>: Greater than

LCS: Laboratory Control Sample

### Quality Control Definitions

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

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

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When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.



## SAMPLE RECEIPT ADVICE

Client Details	
<b>Client</b>	WSP Environmental Pty Ltd
<b>Attention</b>	Colin McKay

Sample Login Details	
<b>Your Reference</b>	45970-Orica Botany Mercury Independent Review
<b>EnviroLab Reference</b>	123719
<b>Date Sample Received</b>	18/02/2015
<b>Date Instructions Received</b>	18/02/2015
<b>Date Results Expected to be Reported</b>	25/02/2015

Sample Condition	
<b>Samples received in appropriate condition for analysis</b>	YES
<b>No. of Samples Provided</b>	2 Soils
<b>Turnaround Time Requested</b>	Standard
<b>Temperature on receipt (°C)</b>	15.8
<b>Cooling Method</b>	Ice Pack
<b>Sampling Date Provided</b>	YES

Comments	
Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples	

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	Phone: 02 9910 6200
Fax: 02 9910 6201	Fax: 02 9910 6201
Email: ahie@envirolabservices.com.au	Email: jhurst@envirolabservices.com.au

*Sample and Testing Details on following page*



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

<i>Sample Id</i>	<i>Acid Extractable metals in soil</i>
Trip 6	✓
Sed Trip 1	✓

**CERTIFICATE OF ANALYSIS**

**123719**

**Client:**

**WSP Environmental Pty Ltd**  
Level 1, 41 McLaren St  
North Sydney  
NSW 2060

**Attention:** Colin McKay

**Sample log in details:**

Your Reference:	<b><u>45970-Orica Botany Mercury Independent Review</u></b>
No. of samples:	2 Soils
Date samples received / completed instructions received	18/02/2015 / 18/02/2015

**Analysis Details:**

Please refer to the following pages for results, methodology summary and quality control data.  
Samples were analysed as received from the client. Results relate specifically to the samples as received.  
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

***Please refer to the last page of this report for any comments relating to the results.***

**Report Details:**

Date results requested by: / Issue Date: 25/02/15 / 23/02/15  
Date of Preliminary Report: Not Issued

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

**Results Approved By:**



Jacinta Hurst  
Laboratory Manager

Acid Extractable metals in soil			
Our Reference:	UNITS	123719-1	123719-2
Your Reference	-----	Trip 6	Sed Trip 1
Date Sampled	-----	17/02/2015	17/02/2015
Type of sample		Soil	Soil
Date digested	-	19/02/2015	19/02/2015
Date analysed	-	19/02/2015	19/02/2015
Mercury	mg/kg	0.1	0.2

Moisture			
Our Reference:	UNITS	123719-1	123719-2
Your Reference	-----	Trip 6	Sed Trip 1
Date Sampled	-----	17/02/2015	17/02/2015
Type of sample		Soil	Soil
Date prepared	-	19/02/2015	19/02/2015
Date analysed	-	20/02/2015	20/02/2015
Moisture	%	6.3	59

Method ID	Methodology Summary
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.

**Client Reference: 45970-Orica Botany Mercury Independent Review**

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Date digested	-			19/02/2015	123719-1	19/02/2015    19/02/2015	LCS-10	19/02/2015
Date analysed	-			19/02/2015	123719-1	19/02/2015    19/02/2015	LCS-10	19/02/2015
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	123719-1	0.1    0.2    RPD: 67	LCS-10	91%

QUALITYCONTROL	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil					
Date digested	-	[NT]	[NT]	123719-2	19/02/2015
Date analysed	-	[NT]	[NT]	123719-2	19/02/2015
Mercury	mg/kg	[NT]	[NT]	123719-2	84%

**Report Comments:**

Asbestos ID was analysed by Approved Identifier: Not applicable for this job  
Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test  
NA: Test not required  
<: Less than

PQL: Practical Quantitation Limit  
RPD: Relative Percent Difference  
>: Greater than

NT: Not tested  
NA: Test not required  
LCS: Laboratory Control Sample

### Quality Control Definitions

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### Laboratory Acceptance Criteria

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

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Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

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

### **SAMPLE RECEIPT ADVICE**

#### **Client:**

WSP Environmental Pty Ltd  
Level 1, 41 McLaren St  
North Sydney NSW 2060

ph: 8925 6700  
Fax: 8925 6799

Attention: Colin McKay

#### **Sample log in details:**

Your reference:	<b>45970 - Orica Botany Mercury Independent Rev</b>
Envirolab Reference:	<b>123951</b>
Date received:	20/02/2015
Date results expected to be reported:	<b>27/02/15</b>

Samples received in appropriate condition for analysis:	YES
No. of samples provided	1 soil
Turnaround time requested:	Standard
Temperature on receipt (°C)	2
Cooling Method:	Ice
Sampling Date Provided:	YES

#### **Comments:**

If there is sufficient sample after testing, samples will be held for the following time frames from date of receipt of samples:  
Water samples - 1 month  
Soil and other solid samples - 2 months  
Samples collected in canisters - 1 week. Canisters will then be cleaned.  
All other samples are not retained after analysis  
If you require samples to be retained for longer periods then retention fees will apply as per our pricelist.

#### **Contact details:**

Please direct any queries to Aileen Hie or Jacinta Hurst  
ph: 02 9910 6200 fax: 02 9910 6201  
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

**CERTIFICATE OF ANALYSIS**

**123951**

**Client:**

**WSP Environmental Pty Ltd**  
Level 1, 41 McLaren St  
North Sydney  
NSW 2060

**Attention:** Colin McKay

**Sample log in details:**

Your Reference:	<b><u>45970 - Orica Botany Mercury Independent Rev</u></b>
No. of samples:	1 soil
Date samples received / completed instructions received	20/02/2015 / 20/02/2015

**Analysis Details:**

Please refer to the following pages for results, methodology summary and quality control data.  
Samples were analysed as received from the client. Results relate specifically to the samples as received.  
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

***Please refer to the last page of this report for any comments relating to the results.***

**Report Details:**

Date results requested by: / Issue Date: 27/02/15 / 26/02/15  
Date of Preliminary Report: Not Issued

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

**Results Approved By:**



Jacinta Hurst  
Laboratory Manager

Acid Extractable metals in soil		
Our Reference:	UNITS	123951-1
Your Reference	-----	Trip 8
Date Sampled	-----	19/02/2015
Type of sample		Soil
Date digested	-	23/02/2015
Date analysed	-	23/02/2015
Mercury	mg/kg	0.2

Moisture		
Our Reference:	UNITS	123951-1
Your Reference	-----	Trip 8
Date Sampled	-----	19/02/2015
Type of sample		Soil
Date prepared	-	23/02/2015
Date analysed	-	24/02/2015
Moisture	%	4.0

Method ID	Methodology Summary
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.

**Client Reference: 45970 - Orica Botany Mercury Independent Rev**

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Date digested	-			23/02/2015	[NT]	[NT]	LCS-6	23/02/2015
Date analysed	-			23/02/2015	[NT]	[NT]	LCS-6	23/02/2015
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	LCS-6	103%

**Report Comments:**

Asbestos ID was analysed by Approved Identifier: Not applicable for this job  
Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test  
NA: Test not required  
<: Less than

PQL: Practical Quantitation Limit  
RPD: Relative Percent Difference  
>: Greater than

NT: Not tested  
NA: Test not required  
LCS: Laboratory Control Sample

### Quality Control Definitions

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**CERTIFICATE OF ANALYSIS**

**123951-A**

**Client:**

**WSP Environmental Pty Ltd**  
Level 1, 41 McLaren St  
North Sydney  
NSW 2060

**Attention:** Colin McKay

**Sample log in details:**

Your Reference:	<b><u>45970 - Orica Botany Mercury Independent Rev</u></b>
No. of samples:	Additional Testing on 1 soil
Date samples received / completed instructions received	20/02/2015 / 27/02/15

**Analysis Details:**

Please refer to the following pages for results, methodology summary and quality control data.  
Samples were analysed as received from the client. Results relate specifically to the samples as received.  
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

***Please refer to the last page of this report for any comments relating to the results.***

**Report Details:**

Date results requested by: / Issue Date: 6/03/15 / 4/03/15  
Date of Preliminary Report: Not Issued

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

**Results Approved By:**



Jacinta Hurst  
Laboratory Manager

PAHs in Soil Our Reference: Your Reference Date Sampled Type of sample	UNITS ----- -----	123951-A-1 Trip 8 19/02/2015 Soil
Date extracted	-	02/03/2015
Date analysed	-	02/03/2015
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	0.4
Anthracene	mg/kg	0.1
Fluoranthene	mg/kg	1
Pyrene	mg/kg	1.0
Benzo(a)anthracene	mg/kg	0.5
Chrysene	mg/kg	0.5
Benzo(b,j+k)fluoranthene	mg/kg	0.9
Benzo(a)pyrene	mg/kg	0.55
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	0.4
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.7
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.8
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.8
Total Positive PAHs	mg/kg	5.9
Surrogate p-Terphenyl-d14	%	92

PCBs in Soil		
Our Reference:	UNITS	123951-A-1
Your Reference	-----	Trip 8
Date Sampled	-----	19/02/2015
Type of sample		Soil
Date extracted	-	02/03/2015
Date analysed	-	03/03/2015
Arochlor 1016	mg/kg	<0.1
Arochlor 1221	mg/kg	<0.1
Arochlor 1232	mg/kg	<0.1
Arochlor 1242	mg/kg	<0.1
Arochlor 1248	mg/kg	<0.1
Arochlor 1254	mg/kg	<0.1
Arochlor 1260	mg/kg	<0.1
Surrogate TCLMX	%	92

Acid Extractable metals in soil		
Our Reference:	UNITS	123951-A-1
Your Reference	-----	Trip 8
Date Sampled	-----	19/02/2015
Type of sample		Soil
Date digested	-	02/03/2015
Date analysed	-	02/03/2015
Chromium	mg/kg	5
Lead	mg/kg	74

MethodID	Methodology Summary
Org-012 subset	<p>Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.</p> <p>For soil results:-</p> <ol style="list-style-type: none"> <li>1. 'TEQ PQL' values are assuming all contributing PAHs reported as &lt;PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present.</li> <li>2. 'TEQ zero' values are assuming all contributing PAHs reported as &lt;PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL.</li> <li>3. 'TEQ half PQL' values are assuming all contributing PAHs reported as &lt;PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above.</li> </ol> <p>Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore " Total +ve PAHs" is simply a sum of the positive individual PAHs.</p>
Org-006	<p>Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.</p>
Metals-020 ICP-AES	<p>Determination of various metals by ICP-AES.</p>

**Client Reference: 45970 - Orica Botany Mercury Independent Rev**

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II %RPD		
Date extracted	-			02/03/2015	[NT]	[NT]	LCS-2	02/03/2015
Date analysed	-			02/03/2015	[NT]	[NT]	LCS-2	02/03/2015
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-2	91%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-2	96%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-2	92%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-2	92%
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-2	108%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	LCS-2	88%
Benzo(b,j+k) fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	[NT]	[NT]	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	[NT]	[NT]	LCS-2	109%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012 subset	91	[NT]	[NT]	LCS-2	93%

**Client Reference: 45970 - Orica Botany Mercury Independent Rev**

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PCBs in Soil						Base II Duplicate II %RPD		
Date extracted	-			02/03/2015	[NT]	[NT]	LCS-2	02/03/2015
Date analysed	-			03/03/2015	[NT]	[NT]	LCS-2	03/03/2015
Arochlor 1016	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1221	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1232	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1242	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1248	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Arochlor 1254	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	LCS-2	113%
Arochlor 1260	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-006	77	[NT]	[NT]	LCS-2	94%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Date digested	-			02/03/2015	[NT]	[NT]	LCS-5	02/03/2015
Date analysed	-			02/03/2015	[NT]	[NT]	LCS-5	02/03/2015
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-5	101%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	LCS-5	96%

**Report Comments:**

Asbestos ID was analysed by Approved Identifier: Not applicable for this job  
Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test

NA: Test not required

<: Less than

PQL: Practical Quantitation Limit

RPD: Relative Percent Difference

>: Greater than

NT: Not tested

NA: Test not required

LCS: Laboratory Control Sample

### Quality Control Definitions

**Blank:** This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

**Duplicate:** This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

**Matrix Spike:** A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

**LCS (Laboratory Control Sample):** This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

**Surrogate Spike:** Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

### Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

# CHAIN OF CUSTODY - Client



## ENVIROLAB SERVICES

<b>Client:</b> NSW EPA	<b>Client Project Name and Number:</b> 45970 - Drica Botany Mercury Independent Review	<b>EnviroLab Services</b> 12 Ashley St, Chatswood, NSW, 2067
<b>Project Mgr:</b> Colin McKay	<b>PO No.:</b>	<b>Phone:</b> 02 9910 6200
<b>Sampler:</b> AY/PC	<b>EnviroLab Services Quote No.:</b>	<b>Fax:</b> 02 9910 6201
<b>Address:</b> Botany	<b>Date results required:</b>	<b>E-mail:</b> ahie@envirolabservices.com.au
<b>Email:</b> colin.mckay@wspgroup.com ; philippa.childs@wspgroup.com	<b>Dr choose: standard / 1 day / 2 day / 3 day</b>	<b>Contact:</b> Aileen Hie
<b>Phone:</b> 0448 977 926 <b>Fax:</b>	<i>Note: Inform lab in advance if urgent turnaround is required - surcharge applies</i>	

Sample Information				Tests Required										Comments			
EnviroLab Sample ID	Client Sample ID	Date sampled	Type of sample	Mercury	Lead	Chromium	PAHS	PCBS									Provide as much information about the sample as you can
1	Trip7	24/02/2015		X													
2	Trip8	24/02/2015		X	X	X	X	X									Already at lab (See ALS Job 123951)
3	Trip9	24/02/2015		X													
3	Trip10	26/02/2015		X													
4	Trip11	26/02/2015		X													
5	Trip12	26/02/2015		X													
6	Trip13	26/02/2015		X													
7	Trip14	27/02/2015		X													


**EnviroLab Services**  
 12 Ashley St  
 Chatswood NSW 2067  
 Ph: (02) 9910 6200  
 Job No: 124539  
 Date Received: 27/02/15  
 Time Received: 16:00  
 Received by: D.F.  
 Temp:  Ambient  
 Cooling:  Icepack  
 Security:  Broken/None

<b>Relinquished by (company):</b> WSP	<b>Received by (company):</b> ALS	<b>Samples Received:</b> Cool or Ambient (circle one)
<b>Print Name:</b> Colin McKay	<b>Print Name:</b> Daniel Ford	<b>Temperature Received at:</b> (if applicable)
<b>Date &amp; Time:</b> 27/02/2015	<b>Date &amp; Time:</b> 27/02/15 16:00	<b>Transported by:</b> Hand delivered / courier
<b>Signature:</b>	<b>Signature:</b>	<b>Page No:</b>



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

### **SAMPLE RECEIPT ADVICE**

#### **Client:**

WSP Environmental Pty Ltd  
Level 1, 41 McLaren St  
North Sydney NSW 2060

ph: 8925 6700  
Fax: 8925 6799

Attention: Colin McKay

#### **Sample log in details:**

Your reference:	<b>45970 - Orica Botany Mercury Independent Rev</b>
Envirolab Reference:	<b>124339</b>
Date received:	27/02/15
Date results expected to be reported:	<b>6/03/15</b>

Samples received in appropriate condition for analysis:	YES
No. of samples provided	7 soils
Turnaround time requested:	Standard
Temperature on receipt (°C)	15.6
Cooling Method:	Ice
Sampling Date Provided:	YES

#### **Comments:**

If there is sufficient sample after testing, samples will be held for the following time frames from date of receipt of samples:  
Water samples - 1 month  
Soil and other solid samples - 2 months  
Samples collected in canisters - 1 week. Canisters will then be cleaned.  
All other samples are not retained after analysis  
If you require samples to be retained for longer periods then retention fees will apply as per our pricelist.

#### **Contact details:**

Please direct any queries to Aileen Hie or Jacinta Hurst  
ph: 02 9910 6200 fax: 02 9910 6201  
email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au

**CERTIFICATE OF ANALYSIS**

**124339**

**Client:**

**WSP Environmental Pty Ltd**  
Level 1, 41 McLaren St  
North Sydney  
NSW 2060

**Attention:** Colin McKay

**Sample log in details:**

Your Reference:	<b><u>45970 - Orica Botany Mercury Independent Rev</u></b>
No. of samples:	7 soils
Date samples received / completed instructions received	27/02/15 / 27/02/15

**Analysis Details:**

Please refer to the following pages for results, methodology summary and quality control data.  
Samples were analysed as received from the client. Results relate specifically to the samples as received.  
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

***Please refer to the last page of this report for any comments relating to the results.***

**Report Details:**

Date results requested by: / Issue Date: 6/03/15 / 4/03/15  
Date of Preliminary Report: Not Issued

NATA accreditation number 2901. This document shall not be reproduced except in full.

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

**Results Approved By:**



Jacinta Hurst  
Laboratory Manager

Acid Extractable metals in soil						
Our Reference:	UNITS	124339-1	124339-2	124339-3	124339-4	124339-5
Your Reference	-----	Trip 7	Trip 9	Trip 10	Trip 11	Trip 12
Date Sampled	-----	24/02/2015	24/02/2015	26/02/2015	26/02/2015	26/02/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date digested	-	02/03/2015	02/03/2015	02/03/2015	02/03/2015	02/03/2015
Date analysed	-	02/03/2015	02/03/2015	02/03/2015	02/03/2015	02/03/2015
Mercury	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1

Acid Extractable metals in soil			
Our Reference:	UNITS	124339-6	124339-7
Your Reference	-----	Trip 13	Trip 14
Date Sampled	-----	26/02/2015	27/02/2015
Type of sample		Soil	Soil
Date digested	-	02/03/2015	02/03/2015
Date analysed	-	02/03/2015	02/03/2015
Mercury	mg/kg	<0.1	<0.1

Moisture						
Our Reference:	UNITS	124339-1	124339-2	124339-3	124339-4	124339-5
Your Reference	-----	Trip 7	Trip 9	Trip 10	Trip 11	Trip 12
Date Sampled	-----	24/02/2015	24/02/2015	26/02/2015	26/02/2015	26/02/2015
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	2/03/2015	2/03/2015	2/03/2015	2/03/2015	2/03/2015
Date analysed	-	3/03/2015	3/03/2015	3/03/2015	3/03/2015	3/03/2015
Moisture	%	8.3	11	10	2.5	1.8

Moisture			
Our Reference:	UNITS	124339-6	124339-7
Your Reference	-----	Trip 13	Trip 14
Date Sampled	-----	26/02/2015	27/02/2015
Type of sample		Soil	Soil
Date prepared	-	2/03/2015	2/03/2015
Date analysed	-	3/03/2015	3/03/2015
Moisture	%	2.4	4.4

Method ID	Methodology Summary
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.

**Client Reference: 45970 - Orica Botany Mercury Independent Rev**

QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II %RPD		
Date digested	-			02/03/2015	[NT]	[NT]	LCS-1	02/03/2015
Date analysed	-			02/03/2015	[NT]	[NT]	LCS-1	02/03/2015
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	LCS-1	112%

**Report Comments:**

Asbestos ID was analysed by Approved Identifier: Not applicable for this job  
Asbestos ID was authorised by Approved Signatory: Not applicable for this job

INS: Insufficient sample for this test

PQL: Practical Quantitation Limit

NT: Not tested

NA: Test not required

RPD: Relative Percent Difference

NA: Test not required

<: Less than

>: Greater than

LCS: Laboratory Control Sample

### Quality Control Definitions

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### Laboratory Acceptance Criteria

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

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Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

**Attachment E - Calibration Certificate for Lumex RA-915 Mercury Analyser**

**Ohio Lumex Co.**

9263 Ravenna Rd, Unit A-3

Twinsburg Ohio 44087

Tel. 1-888-876-2611

Email: Mail@Ohiolumex.com

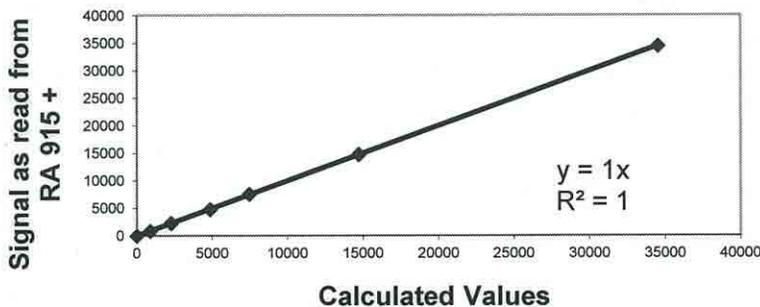
**U69682X**

### Calibration Certificate #490

**RA-915 +**

Standard #	Temp C	Calculated value	Signal (10m cell)
1	21	0	0
2	21	884	868
3	21	2264	2285
4	21	4858	4805
5	21	7453	7570
6	21	14711	14778
7	21	34521	34473

**RA 915 + Signal vs. Calculated Values**



Calibration Gas certified value: 5.455 ug/m<sup>3</sup>

Reading observed: 5.4 ug/m<sup>3</sup>

Calibration Parameter A : 803

Calibration Parameter B : 43400

**CALIBRATION DATE: 03/18/14 NEXT CALIBRATION DUE: 03/18/15**

**ON THE DATE CALIBRATED, THIS UNIT OPERATED WITHIN SPECIFIED TOLERANCES**

**Digital Barometer:** Cert. # 4245-4547726, Cal. Due: 08/09/2014

**Digital Thermometer:** Cert. # 4245-4547726, Cal. Due: 08/09/2014

**Gas NIST Traceable Standard:** Thermo Hg Calibrator Serial #1021145493

**Concentration:** 5.455 ug/m<sup>3</sup>, Analytical Accuracy: +/- 10%. Recertification Date: 06/11/2014

**SERVICE TECHNICIAN:** J.S. *J. S. [Signature]*

**QC Check:** *[Signature]*

**RECOMMENDATION NOTE: INSTRUMENT SHOULD BE RECALIBRATED EVERY 12 MONTHS OR SOONER, IF EXPOSED TO EXTREME CONDITIONS OR DAMAGE IS SUSPECTED**

# OHIO LUMEX Lumex Company

9263 Ravenna Rd. Unit A-3

Twinsburg, Ohio 44087

Toll Free (888) 876 2611, (330) 405 0837, Fax. (330) 405 0847

www.ohiolumex.com

---

## Analyzer # 490 Repair Statement

Dear Sir or Madam:

<b>Work Performed/ Results Found:</b>	<b>Work Performed and found as specified</b>
1. RA 915+ (spectrometer) initial evaluation, cleaning	YES
2. Power and Charging system test, battery replaced	YES
3. Optical bench tested/adjusted	YES
4. Internal/External filters replaced	YES
5. Zero mercury filter replaced	YES
6. Pump tested	YES
7. Lamp and lamp generator tested/adjusted	YES
8. Photomultiplier module tested/adjusted	YES
9. Performance tested at elevated temperature (55C)	NO
10. Linearity tested/adjusted	YES
11. Calibration, Calibration Certificate attached,	YES
12. Datalogger tested	NA
13. Internal performance verification test module adjusted	YES
14. Mercury decontamination for instrument or case	NO

**The problem we found was:**

1. Multipas cell mirrors need adjustment

**Measure taken:**

Adjusted

On the day of testing, instrument is operational and found to perform as manufacturer specified.

Service Technician: \_\_\_\_\_

Date: 03/18/14

**Attachment F – Ecosure, 2015**



# Mercury Independent Review – Stage 2

Final Report  
March 2015

WSP



ecology / vegetation / wildlife / aquatic ecology / GIS

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# 1 Introduction

Ecosure was commissioned by WSP Group (WSP) to undertake biotic (fish) sampling of middle trophic species in the Penhryn Estuary of Botany Bay. The fish tissue mercury analyses form part of the larger NSW Environment Protection Authority (EPA) *Orica Botany Mercury Independent Review – Stage 2*.

Ecosure prepared a proposal entitled “*Orica Botany Mercury Independent Review – Stage 2*” which was awarded to WSP in 2014. The scope of works for the tissue mercury analyses includes:

- a desktop review of past literature and reports on mercury contamination within aquatic biota of the broader study area to:
  - (i) confirm and refine the current proposed scope of works,
  - (ii) provide data to be used for comparison within the current assessment
- field sampling to collect a range of fish species and replicates for tissue metal analysis, with the sole focus being mercury
- reporting with interpretation of results, including comparison to relevant guidelines.

This report presents the results from the most recent survey conducted in February 2015. Comparisons have been made with data collected within previous surveys.

## 2 Methods

Fish sampling was conducted within the Penrhyn Estuary commencing on the 17<sup>th</sup> and concluding on the 18<sup>th</sup> of February 2015. As the uptake of mercury can vary within and between species, a range of fish (including fish at various life history stages) were targeted for analysis. This approach therefore accounted for a range of factors/variables including age, diet, movement and micro habitat use, and thus the potential variation of concentrations within individual species and between other species.

Considering previous surveys (Cardno 2015, URS 2004) and requests from WSP, the survey targeted the following species:

- sea mullet (*Mugil cephalus*)
- sand mullet (*Myxus elongatus*)
- yellow-fin bream (*Acanthopagrus australis*)
- silver biddy (*Gerres subfasciatus*)
- dusky flathead (*Platycephalus fuscus*)
- flat-tail mullet (*Liza argentea*)
- whiting (*Sillago ciliata*)
- luderick (*Girella tricuspidata*)
- trevalley (*Pseudocaranx spp.*)
- smooth toadfish (*Tetractenos glaber*).

### 2.1 Fish collection

Fish sampling was conducted via active (seine nets, hand reels) and passive (fyke nets) methods. Seine netting was conducted in wadable water depths within the upper estuary on the ebbing tide. Double-winged fyke nets and blocker nets were deployed across the upper estuary channel at high tide and were set for several hours until reaches upstream had sufficiently drained.

### 2.2 Sample preparation

To maintain consistency with previous investigations and where sufficient individuals were captured, 10 individuals from each species were assessed for mercury concentrations. Prior to tissue collection, individuals were euthanised via overdose of Aqui-S<sup>®</sup> solution and then were measured and weighed.

Sea mullet, whiting, yellowfin bream and luderick individuals were rinsed well in clean water and placed on a sterile plastic sheet. A clean scalpel was then used to remove the flesh from each specimen. The skin from the removed flesh was then cut from the sample in a method

similar to filleting a fish. An extreme level of care was taken to ensure no contamination, including complete avoidance of the stomach. The remaining flesh was then rinsed in distilled water, weighed and placed in a labelled sterile bag. Smooth toadfish and silver biddy individuals were not dissected, rather were kept whole (as per previous collection techniques), rinsed in distilled water and placed in a labelled sterile bag. All samples were transferred to a chilled esky and kept on ice for delivery to a NATA accredited laboratory (Advanced Analytical Australia) for mercury analysis. As a minimum, 5 g of sample from each individual was sent to the laboratory for analysis.

## 2.3 Permits

Fish surveys were conducted in accordance with Ecosure's NSW Fisheries Scientific Collection Permit (permit P09/0024-3.0) and Animal Ethics Committee approval.

## 2.4 Data analysis

### 2.4.1 Guideline comparison

The Australia New Zealand Food Standards Code - Standard 1.4.1 - Contaminants and Natural Toxicants (ANZFSC 2011) is administered by the bi-national government agency Food Standards Australia New Zealand (FSANZ). This Standard sets out the maximum levels (MLs) of specified metal and non-metal contaminants and natural toxicants in nominated foods.

A conservative approach was applied, where results obtained in the current study have been compared to the most stringent permissible concentration of mercury in fish and fish products, being 0.5 mg/kg (ANZFSC 2011).

### 2.4.2 Statistical analysis

Mean concentrations of mercury and standard errors (se) were calculated for each species.

Differences in mercury concentrations for each assessed species were tested using a two sample t-test. This test was selected as the limitations of the datasets met the required assumptions, including:

- the dataset must be normally distributed
- the data is not paired (i.e. uneven dataset)
- the variance of the two samples may be assumed to be equal or unequal.

As the species and number of individuals collected varied among previous sampling events the following species could only be statistically tested:

- whiting, collected during the 2014 and 2015 survey events
- silver biddy, collected during the 2004 and 2015 survey events
- sea mullet, collected during the 2004 and 2015 survey events

- luderick, collected during the 2004 and 2015 survey events.

Other survey events, such as those conducted in Stage two (1993, 1994) and stage three (1996 to 1998) were not incorporated into the analyses; as no raw data could be sourced and previous reports provide conflicting values.

Pearson product-moment correlation among mercury tissue concentrations and physical parameters (fish length and weight) were carried out to identify any significant correlations between measured variables. Due to minimal replication, correlation tests were not run for luderick or bream.

All statistical procedures were performed using the statistical software package Minitab v17<sup>®</sup>.

## 3 Summary of findings

### 3.1 Previous datasets

Four assessments have been undertaken between 1993 and 2014 examining mercury concentrations within estuarine fish captured within the Penhryn estuary. During this period ten species have been sampled, of these, sea mullet (*Mugil cephalus*) silver biddy (*Gerres subfasciatus*) and yellow-fin bream (*Acanthopagrus australis*) were the most commonly assessed, with each species being collected on three occasions (Table 1).

Previous results indicate:

- no specimens previously collected recorded mercury concentrations in flesh tissue or whole body samples greater than the ANZFSC (2011) maximum concentration of mercury within fish for human consumption (1 mg/kg)
- the maximum concentration of mercury previously recorded is 0.45 mg/kg from a luderick flesh tissue sample (URS 2004)
- mercury concentrations in mullet species and tarwhine did not exceed 0.10 mg/kg on any occasion
- mercury was undetected in sand mullet specimens collected on two occasions
- the maximum mercury concentration recorded in other species ranged from 0.25 mg/kg in yellow-fin bream, to 0.40 mg/kg recorded in a silver biddy and dusky flathead (*Platycephalus fuscus*) sample.

Table 1 Summary of available data for mercury concentrations in fish samples collected within the Penhryn estuary

Species (common name)	Stage 2 1993 - 1994				Stage 3 1996 - 1998				URS 2004				Cardno 2015 <sup>1</sup>			
	mean	SE	min	max	mean	SE	min	max	mean	SE	min	max	mean	SE	min	max
sea mullet	-	-	<0.1	<b>0.10</b>	-	-	ND	0.10	0.03	0.004	<0.01	0.06				
flat-tail mullet					-	-	ND	ND	0.04	0.010	0.01	<b>0.10</b>				
sand mullet	-	-	<0.1	<b>&lt;0.1</b>	-	-	ND	ND								
yellow-fin bream	-	-	<0.1	<b>0.25</b>	-	-	ND	0.20					0.13	0.015	0.08	0.17
tarwhine									0.07	0.020	0.02	<b>0.10</b>				
trevally	-	-	<0.1	0.20									0.18	0.018	0.09	<b>0.26</b>
luderick	-	-	<0.1	0.20					0.26	0.060	0.13	<b>0.45</b>				
whiting spp.													0.13	0.024	0.04	<b>0.32</b>
dusky flathead	-	-	<0.1	0.10	-	-	ND	<b>0.40</b>								
silver biddy**	-	-	<0.1	0.10	-	-	ND	<b>0.40</b>	0.16	0.020	0.05	0.26				

Note: \*\* indicates whole fish samples were retained for analysis, rather than flesh tissue, ND = Not Detected, where limit of reporting cannot be determined, **Bold** indicates maximum historic concentration for a particular species.

<sup>1</sup> Data collected by Cardno 2015, was undertaken in 2014

## 3.2 Survey results

The current survey resulted in the collection of 35 individuals, encompassing six species (Table 2, Figure 1). With the exception of luderick (adult specimens only), various life history stages (i.e. juvenile and mature specimens) were also collected for each species. This is evident in the variability between minimum and maximum length values shown in Table 2. Raw data for fish length, fish weight and tissue sample weight is provided in Appendix 1, and laboratory certificates are provided in Appendix 2.

Results obtained can be summarised as follows:

- Mercury concentrations in all tissue samples conformed to the ANZFSC (2011) maximum concentration of mercury within fish for human consumption (0.50 mg/kg).
- The maximum concentration recorded was 0.300 mg/kg within a yellow-fin bream sample.
- Two luderick samples recorded a mean concentration of 0.175 mg/kg  $\pm$  0.005 (se).
- Ten toadfish samples recorded a mean concentration of 0.100 mg/kg  $\pm$  0.010 (se).
- Eight whiting samples recorded a mean concentration of 0.068 mg/kg  $\pm$  0.007 (se).
- Four silver biddy samples recorded a mean concentration of 0.060 mg/kg  $\pm$  0.003 (se).
- Ten sea mullet samples recorded a mean concentration of 0.056 mg/kg  $\pm$  0.005 (se).

## 3.3 Correlations analyses

Correlation analysis was undertaken between fish attributes (size and weight) and mercury concentrations where suitable replicates were obtained (Table 3). Key findings can be summarised as follows:

- The strongest correlation was exhibited between sea mullet samples and mercury concentrations, showing a significant negative correlation between both fish weight ( $r = -0.92$ ,  $p < 0.01$ ) and length ( $r = -0.96$ ,  $p < 0.01$ ). This indicates that as fish size increased the mercury concentration in flesh tissue decreased. This result may reflect the residence time of juvenile specimens within the upper estuary, as opposed to more mobile adult specimens likely to be transient visitors.
- Smooth toadfish samples showed a significant positive correlation in mercury samples when compared to fish length ( $r = 0.79$ ,  $p = <0.01$ ) and fish weight ( $r = 0.68$ ,  $p = 0.03$ ).
- Whiting samples showed a significant positive correlation in mercury samples and fish length ( $r = 0.87$ ,  $p = <0.01$ ) though the positive correlation between mercury concentrations and fish weight was not significant ( $r = 0.71$ ,  $p = 0.05$ ).
- Silver biddy samples showed a strong positive correlation between mercury concentrations and fish length ( $r = 0.86$ ) and weight ( $r = 0.90$ ), though were not significant ( $p = 0.14$  and  $0.10$  respectively). This likely indicates the number of replicates and the resulting lower degrees of freedom.

Table 2 Mean, standard error (se), minimum and maximum values for fish length, weight and mercury for each species collected in the Penhryn estuary.

Fish	Number of samples	Metric	Fish length (mm)	Fish weight (g)	Mercury* (mg/kg)	ANZFSC 2011 guideline (mg/kg)
sea mullet ( <i>Mugil cephalus</i> )	10	mean	180	149	0.056	0.50
		se	39	90	0.005	
		minimum	110	12	<0.01	
		maximum	430	797	0.068	
silver biddy ( <i>Gerres subfasciatus</i> )	4	mean	110	21	0.060	0.50
		se	20	5	0.003	
		minimum	50	6	0.054	
		maximum	139	31	0.068	
luderick ( <i>Girella tricuspidata</i> )	2	mean	357	613	0.175	0.50
		se	5	32	0.005	
		minimum	352	581	0.170	
		maximum	361	645	0.180	
whiting ( <i>Sillago ciliata</i> )	8	mean	224	224	0.068	0.50
		se	13	13	0.007	
		minimum	148	35	0.019	
		maximum	260	156	0.095	
smooth toadfish ( <i>Tetractenos glaber</i> )	10	mean	94	24	0.100	0.50
		se	5	2	0.010	
		minimum	69	11	0.052	
		maximum	110	33	0.160	
yellow-fin bream ( <i>Acanthopagrus australis</i> )	1	mean	-	-	-	0.50
		se	-	-	-	
		minimum	160	232	0.3	
		maximum	160	232	0.3	

\*If reported value was less than the LOR, the LOR was used to calculate means.

Table 3 Pearson's product-moment correlation between fish mercury concentrations and fish length and weight.

Species	Weight	Length
sea mullet	$r = -0.92$ $p = <0.01$	$r = -0.96$ $p = <0.01$
silver biddy	$r = 0.90$ $p = 0.10$	$r = 0.86$ $p = 0.14$
whiting	$r = 0.71$ $p = 0.05$	$r = 0.87$ $p = <0.01$
toadfish	$r = 0.68$ $p = 0.03$	$r = 0.79$ $p = <0.01$

Note: Cell contents indicated Pearson's product-moment correlation  $r$  value followed by  $p$  value (significant correlation where  $p < 0.05$ ).

### 3.4 Comparison among years

Raw data from the 2004 and 2014 survey events was compared to data collected within the current survey for each species where applicable (Table 4, Figure 1), and can be summarised as follows:

- Mercury concentrations differed significantly among survey years, with silver biddy ( $p = 0.002$ ) and whiting ( $p = 0.031$ ) samples recording significantly less mercury in the current survey.
- Mercury concentrations in sea mullet were significantly greater in the current survey ( $p = 0.012$ ) when compared to recorded concentrations in 2004. It should be noted, no data is available to determine the relationship between fish size and mercury concentrations in the historic dataset. The observed difference between years may simply reflect a varying composition of fish specimens used (i.e. fish length).
- Luderick was the only species where mercury concentrations did not differ significantly between survey events.

Table 4 Number of samples ( $N$ ), mean, degrees of freedom, and  $p$  values for two sample t-test

Year	$N$	Mean	Degrees of freedom	$p$ value
sea mullet				
2004	12	0.03	14	<b>0.012</b>
2015	10	0.05		
silver biddy				
2004	10	0.16	9	<b>0.002</b>
2015	4	0.06		
luderick				
2004	7	0.27	6	0.121
2015	2	0.18		
whiting				
2014	10	0.13	10	<b>0.029</b>
2015	8	0.07		

Note: **Bold** indicates a significant difference, i.e.  $p < 0.05$ .

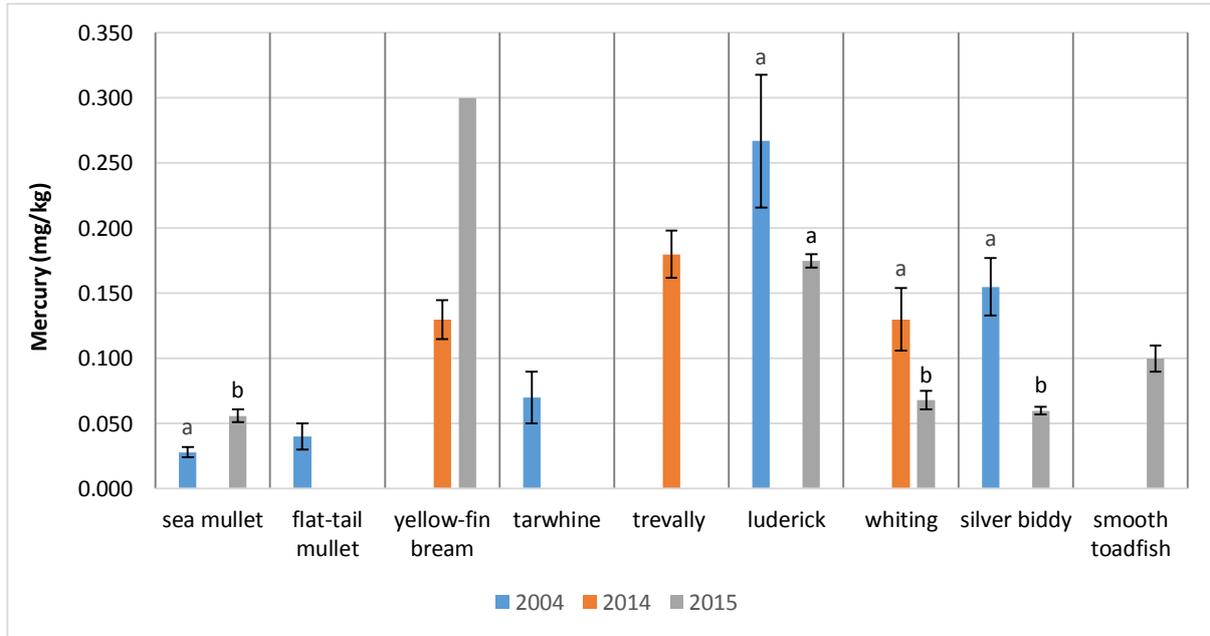


Figure 1 Mercury concentration (mg/kg) ± standard error (SE) within each fish species. Means with different letters are significantly different ( $p < 0.05$ ) among survey events for each species.

## 4 Conclusion

This report presents the findings of an assessment undertaken to determine the concentrations of mercury present within various estuarine fish species residing within the Penhryn estuary. Results obtained have been compared to food consumption standards, and statistically assessed to determine if mercury concentrations have changed amongst sampling episodes, or if there is correlation to fish attributes (size and weight).

Findings of this assessment can be summarised by the following:

- Mercury concentrations in all tissue samples conformed to the ANZFSC (2011) maximum concentration of mercury within fish for human consumption (0.50 mg/kg). In general, mean mercury concentrations were considerably lower than the designated guideline value (maximum value of 0.300 mg/kg).
- The mean concentration of mercury within silver biddy (whole samples) was 0.060 mg/kg  $\pm$  0.003(se). No significant correlation was found to occur between fish length / weight and mercury concentrations, though this likely reflects the small sample size. Concentrations were found to be significantly less in samples collected in the current survey than to those collected in 2004 ( $p = 0.002$ ).
- The mean concentration of mercury recorded within whiting was 0.068 mg/kg  $\pm$  0.007(se). A significant positive correlation was identified between fish length and mercury concentrations ( $r = 0.87$ ,  $p < 0.01$ ), indicating concentrations increase with fish length. Concentrations recorded in the current survey were significantly less than those recorded in 2014 ( $p = 0.031$ ).
- The mean concentration of mercury within sea mullet flesh tissue was 0.056mg/kg  $\pm$  0.005(se). A significant negative correlation was identified between mercury concentrations and fish length ( $r = -0.96$ ,  $p < 0.01$ ), indicating the larger the specimen the lower the concentration of mercury. Concentrations were significantly greater in 2014 than concentrations recorded in 2004 ( $p = 0.012$ ). It should be noted, no data is available to determine the relationship in fish size and mercury concentrations in the historic dataset. With the observed difference between years may simply reflect a varying composition fish specimens used (i.e. fish length).
- The mean concentrations of mercury within toadfish (whole samples) was 0.100 mg/kg  $\pm$  0.010(se).
- The mean concentration of mercury within luderick flesh tissue was 0.175 mg/kg  $\pm$  0.005(se). There was no significant difference in concentrations between sampling events (2004 and 2015).
- A single sample collected from a yellow-fin bream recorded a concentration of 0.300 mg/kg. This value is greater than those previously recorded for this species.

---

## References

Australia New Zealand Food Standards Code (ANZFA), 2011, Australia New Zealand Food Standards Code - Standard 1.4.1 - Contaminants and Natural Toxicants, accessed 9<sup>th</sup> of March 2015, <http://www.comlaw.gov.au/Details/F2011C00542>

Cardno 2015 - *Technical Note: Preliminary Findings Biota Sampling in Botany Bay*. Internal report for Orica Dated January 2015.

URS, 2004, HCB and Mercury in Sediment and Biota, Penhryn Estuary, NSE, August 2004, a report prepared for Orica Australia Pty Ltd on behalf of URS.

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## Appendix 1 Field proforma



**Factors affecting capture**

Factor	Unit 1	Unit 2	Unit 3	Unit 4	Weighting
depth					0 = no influence
slipperiness / bogginess					1 = minor influence
turbidity					2 = moderate influence
woody debris					3 = major influence
macrophytes / filamentous algae					4 = very major influence
conductivity					5 = prevented fishing
other					
<b>Total</b>					

**Habitat characteristics**

Unit	Habitat characteristics
Unit 1	
Unit 2	
Unit 3	
Unit 4	

**Notes**

Smooth toad fish = *tetractenos glaber* x 10

Silver biddy = *Gerris subfasciatus*

Whiting = *Sillago sp*

Sea mullet sample 2 Stomach ruptured

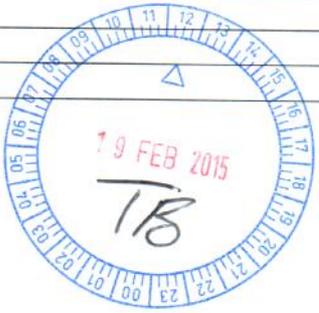
" " sample 6 " "

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## Appendix 2 Laboratory Certificate of Analysis

A1510944

Company Name	Ecosure	Contact Number		
Contact Name	Justin Cutajar	email results	(07) 36061030	
Project Name	Mercury Investigation	Quote #	<a href="mailto:jcutajar@ecosure.com.au">jcutajar@ecosure.com.au</a>	
Project Number	TH092		EN147_111	
Sample ID:	Date	Species	Analysis	Comments
1	17/02/2014	silver biddy	Mercury Analysis by CVASS	process entire fish sample
2	18/02/2014	silver biddy	Mercury Analysis by CVASS	process entire fish sample
3	18/02/2014	silver biddy	Mercury Analysis by CVASS	process entire fish sample
4	18/02/2014	silver biddy	Mercury Analysis by CVASS	process entire fish sample
5	18/02/2014	sea mullet	Mercury Analysis by CVASS	process sample provided
6	18/02/2014	sea mullet	Mercury Analysis by CVASS	process sample provided
7	18/02/2014	sea mullet	Mercury Analysis by CVASS	process sample provided
8	18/02/2014	sea mullet	Mercury Analysis by CVASS	process sample provided
9	18/02/2014	sea mullet	Mercury Analysis by CVASS	process sample provided
10	18/02/2014	sea mullet	Mercury Analysis by CVASS	process sample provided
11	18/02/2014	sea mullet	Mercury Analysis by CVASS	process sample provided
12	18/02/2014	sea mullet	Mercury Analysis by CVASS	process sample provided
13	18/02/2014	sea mullet	Mercury Analysis by CVASS	process sample provided
14	18/02/2014	sea mullet	Mercury Analysis by CVASS	process sample provided
15	18/02/2014	Bream	Mercury Analysis by CVASS	process sample provided
16	17/02/2014	Toad fish	Mercury Analysis by CVASS	process entire fish sample
17	17/02/2014	Toad fish	Mercury Analysis by CVASS	process entire fish sample
18	17/02/2014	Toad fish	Mercury Analysis by CVASS	process entire fish sample
19	17/02/2014	Toad fish	Mercury Analysis by CVASS	process entire fish sample
20	17/02/2014	Toad fish	Mercury Analysis by CVASS	process entire fish sample
21	17/02/2014	Toad fish	Mercury Analysis by CVASS	process entire fish sample
22	17/02/2014	Toad fish	Mercury Analysis by CVASS	process entire fish sample
23	17/02/2014	Toad fish	Mercury Analysis by CVASS	process entire fish sample
24	17/02/2014	Toad fish	Mercury Analysis by CVASS	process entire fish sample
25	17/02/2014	Toad fish	Mercury Analysis by CVASS	process entire fish sample
26	18/02/2014	luderick	Mercury Analysis by CVASS	process sample provided
27	18/02/2014	luderick	Mercury Analysis by CVASS	process sample provided
28	17/02/2014	whiting	Mercury Analysis by CVASS	process sample provided
29	18/02/2014	whiting	Mercury Analysis by CVASS	process sample provided
30	18/02/2014	whiting	Mercury Analysis by CVASS	process sample provided
31	18/02/2014	whiting	Mercury Analysis by CVASS	process sample provided
32	18/02/2014	whiting	Mercury Analysis by CVASS	process sample provided
33	18/02/2014	whiting	Mercury Analysis by CVASS	process sample provided
34	18/02/2014	whiting	Mercury Analysis by CVASS	process sample provided
35	18/02/2014	whiting	Mercury Analysis by CVASS	process sample provided



# SAMPLE RECEIPT NOTIFICATION



**Attention** : Justin Cutajar

**Client** : Ecosure Pty Ltd  
Suite 10, 43 Tallebudgera Creek Road  
West Burleigh QLD 4219

**Telephone** : 07 5508 2046

**Facsimile** : 07 5508 2544

**Project** : Mercury in Biota

**Order Number** :

---

**Laboratory Reference** : **A15/0944**

Completed Chain of Custody accompanied samples.	<b>YES</b>
Samples were received in good condition and correctly preserved for all tests.	<b>YES</b>
Samples were received in sufficient time to allow laboratory to meet holding times.	<b>YES</b>
Samples were received chilled/chilling (if required).	<b>YES</b>

**Date samples received** : **19/02/2015**

**Matrix** : **biota (fish)**

**No. of samples** : **35**

**Scheduled reporting date** : **2/03/15**

---

**Customer Services Officer** : **Trent Biggin**

Telephone : 07 3268 1228

Email : brisbane@advancedanalytical.com.au

Contact your Customer Services Officer for all queries and issues regarding this sample batch.

Note: Turnaround time begins at time of receipt at laboratory, surcharges may apply for fast turnaround.

Water samples will be appropriately stored for 1 month from date of receipt of samples.

Soil / Sediment samples will be appropriately stored for 2 months from date of receipt of samples.

## COMMENTS:

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## REPORT OF ANALYSIS

**Laboratory Reference:** A15/0944 [R00 ]

**Client:** Ecosure Pty Ltd  
Suite 10, 43 Tallebudgera Creek Road  
West Burleigh QLD 4219

**Contact:** Justin Cutajar

**Order No:** TH092  
**Project:** Mercury in Fish  
**Sample Type:** Fish  
**No. of Samples:** 35  
**Date Received:** 19/02/2015  
**Date Completed:** 26/02/2015

---

### *Laboratory Contact Details:*

**Client Services Manager:** Trent Biggin  
**Technical Enquiries:** Andrew Bradbury  
**Telephone:** +61 7 3268 1228  
**Fax:** +61 7 3268 1238  
**Email:** brisbane@advancedanalytical.com.au  
andrew.bradbury@advancedanalytical.com.au

---

### *Attached Results Approved By:*

**Rama Nimmagadda**  
**Technical Manager**

### *Comments:*

All samples tested as submitted by client. All attached results have been checked and approved for release. This is the Final Report and supersedes any reports previously issued with this reference number. Accredited for compliance with ISO/IEC 17025. This document shall not be reproduced, except in full.



Accreditation No. 15109

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Issue Date: 27 February 2015

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www.advancedanalytical.com.au



**Batch Number:** A15/0944 [R00]  
**Project Reference:** Mercury in Fish

<b>Laboratory Reference:</b>	-	-	/1	/2	/3	/4
<b>Client Reference:</b>	-	-	Silver Biddy 1	Silver Biddy 2	Silver Biddy 3	Silver Biddy 4
<b>Date Sampled:</b>	-	-	17/02/2015	18/02/2015	18/02/2015	18/02/2015
<b>Analysis Description</b>	<b>Method</b>	<b>Units</b>				
<b>Trace Elements</b>						
Mercury	04-006	mg/kg	0.054	0.068	0.067	0.058

<b>Laboratory Reference:</b>	-	-	/5	/6	/7	/8
<b>Client Reference:</b>	-	-	Sea Mullet 1	Sea Mullet 2	Sea Mullet 3	Sea Mullet 4
<b>Date Sampled:</b>	-	-	18/02/2015	18/02/2015	18/02/2015	18/02/2015
<b>Analysis Description</b>	<b>Method</b>	<b>Units</b>				
<b>Trace Elements</b>						
Mercury	04-006	mg/kg	0.065	0.068	0.046	0.061

<b>Laboratory Reference:</b>	-	-	/9	/10	/11	/12
<b>Client Reference:</b>	-	-	Sea Mullet 5	Sea Mullet 6	Sea Mullet 7	Sea Mullet 8
<b>Date Sampled:</b>	-	-	18/02/2015	18/02/2015	18/02/2015	18/02/2015
<b>Analysis Description</b>	<b>Method</b>	<b>Units</b>				
<b>Trace Elements</b>						
Mercury	04-006	mg/kg	0.056	0.059	0.063	0.062

<b>Laboratory Reference:</b>	-	-	/13	/14	/15	/16
<b>Client Reference:</b>	-	-	Sea Mullet 9	Sea Mullet 10	Bream 1	Toad Fish 1
<b>Date Sampled:</b>	-	-	18/02/2015	18/02/2015	18/02/2015	17/02/2015
<b>Analysis Description</b>	<b>Method</b>	<b>Units</b>				
<b>Trace Elements</b>						
Mercury	04-006	mg/kg	0.014	<0.01	0.30	0.13

<b>Laboratory Reference:</b>	-	-	/17	/18	/19	/20
<b>Client Reference:</b>	-	-	Toad Fish 2	Toad Fish 3	Toad Fish 4	Toad Fish 5
<b>Date Sampled:</b>	-	-	17/02/2015	17/02/2015	17/02/2015	17/02/2015
<b>Analysis Description</b>	<b>Method</b>	<b>Units</b>				
<b>Trace Elements</b>						
Mercury	04-006	mg/kg	0.16	0.081	0.082	0.14



**Batch Number:** A15/0944 [R00]  
**Project Reference:** Mercury in Fish

<b>Laboratory Reference:</b>	-	-	/21	/22	/23	/24
<b>Client Reference:</b>	-	-	<b>Toad Fish 6</b>	<b>Toad Fish 7</b>	<b>Toad Fish 8</b>	<b>Toad Fish 9</b>
<b>Date Sampled:</b>	-	-	<b>17/02/2015</b>	<b>17/02/2015</b>	<b>17/02/2015</b>	<b>17/02/2015</b>
<b>Analysis Description</b>	<b>Method</b>	<b>Units</b>				
<b>Trace Elements</b>						
Mercury	04-006	mg/kg	0.071	0.080	0.13	0.099

<b>Laboratory Reference:</b>	-	-	/25	/26	/27	/28
<b>Client Reference:</b>	-	-	<b>Toad Fish 10</b>	<b>Luderick 1</b>	<b>Luderick 2</b>	<b>Whiting 1</b>
<b>Date Sampled:</b>	-	-	<b>17/02/2015</b>	<b>18/02/2015</b>	<b>18/02/2015</b>	<b>17/02/2015</b>
<b>Analysis Description</b>	<b>Method</b>	<b>Units</b>				
<b>Trace Elements</b>						
Mercury	04-006	mg/kg	0.052	0.17	0.18	0.019

<b>Laboratory Reference:</b>	-	-	/29	/30	/31	/32
<b>Client Reference:</b>	-	-	<b>Whiting 2</b>	<b>Whiting 3</b>	<b>Whiting 4</b>	<b>Whiting 5</b>
<b>Date Sampled:</b>	-	-	<b>18/02/2015</b>	<b>18/02/2015</b>	<b>18/02/2015</b>	<b>18/02/2015</b>
<b>Analysis Description</b>	<b>Method</b>	<b>Units</b>				
<b>Trace Elements</b>						
Mercury	04-006	mg/kg	0.070	0.067	0.083	0.095

<b>Laboratory Reference:</b>	-	-	/33	/34	/35
<b>Client Reference:</b>	-	-	<b>Whiting 6</b>	<b>Whiting 7</b>	<b>Whiting 8</b>
<b>Date Sampled:</b>	-	-	<b>18/02/2015</b>	<b>18/02/2015</b>	<b>18/02/2015</b>
<b>Analysis Description</b>	<b>Method</b>	<b>Units</b>			
<b>Trace Elements</b>					
Mercury	04-006	mg/kg	0.064	0.074	0.056

<b>Method</b>	<b>Method Description</b>
04-006	Mercury in food by CVAAS, mg/kg

Result Comments

[<] Less than

[INS] Insufficient sample for this test

[NA] Test not required

\*Analyte is not covered by NATA scope of accreditation.

Sample results are reported on a wet weight basis.

Issue Date: 27 February 2015

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**Batch Number:** A15/0944 [R00]  
**Project Reference:** Mercury in Fish

## QUALITY ASSURANCE REPORT

TEST	UNITS	Blank	Duplicate Sm#	Duplicate Results	Spike Sm#	Spike Results
Mercury	mg/kg	<0.01	A15/0944-1	0.054    0.054    RPD: 0	A15/0944-1	105%

TEST	Units	Blank	Duplicate Sm#	Duplicate Results	Spike Sm#	Spike Results
Mercury	mg/kg	<0.01	A15/0944-11	0.063    0.068    RPD: 8	A15/0944-21	104%

TEST	Units	Blank	Duplicate Sm#	Duplicate Results
Mercury	mg/kg	[NT]	A15/0944-21	0.071    0.072    RPD: 1

TEST	Units	Blank	Duplicate Sm#	Duplicate Results
Mercury	mg/kg	[NT]	A15/0944-31	0.083    0.083    RPD: 0

### Comments:

RPD = Relative Percent Deviation

[NT] = Not Tested

[N/A] = Not Applicable

'#' = Spike recovery data could not be calculated due to high levels of contaminants

Acceptable replicate reproducibility limit or RPD: 30%

Acceptable matrix spike & LCS recovery limits: Trace elements 70-130%

Organic analyses 50-150%

SVOC & speciated phenols 10-140%

Surrogates 10-140%

When levels outside these limits are obtained, an investigation into the cause of the deviation is performed before the batch is accepted or rejected, and results are released.

## Appendix 3 Mercury concentrations in fish tissue

Fish	Sample number	Replicate	Date sampled	Mercury (mg/kg)
Silver Bidy 1	1	0	17/02/2015	0.054
Silver Bidy 1	1	1	17/02/2015	0.054
Silver Bidy 2	2	0	18/02/2015	0.068
Silver Bidy 3	3	0	18/02/2015	0.067
Silver Bidy 4	4	0	18/02/2015	0.058
Sea Mullet 1	5	0	18/02/2015	0.065
Sea Mullet 2	6	0	18/02/2015	0.068
Sea Mullet 3	7	0	18/02/2015	0.046
Sea Mullet 4	8	0	18/02/2015	0.061
Sea Mullet 5	9	0	18/02/2015	0.056
Sea Mullet 6	10	0	18/02/2015	0.059
Sea Mullet 7	11	0	18/02/2015	0.063
Sea Mullet 7	11	1	18/02/2015	0.068
Sea Mullet 8	12	0	18/02/2015	0.062
Sea Mullet 9	13	0	18/02/2015	0.014
Sea Mullet 10	14	0	18/02/2015	<0.01
Bream 1	15	0	18/02/2015	0.300
Toad Fish 1	16	0	17/02/2015	0.130
Toad Fish 2	17	0	17/02/2015	0.160
Toad Fish 3	18	0	17/02/2015	0.081
Toad Fish 4	19	0	17/02/2015	0.082
Toad Fish 5	20	0	17/02/2015	0.140
Toad Fish 6	21	0	17/02/2015	0.071
Toad Fish 6	21	1	17/02/2015	0.072
Toad Fish 7	22	0	17/02/2015	0.080
Toad Fish 8	23	0	17/02/2015	0.130

Fish	Sample number	Replicate	Date sampled	Mercury (mg/kg)
Toad Fish 9	24	0	17/02/2015	0.099
Toad Fish 10	25	0	17/02/2015	0.052
Luderick 1	26	0	18/02/2015	0.170
Luderick 2	27	0	18/02/2015	0.180
Whiting 1	28	0	17/02/2015	0.019
Whiting 2	29	0	18/02/2015	0.070
Whiting 3	30	0	18/02/2015	0.067
Whiting 4	31	0	18/02/2015	0.083
Whiting 4	31	1	18/02/2015	0.083
Whiting 5	32	0	18/02/2015	0.095
Whiting 6	33	0	18/02/2015	0.064
Whiting 7	34	0	18/02/2015	0.074
Whiting 8	35	0	18/02/2015	0.056

## Revision History

Revision No.	Revision date	Details	Prepared by	Reviewed by	Approved by
00	17/03/2014	Mercury Independent Review – Stage 2	Justin Cutajar, Aquatic Ecologist	Chris Pietsch, Senior Aquatic Ecologist	Leigh Knight, Senior Environmental Planner
01	29/04/2015	Mercury Independent Review – Stage 2	Justin Cutajar, Aquatic Ecologist	Chris Pietsch, Senior Aquatic Ecologist	Leigh Knight, Senior Environmental Planner
02	28/09/2015	Mercury Independent Review – Stage 2	Chris Pietsch, Senior Aquatic Ecologist		

## Distribution List

Copy #	Date	Type	Issued to	Name
1	28/09/2015	Electronic	WSP Group	Colin McKay
2	28/09/2015	Electronic	Ecosure	Administration

Citation: Ecosure (2015), Mercury Independent Review – Stage 2, Report to WSP, Brisbane

Report compiled by Ecosure Pty Ltd

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TH092-RE Orica Botany Mercury Independent Review - Final Report.R2review.R1

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