Pacific National

Detailed Site Investigation for Proposed New Refuelling Infrastructure Area

Part Lot 35 in DP 1007367
20 Dasea Street, Chullora

11 December 2019

54005/112485 (Rev 0)

JBS&G Australia Pty Ltd

www.jbsg.com.au

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Abbreviations

Term	Definition
ACM	Asbestos Containing Material
AHD	Australian Height Datum
ANZECC	Australian and New Zealand Environment Conservation Council
AST	Aboveground storage tank
Bgs	below ground surface
BTEX	Benzene, toluene, ethylbenzene and xylenes
B(a)P	Benzo(a)pyrene
CLM Act	Contaminated Land Management Act
CSM	Conceptual site model
DEC	NSW Department of Environment and Conservation
DQI	Data quality indicator
DQOs	Data Quality Objectives
DSI	Detailed Site Investigation
DWE	NSW Department of Water and Energy
EMP	Environmental Management Plan
EPA	NSW Environment Protection Authority
ESA	Environmental Site Assessment
FA/AF	Friable asbestos/asbestos fines
GME	Groundwater monitoring event
ha	Hectare
HIL	Health based investigation level
HSL	Health screening level
JBS&G	JBS&G Australia Pty Ltd
LNAPL	Light non-aqueous phase liquid
LOR	Limit of Reporting
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NOW	NSW Office of Water
OCP	Organochlorine pesticide
OEH	Office of Environment and Heritage
PAHs	Polycyclic aromatic hydrocarbons
PCB	Polychlorinated biphenyl
POEO Act	Protection of the Environment Operations Act
PQL	Practical Quantitation Limit
PSH	Phase Separated Hydrocarbon
QA/QC	Quality Assurance/Quality Control
RPD	Relative Percentage Difference
SAQP	Sampling, Analysis and Quality Plan
TPH	Total Petroleum Hydrocarbons
TRH	Total Recoverable Hydrocarbons

Executive Summary

JBS&G Australia Pty Ltd (JBS&G) has been engaged by Pacific National (the client) to undertake a Detailed Site Investigation for a portion of its Sydney Freight Terminal (SFT), located at 20 Dasea Street, Chullora, NSW. The site is legally identified as part Lot 35 in DP 1007367 and covers approximately 4965 m^2, which specifically relates to a proposed new refuelling infrastructure. The site location is shown on **Figure 1** and the site layout is shown on **Figure 2**.

The objectives of this investigation were to assess the potential for contamination based on historical site activities and to allow an assessment of site suitability for ongoing commercial/industrial land use.

The scope of work comprised:

- Review existing site investigation information including previous investigation reports;
- Review of available background information pertaining to the environmental setting;
- Collection of soil samples from 11 systematic and targeted locations to assess contaminants of potential concern (COPCs). Four borehole locations were converted into groundwater monitoring wells and subsequently sampled to assess COPCs;
- Analysis of selected soil and groundwater samples at a laboratory NATA accredited for total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene and xylene (BTEX compounds), polycyclic aromatic hydrocarbons (PAHs), heavy metals (arsenic, cadmium, chromium, copper, nickel, lead, zinc and mercury), organochlorine pesticides (OCPs), polychlorinated biphenyls (PCBs) and asbestos; and
- Comparison of collected data against relevant EPA endorsed criteria.

Based on the findings of the investigations, and subject to the limitations presented in **Section 11**, it is concluded the site is suitable for ongoing commercial/industrial land use subject to management of identified zinc impacts to site groundwater.

It is recommended that an Environmental Management Plan (EMP) be prepared to document the required measures to be implemented at the site during construction activities. Zinc impacts within groundwater restrict potential beneficial uses (i.e. irrigation) or discharge during construction dewatering. The EMP will also be required to detail the required controls for potential contact with impacted groundwater during excavation activities.

1. Introduction

1.1 Background

JBS&G Australia Pty Ltd (JBS&G) has been engaged by Pacific National (the client) to undertake a Detailed Site Investigation for a portion of its Sydney Freight Terminal (SFT), located at 20 Dasea Street, Chullora, NSW. The site is legally identified as part Lot 35 in DP 1007367 and covers approximately 4965 m^2, which specifically relates to an proposed for new refuelling infrastructure. The site location is shown on **Figure 1** and the site layout is shown on **Figure 2**.

Pacific National intends to upgrade the provisioning facility and requires an Environmental Site Assessment (ESA) to assess hydrocarbon staining around the footprint of the existing facility and to satisfy potential contamination requirements for a development application.

This assessment has been developed in accordance with relevant guidelines made or endorsed by the NSW Environment Protection Authority (EPA). This report is consistent with EPA reporting requirements for a DSI report.

1.2 Objectives

The objectives of this investigation were to assess the potential for contamination based on historical site activities and to allow an assessment of site suitability for ongoing commercial/industrial land use.

1.3 Scope of Work

The scope of work comprised:

- Review existing site investigation information including previous investigation reports (**Section 3**);
- Review of available background information pertaining to the environmental setting;
- Collection of soil samples from 11 systematic and targeted locations to assess contaminants of potential concern (COPCs). Four borehole locations were converted into groundwater monitoring wells and subsequently sampled to assess COPCs;
- Analysis of selected soil and groundwater samples at a laboratory NATA accredited for total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene and xylene (BTEX compounds), polycyclic aromatic hydrocarbons (PAHs), heavy metals (arsenic, cadmium, chromium, copper, nickel, lead, zinc and mercury), organochlorine pesticides (OCPs), polychlorinated biphenyls (PCBs) and asbestos;
- Comparison of collected data against relevant EPA endorsed criteria;
- Assess whether the contamination identified at the site, if any, poses an unacceptable risk to potential receptors under an on-going commercial/industrial land use scenario. Where an unacceptable risk is identified, provide recommendations for management actions required;
- Assessment of risk from potential groundwater impacts are based upon groundwater monitoring data collected from the site; and
- Preparation of a report in general accordance with relevant NSW Environment Protection Authority (EPA) issued and endorsed guidelines.

1.4 Previous Assessments

A previous assessment has been completed on the site. A summary of the site history and previous investigations on the site is presented in **Section 3**.

2. Site Description

The site condition information is provided in the following sections.

2.1 Site Identification

Site identification information is summarised in **Table 2.1**. The site location is shown on **Figure 1** and the proposed site layout is shown on **Figure 2**.

Table 2.1: Site Identification

Address	20 Dasea Street, Chullora, NSW
Area	Approximately 4965 m^2
Legal Description	Part Lot 35 in DP 1007367
Current Zoning	IN1: General Industrial (Bankstown LEP, 2015[1])
Previous site use	Railyards
Current site use	Locomotive provisioning facility within Sydney Freight Terminal
Proposed site use	Commercial / industrial

2.2 Site Description

The site comprises a locomotive provisioning facility and a cleared vacant portion of the Sydney Freight Terminal owned by Pacific National. The site surface comprises compacted roadbase, rail ballast, and an asphalt paved road. **Figure 2** shows the site layout. Key site features include the following:

- A fuel dispenser (bowser) with associated transfer lines connected to two large diesel aboveground storage tanks (ASTs) and a disused AST were located in the central portion of the site. There were no signs of surface staining visible on concrete plinths underlying the ASTs. Surface oil staining was visible in the concrete bunded area containing the diesel bowser;
- A lubricant tank shed was located in the southern portion of the site with associated underground transfer lines to dispensers (for locomotives) in the eastern portion of the site; and
- The locomotive refuelling area was located in the eastern portion of the site. A fuel overflow/spill trap was located underlying the rail tracks within the area. Any liquids collected within the trap are transferred to an oil/water separator in the northern portion of the site. Surface oil staining was observed around the location of the fuel overflow/spill trap.

2.3 Surrounding Land Use

The immediate surrounding land use is predominantly railyards and rail lines. To the west of the investigation area is an open area used for general site storage (including crates, soil and timber). To the south of the site is additional rail lines and large industrial properties.

The Cooks River is located approximately 50 m the north and west of the investigation area.

2.4 Topography and Drainage

A review of site topography on SIX Maps[2] topographic map indicated that the site has an approximate elevation of 30 m Australian Height Datum (AHD). The site and investigation area is situated on a generally level ground surface that gently slopes to the northwest towards Cooks River. Within the investigation area, precipitation is expected to infiltrate the surface soils at a rate reflective of the gravelly/clayey fill material present to a depth of up to 3.2 m below the ground

[1] Bankstown Local Environmental Plan, 2015 (Bankstown LEP, 2015)
[2] https://maps.six.nsw.gov.au/, accessed 13 October 2015

surface. During periods of heavy or prolonged rainfall, surface water from the investigation area is expected to follow the site topography and drain to Cooks River to the northwest.

2.5 Geology

Review of the 1:100,000 'Sydney' Geological Survey of NSW Sheet 9130 (1983a[3]), indicates the site is underlain by Bringelly Shale comprising shale, carbonaceous claystone, laminite, fine to medium grained lithic sandstone, rare coal.

Review of 1:100,000 'Sydney' Soil Landscape Series Sheet 9130 (1983b[4]), reveals the site is a disturbed landscape, comprising level to hummocky terrain, extensively disturbed by human activity including complete disturbance, removal or burial of soil. Landfill includes soil, rock, building and waste materials.

Review of the Botany Bay Acid Sulfate Soil Risk Map – Edition 2 indicates the site is located in an area of no known occurrence of acid sulfate soil materials.

2.6 Hydrogeology

A review of the registered groundwater bores from the NSW Office of Water (NOW[5]) database, indicated that there were two areas of multiple sets of groundwater bores located approximately 800 m southeast of the site. All groundwater wells were installed for monitoring purposes, however no standing water levels were provided in the drilling logs. Wells were installed typically in clay or shale. A figure showing registered bore locations and selected bore work summary sheets are provided in **Appendix B**. Based on the expected geology at the site, comprising fill overlying clay, shallow perched groundwater may be present on site. Based on local topography, groundwater is expected to flow to the northwest, towards Cooks River.

[3] *Sydney* 1:100,000 Geological Survey of NSW Sheet 9130 (1983a)
[4] *Sydney* 1:100,000 Soil Landscape Series Sheet 9130 (1983b)
[5] http://allwaterdata.water.nsw.gov.au/water.stm, accessed 23 November 2017

3. Summary Site History

3.1 NSW EPA Records

A search of the NSW EPA public register[6] under the Protection of the Environment Operations (POEO) Act 1997 was undertaken. The search identified that there were numerous licences in Chullora, although none related to the site. A copy of NSW EPA search results is provided in **Appendix C**.

A search was also undertaken through the EPAs public contaminated land register[7]. The search identified that there have been no notices issued for properties under the Contaminated Land Management Act 1997 (CLM Act) located in Chullora.

In addition, a review of the EPA's list of NSW Contaminated Sites Notified to EPA[8] identified that one property in the suburb of Chullora, Chullora Railway Workshops, has been notified to EPA under Section 60 of the CLM Act. This property is located approximately 500 m east of the site. Based on the local topography, indicating land slopes to the east, any impacts at the Chullora Railway Workshops are unlikely to affect the site.

3.2 Australian and NSW Heritage Register

A search of the NSW Heritage database did not identify any state or local government listed heritage items at the site. A search of the Australian Heritage database did not identify any Heritage listed items at the site.

A copy of heritage databases search results is provided in **Appendix D**.

3.3 Historical Land Titles

A copy of the historical titles documentation obtained for the site is provided in **Appendix E**. The historical title details are summarised in **Table 3.1** following.

Table 3.1: Summary of Historical Site Titles

Date	Owner
Part Lot 35 D.P. 1007367	
11.01.1915 (1915 to 1923)	Winchcombe Carson Limited
21.12.1923 (1923 to 2000)	Railway Commissioners for New South Wales Intervening name changes, now State Rail Authority of New South Wales
30.05.2000 (2000 to Date)	# National Rail Corporation Limited Now # Asciano Services Pty Ltd

From the review of historical title information it is inferred that the site has been used for rail related purposes from at least 1923. Winchcombe Carson Limited, which owned the site from 1915 to 1923, appears to have been a wool broking company, indicating the site may have been used for wool storage prior to railway use.

3.4 Section 149 Planning Certificate Search

At the time of preparing this draft report, the s149 certificates had not been received from Council.

3.5 Aerial Photographs

Review of historical aerial photographs obtained from NSW Spatial Services for the years 1930, 1943, 1955, 1965, 1975, 1986, 1994 and 2007, and a 2017 image obtained from NearMap, were reviewed

[6] http://www.epa.nsw.gov.au/prpoeoapp/, accessed 23 November 2017
[7] http://www.epa.nsw.gov.au/prclmapp/searchregister.aspx, accessed 23 November 2017
[8] http://www.epa.nsw.gov.au/clm/publiclist.htm, accessed 14 September 2017

for this assessment. Copies of the historical aerial photographs are provided in **Appendix F**. The aerial photograph review identified the following features in relation to the history of the site:

1930: The site comprises fragmented bushland with several dirt tracks leading to what appear to be rail lines to the north, south and east of the site.

The surrounding land also appears to comprise largely fragmented bushland with some railway lines or dirt roads, and numerous dirt tracks visible. Land to the north-west of the site appears to comprise of cleared vacant land and some possible market gardens. A number of small buildings and a large warehouse is located south of the site. What appear to be areas of bare ground are visible to the southwest and east of the site.

1943: The site appears largely unchanged from the 1930 aerial photograph.

A large warehouse building is visible to the east of the site. Vegetation appears to have been cleared in some areas along the Cooks River alignment to the north and west of the site.

1955: The site surface appears to be bare ground and has been subject to extensive filling to achieve levels similar to adjoining land to the east. Evidence of filling to the north and west and appears to be in on-going to the southeast for construction of railway corridors.

Further industrial development appears to have occurred to the south-west of the site.

1965: A rail line and railway carriages are visible in the northern portion of the site, with the remainder of the appearing to comprise vacant grass covered land.

A large area of cleared bare ground is visible to the southeast of the site.

1975: The rail line in the northern portion of the site is no longer apparent. Extensive land clearing and earthworks is visible to the north and west of the site, with some potentially paved areas. The cleared area to the north and west of the site is potentially being used for storage of shipping containers. A railway line appears to run along the inside of the site's southeast boundary.

1986: A road terminus with large turning circle is present in the northern portion of the site. The central and western portion of the site appears to have been subject to excavation, or the site has been cleared of vegetation, which may make the ground appear to have been excavated. Numerous stockpiles of soil are visible between the site and the Cooks River. The rail yards to the north and west of the site have undergone significant development with several shipping container gantry cranes, a large warehouse or locomotive servicing shed and numerous shipping containers visible. Further industrial development has occurred to the south-west of the site.

1994: The central portion of the site appears to be used for the storage of shipping containers. The western portion of the site appears to have been filled for construction of a site access road over the Cooks River to the west. A large warehouse like building is visible south-east of the site.

2007: The aerial photograph is of poor quality, however, it appears that the site is no longer being used for the storage of shipping containers. Small structures are visible in the southern portion of the site and the locations appear consistent with the current (2017) lubricant storage shed and diesel ASTs. The turning circle in the northern portion of the site appears to have been partially demolished.

There is bushland regrowth apparent within the Cooks River alignment to the west. What appeared to be industrial land to the south has undergone redevelopment for commercial/industrial purposes, with several large warehouse like buildings visible.

2017: What appears to be a paved, asphalt road and turning circle are visible in the northwest portion of the site. appears within the northern portion of the site. Additional structures, consistent with the current locomotive refuelling infrastructure, are visible in the eastern portion of the site.

Bushland regrowth is evident to the north, east and west of the site. Vacant land to the south appears to have been developed for commercial/industrial purposes

3.6 Integrity Assessment and Summary of Site History

From review of historical title information and historical aerial photographs, the site has historically been mainly used for rail related purposes.

Based on the range of sources and the general consistency of the historical information, it is considered that the historical assessment has an acceptable level of accuracy with respect to the potentially contaminating activities historically occurring at the site.

3.7 Targeted ESA (OTEK 2010[9])

OTEK Australia Pty Ltd (OTEK) (20101) reported on a targeted ESA, focussing on old and new fuel aboveground storage tanks (ASTs), tank fill and dispensing points, and areas of gravel ballast locate adjacent to, between, and downgradient of locomotive refuelling points. The targeted ESA included soil sampling from seventeen boreholes and groundwater sampling from one monitoring well.

Petroleum hydrocarbon impacts to soil were identified in locations exceeding relevant criteria at the time of the assessment in locations adjacent to a former AST and in locations adjoining locomotive refuelling points. A figure showing sampling locations and summarised analytical data are provided in **Appendix G**.

[9] Targeted Environmental Site Assessment (DRAFT), Pacific National Sydney Freight Terminal, 20 Dasea St, Chullora, NSW. Prepared by OTEK Australia Pty Ltd, Project Job No. 4109157, 19 January 2010 (OTEK 2010)

4. Conceptual Site Model

NEPC (2013) identifies a conceptual site model (CSM) as a representation of site related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The development of a CSM is an essential part of all site assessments.

NEPC (2013) identified the essential elements of a CSM as including:

- Known and potential sources of contamination and contaminants of concern including the mechanism(s) of contamination;
- Potentially affected media (soil, sediment, groundwater, surface water, indoor and ambient air);
- Human and ecological receptors;
- Potential and complete exposure pathways; and
- Any potential preferential pathways for vapour migration (if potential for vapours identified).

4.1 Potential Contamination Issues/Sources

With respect to the site, JBS&G considers that the key site contamination issues (Area of Environmental Concern) are:

- The presence of fill used to level the site; and
- The storage and handling of petroleum hydrocarbons as associated with the ASTs and vehicle/train refuelling points which may have caused environmental impact through surface leaks and spills.

4.2 Contaminants of Potential Concern

Based on the presence of fill and the storage and handling of petroleum hydrocarbons on site, the principal contaminants of potential concern (COPC) are as follows:

- Metals and metalloids (As, Cd, Cr, Cu, Pb, Hg, Ni and Zn);
- Total recoverable hydrocarbons (TRH);
- Benzene, toluene, ethylbenzene and xylene (BTEX);
- Organochlorine pesticides (OCPs);
- Polychlorinated biphenyls (PCBs);
- Polycyclic Aromatic Hydrocarbons (PAHs); and
- Asbestos.

4.3 Potentially Affected Media

Potentially contaminated media have been identified as:

- Fill materials;
- Natural soils; and
- Groundwater.

4.4 Receptors and Exposure Pathways

The site will continue being used for commercial / industrial purposes, similar its' current use, and will provide an above ground storage area for fuel and contain an oil/water separator to service

Pacific National's locomotive provisioning yard. Based on this on-going land use scenario, a review of potential human receptors and exposures pathways on the site has been undertaken and is summarised in **Table 4.1** following.

Table 4.1: Summary of Potential Exposed Populations and Exposure Pathways for Future Site Use

Receptor	Location (potential Future Site Use)	Media	Potential Exposure Pathways
Commercial / Industrial Worker	Outdoor / Yard Area (non-paved)	Soils	Oral
			Dermal
			Inhalation (particulates)
Intrusive Maintenance Worker (short duration)	Excavations	Soils	Oral
			Dermal
			Inhalation (vapours and particulates)
		Groundwater	Oral
			Dermal
			Inhalation (vapours)

Due to the presence of compacted roadbase gravels and asphalt pavement present on the site surface, and lack of significant vegetation, consideration of ecological receptors is not applicable to site soils for the current investigation.

4.5 Preferential Pathways

Preferential pathways would be associated with historical sub-surface infrastructure on the site, including pipelines / trenches etc. Based on the gravelly nature of the underlying fill materials, these materials are also considered to provide preferential pathways for contaminant migration.

5. Sampling and Analysis Plan

5.1 Data Quality Objectives

Data quality objectives (DQOs) were developed for the investigation, as discussed below.

5.1.1 State the Problem

The site is a portion of the Sydney Freight Terminal and is used for the storage of materials (including fuels) for supply to the locomotive provisioning shed located in the eastern portion of the site. A previous investigation reported localised petroleum hydrocarbon impacts to soil at locations adjacent to a former AST and in locations adjoining locomotive refuelling points.

Pacific National have proposed to upgrade the facility and require an ESA to be submitted with the Development Application to Canterbury-Bankstown Council. As a result, additional environmental data needs to be collected to confirm the nature and potential extent of contamination risks on-site and to enable a statement on site suitability to be made. Where this is not possible, then appropriate recommendations need to be made for the remediation/management of subsurface contamination at the site.

5.1.2 Identify the Decision

Based on the decision-making process for assessing urban redevelopment site detailed in *Contaminated Sites: Guidelines for the NSW Site Auditor Scheme (3rd Edition)*. NSW EPA 2017 (EPA 2017), the following decisions must be made:

- Are there any unacceptable risks to likely future on-site receptors from impacted soil or groundwater on site?
- Are there any issues relating to local area background soil concentrations that exceed the appropriate soil criteria?
- Are there any impacts of chemical mixtures?
- Are there any additional aesthetic concerns (odours) in soil present at the site?
- Is there any evidence of, or potential for, migration of contaminants off-site?
- Is a site management strategy required?

5.1.3 Identify Inputs to the Decision

Inputs to the decisions will be:

- A review of available historical information;
- A detailed site inspection;
- Physical observations and interpretation of environmental data through the collection of soil and groundwater samples and laboratory chemical analysis results;
- Development of appropriate assessment criteria for evaluation of environmental impacts;
- Laboratory analysis of samples of potentially contaminated media for COPC; and
- Confirmation that data generated by sample analysis are of an acceptable quality to allow reliable comparison to assessment criteria by assessment of quality assurance/quality control a per the data quality indicators established in **Section 5.1.6**.

5.1.4 Define the Study Boundaries

The study boundaries are shown in **Figure 1** and **2** and described in **Sections 2.1** and **2.2**. The maximum vertical extent of the investigation was 7.6 m bgs.

Due to the commercial/industrial land use and nature of the site, seasonality will not be assessed as part of this investigation.

5.1.5 Develop a Decision Rule

The decision rules adopted to answer the decisions identified in **Section 5.1.2** are summarised in **Table 5.1**.

Table 5.1 Summary of Decision Rules

Decision Required to be made	Decision Rule
1. Are there any risks to likely future onsite receptors from impacted soils/groundwater on site?	Soil analytical data will be compared against EPA endorsed criteria. Soil Statistical analysis of the data will be completed in accordance with relevant guidance documents, as appropriate, to facilitate the decisions. The following statistical criteria will be adopted with respect to soil: Either: the reported concentrations will be below the site criteria; Or: the average site concentration for each analyte will be below the adopted site criterion; no single analyte concentration exceeds 250% of the adopted site criterion; and the standard deviation of the results will be less than 50% of the site criterion. And: the 95% upper confidence limit (UCL[10]) of the average concentration for each analyte will be below the adopted site criterion. If the statistical criteria stated above are satisfied, the answer to the decision is No. If the statistical criteria is not satisfied, the answer to the decision is Yes.
2. Are there any issues relating to the local area background soil concentrations that exceed appropriate soil criteria?	Soil analytical data will be compared against EPA endorsed criteria. If the 95% UCL of surface soils exceeded published background concentrations (NEPC 1999), the answer to the decision is Yes. Otherwise the answer to the decision is No.
3. Are there chemical mixtures that may impact human health?	Are there more than one group of contaminants present which increase the risk of harm? If there is, the answer to the decision is Yes. Otherwise, the answer to the decision is No.
4. Are there any aesthetics issues in fill soils at the site?	If there are large quantities of non-hazardous, inert, foreign material that may have the potential to contain hazardous contaminants, any ACM fragments on the ground surface, or any unacceptable odours, the answer to the decision is Yes. Otherwise, the decision answer to the decision is No.
5. Is there any evidence of, or potential for, migration of contaminants off-site?	Is impacted groundwater potentially migrating from site? If yes, the answer to the decision is Yes. Otherwise, the answer to the decision is No.
6. Is a site management strategy required?	Is the answer to any of the above decisions Yes? If Yes, a site management strategy will be required to be developed. If No, a site management strategy is not required.

5.1.6 Specify Limits of Decision Error

This step is to establish the decision maker's tolerable limits on decision errors, which are used to establish performance goals for limiting uncertainty in the data. Data generated during this project must be appropriate to allow decisions to be made with confidence.

Specific limits for this project have been adopted in accordance with the appropriate guidance from the NSW EPA, NEPC (2013), ANZECC (2000), DEC (2007), appropriate indicators of data quality (DQIs used to assess QA/QC) and standard JBS&G procedures for field sampling and handling.

To assess the usability of the data prior to making decisions, the data will be assessed against pre-determined Data Quality Indicators (DQIs) for completeness, comparability, representativeness, precision and accuracy.

The pre-determined Data Quality Indicators (DQIs) established for the project are discussed below in relation to precision, accuracy, representativeness, comparability, completeness and sensitivity (PARCCS parameters), and are shown in **Table 5.2**.

[10] *Sampling Design Guidelines.* NSW EPA. September 1995. (EPA 1995)

- **Precision** - measures the reproducibility of measurements under a given set of conditions. The precision of the laboratory data and sampling techniques is assessed by calculating the Relative Percent Difference (RPD) of duplicate samples.
- **Accuracy** - measures the bias in a measurement system. The accuracy of the laboratory data that are generated during this study is a measure of the closeness of the analytical results obtained by a method to the 'true' value. Accuracy is assessed by reference to the analytical results of laboratory control samples, laboratory spikes and analyses against reference standards.
- **Representativeness** –expresses the degree which sample data accurately and precisely represent a characteristic of a population or an environmental condition. Representativeness is achieved by collecting samples on a representative basis across the site, and by using an adequate number of sample locations to characterise the site to the required accuracy.
- **Comparability** - expresses the confidence with which one data set can be compared with another. This is achieved through maintaining a level of consistency in techniques used to collect samples; ensuring analysing laboratories use consistent analysis techniques and reporting methods.
- **Completeness** – is defined as the percentage of measurements made which are judged to be valid measurements. The completeness goal is set at there being sufficient valid data generated during the study.
- **Sensitivity** – expresses the appropriateness of the chosen laboratory methods, including the limits of reporting, in producing reliable data in relation to the adopted criteria.

If any of the DQIs are not met, further assessment will be necessary to determine whether the non-conformance will significantly affect the usefulness of the data. Corrective actions may include requesting further information from samplers and/or analytical laboratories, downgrading of the quality of the data or alternatively, re-collection of the data.

Table 5.2: Summary of Quality Assurance / Quality Control Program

Data Quality Objectives	Frequency	Data Quality Indicator
Precision		
Blind duplicates (intra laboratory)	1 / 20 samples	<30% RPD
Blind duplicates (inter laboratory)	1 / 20 samples	<30% RPD
Accuracy		
Surrogate spikes	All organic samples	70-130%
Laboratory control samples	1 per lab batch	70-130%
Matrix spikes	1 per lab batch	70-130%
Representativeness		
Sampling appropriate for media and analytes		-
Samples extracted and analysed within holding times.	-	organics (14 days), inorganics (6 months)
Trip spike	1 per sample batch where samples are to be analysed for volatile compounds	70-130% recovery
Trip blank	1 per sample batch where samples are to be analysed for volatile compounds	<LOR
Method blank	1 per lab batch	<LOR
Comparability		
Standard operating procedures for sample collection & handling	All samples	All samples

Data Quality Objectives	Frequency	Data Quality Indicator
Standard analytical methods used for all analyses	All samples	All samples
Consistent field conditions, sampling staff and laboratory analysis	All samples	All samples
Completeness		
Sample description and COCs completed and appropriate	All samples	All samples
Appropriate documentation	All samples	All samples
Satisfactory frequency and result for QC samples	All QA/QC samples	-
Data from critical samples is considered valid	-	Critical samples valid
Sensitivity		
Limits of reporting appropriate and consistent	All samples	All samples

5.1.7 Optimise the Design for Obtaining Data

Various strategies for developing a statistically based sampling plan are identified in EPA (1995), including judgemental, random, systematic and stratified sampling patterns. As the site essentially comprises a rectangular feature with known impacts, it was considered that a combination of systematic and targeted sampling was appropriate for the investigation. Therefore, soil sampling was undertaken at eleven locations (B1 to B11) across the site, including targeted locations within AECs. Four of the soil sampling boreholes (B1, B4, B5 and B11) were converted into groundwater monitoring wells (MW1 to MW3 and MW5). The Sampling and Analysis Plan is detailed in **Table 5.3**. The sampling locations are shown on **Figure 3**.

5.2 Investigation Methodology

5.2.1 Soil Investigation Methodology

Soil sampling locations for this investigation were completed using a small track mounted drill rig fitted with push tube sampling equipment. Soil samples were generally collected in the fill/soil profile at intervals of 0.1 m, 0.5 m, 1 m and every consecutive meter to a maximum depth of approximately 3 m.

During the collection of soil samples, features such as seepage, discolouration, staining, odours and other indications of contamination were noted on field sheets.

Collected samples were immediately transferred to laboratory supplied sample jars and plastic resealable 'ziplock' bags (for field screening). Care was taken to minimise the potential for loss of volatile contaminants during sampling.

Field soil duplicate and split samples were obtained using the above sampling methods. Samples were not mixed prior to collection of duplicate and split samples to minimise the potential for loss of volatiles.

Filled sample jars were transferred to a chilled ice box for sample preservation prior to and during shipment to the testing laboratory. A chain-of-custody form was completed and forwarded with the samples to the testing laboratory. Based upon field observations and the PID screening results, samples were analysed in accordance with the laboratory schedule in **Table 5.3**.

5.2.2 Field PID Screening

Soil samples were screened using a photo-ionisation detector (PID) fitted with a standard ionisation lamp with electron voltage (eV) range associated with the ionisation potentials of typical volatile organic compounds (VOCs), including petroleum hydrocarbons. The PID was appropriately

calibrated and was used to assist in collection of samples for petroleum hydrocarbon analysis. A copy of the PID calibration records are included in **Appendix K**.

Samples obtained for PID screening were placed in a sealed plastic bag for a period of approximately 5 minutes to equilibrate, prior to a PID being attached to the bag. Readings were then monitored for a period of approximately 30 seconds or until values stabilised and the stabilised/highest reading was recorded.

5.2.3 Groundwater Monitoring Well Installation

Four groundwater monitoring wells (MW1 to MW3 and MW5) were installed as part of this investigation. One shallow well (MW1) was installed at a location within an area of shallow soil staining and an additional three wells (MW2; MW03 and MW5) were installed at locations inferred to be downgradient of the AST, fuel dispenser and/or the oil water separator.

Boreholes for monitoring wells were drilled using a drill rig fitted with solid flight augers. Boreholes were advanced to approximately 2 m below groundwater as encountered during drilling.

Monitoring wells were constructed using Class 18 uPVC (50mm) screen and casing, with appropriate gravel packs, bentonite seals, well caps and lockable road boxes.

Wells were developed after construction using a stainless steel bailer to remove turbidity created by the drilling and construction process. Following development the monitoring wells were allowed to stabilise for approximately ten days before sampling.

5.2.4 Groundwater Sampling

Prior to sampling each monitoring well was gauged using an oil/water interface probe. Gauging included assessment for presence of light non aqueous phase liquids and depth to water. During purging field parameters of pH, conductivity, redox and temperature were monitored in a flow cell. Samples were taken once parameters stabilised to within approximately 10%. Groundwater samples were obtained through the use of a low flow peristaltic pump.

Groundwater samples were transferred directly to laboratory supplied sample bottles. Sample bottles were clearly marked with sample identification details, sealed and then transferred to a chilled esky with ice. Samples were analysed in accordance with the analytical schedule (**Table 5.3**).

5.2.5 Survey of New Wells

All new monitoring wells were surveyed using an automatic laser level to measure relative heights of top of casing between monitoring well locations to allow interpretation of groundwater flow directions at the site. The relative heights of the top of casing (TOC) of the wells was calculated by subtracting the TOC measurements from a nominal value of 5 m.

5.2.6 Decontamination

Non-disposable sampling equipment was used for soil (new push tube liners for sample collection in each push tube run) and groundwater (new tubing) sampling, and each sample was collected with a new pair of disposable gloves. Therefore, decontamination of sampling equipment was largely not necessary with the exception of the interface probe, which was appropriately decontaminated between each monitoring well.

5.3 Laboratory Analyses

JBS&G subcontract Eurofins MGT (Eurofins) as the primary laboratory, with Envirolab Services (Envirolab) as the secondary laboratory for asbestos and chemical analyses. Both laboratories are NATA registered for the required analyses. In addition, the laboratories were required to meet JBS&G's internal QA/QC requirements. The analytical schedule is presented in **Table 5.3**.

Table 5.3: Sampling and Analytical Program

Sample Type	No. of Sampling Locations	Analyses (exc. QA/QC)
Soil	11 borehole locations	Heavy Metals – 9 samples PAHs – 22 samples TRH/BTEX – 22 samples OCP/PCBs – 18 samples Asbestos – 8 samples
Groundwater	4 monitoring wells	PAH – 3 water samples TRH/BTEX – 3 water samples Heavy metals – 3 samples VOCs – 3 samples

6. Assessment Criteria

6.1 Regulatory Guidelines

The investigation was undertaken with consideration to aspects of the following guidelines as relevant:

- Contaminated Sites: Sampling Design Guidelines, NSW EPA, 1995 (EPA 1995);
- Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites, NSW OEH, 2011 (OEH 2011);
- Contaminated Sites: Guidelines for the NSW Site Auditor Scheme, 3rd Edition, NSW EPA, 2017 (EPA 2017);
- National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1), National Environment Protection Council (NEPC 2013); and
- Guidelines on Duty to Report Contamination under the Contaminated Land Management Act 1997, NSW EPA, September 2015 (EPA 2015).

6.2 Soil Criteria

The site is proposed to be used for ongoing commercial/industrial purposes. As such, based on the proposed land use and in accordance with the decision process for assessment of urban redevelopment sites (EPA 2017), concentrations in the soil will be compared against published levels sourced from the following:

- Health based Commercial/Industrial (D) Investigation and Screening Levels provided in Schedule B1 of NEPC 2013; and
- Management Limits for TRH fractions in Soil for Commercial/Industrial - Table 1B(7) NEPC (2013).

When applying the criteria, where appropriate, consideration was given to the soil type (coarse or fine) and depth of sample in order to implement the appropriate guideline value.

The results of asbestos observations and analysis were assessed in general accordance with NEPC (2013) including DOH (2009[11]) guidance.

The site is covered with asphalt or compacted hardstand gravels and road-base material and is to be used for commercial/industrial use. There is very limited landscaped areas present on the site and site soils are not accessible to ecological receptors, and therefore, soil data has not been assessed against EILs.

6.3 Groundwater Criteria

The adopted groundwater criteria are based on the following guidelines:

- Australia and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018); and
- National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1), National Environment Protection Council, 2013 (NEPC 2013).

The site is located within the Cooks River catchment. On this basis, groundwater investigation criteria are adopted with reference to EPA's endorsed environmental values for the Cooks River catchment as affected by urban development. The relevant environmental values/objectives relevant for discharge of groundwater to Cooks River are aquatic ecosystems (marine), visual

[11] Guidelines for the Assessment Remediation and Management of Asbestos-Contaminated Sites in Western Australia May 2009. Western Australia Department of Health (DOH) (DOH 2009)

amenity and secondary/primary recreational contact. As such, application of the adopted groundwater criteria shall be as follows:

- Recreational Criteria – shall be applied to groundwater as human contact with groundwater may occur via mixing of groundwater and the surface waters of the Cooks River system and subsequent Botany Bay foreshore area.
- Marine Criteria – shall similarly be applied to groundwater as a result of potential exposure down-gradient of the site.

Given that Botany Bay, the ultimate receiving water body, is a tidal marine environment, threshold values for marine environments have been adopted for this assessment. It has been assumed that the receiving waters are slightly to moderately disturbed ecosystems based on their location within the metropolitan area.

Recreational criteria are based on guidance in NHMRC (2008) which indicates concentrations of substances at 10 times drinking water guideline provides a screening approach for assessing whether further consideration of risks to recreational waters is warranted. The guidelines have further been used as screening values for intrusive maintenance workers undertaking excavations within the extent of the site and may come in temporary contact with site groundwater.

Groundwater health screening levels (HSLs) for vapour intrusion presented in Table 1A(4) by NEPC (2013) are adopted for commercial/industrial site use.

7. Quality Assurance / Quality Control

7.1 Soil QA / QC Results

The QA/QC results for soil and groundwater samples collected at the site are summarised in **Table 7.1** and discussed in **Section 7.2** below. Detailed laboratory QA/QC results are included in the laboratory reports in **Appendix H**, and summarised QA/QC results for field duplicates and triplicates are provided in **Appendix I**. It is noted that some of the results of analysis contained within the laboratory reports do not relate to the site.

Table 7.1: Data Quality Indicator Assessment

Data Quality Objective	Frequency	Results
Precision		
Blind duplicates (intra laboratory)	2/34 primary samples (Soil) 0/3 primary samples (Groundwater)	0-129 % RPD*
Split duplicates (inter laboratory)	2/34 primary samples (Soil) 0/3 primary samples (Groundwater	0-153 % RPD*
Laboratory duplicates	2/26 (Soil)	<0-31 % RPD
Accuracy		
Surrogate spikes	All organic constituents	53-130 % recovery*
Matrix spikes	2/30	73-127% recovery
Laboratory control samples	2/3	73-125 % recovery
Representativeness		
Sampling appropriate for media and analytes	All	Sampling undertaken by trained staff in accordance with standard operating procedures
Trip spike	2/sampling batch	79-120 % recovery
Trip Blank	2/sampling batch	<LOR
Rinsate blank	1 per sampling day when non-disposable sampling equipment used.	No rinsate required as only disposable sampling equipment utilised.
Laboratory blanks	1 per batch	<LOR
Samples extracted and analysed within holding times.	All	All groundwater samples analysed within holding times. Primary soil samples out of holding times for TRH analysis*
Comparability		
Standard operating procedures used for sample collection and handling	All	Standard procedures for all sampling
Standard analytical methods used	All	Standard analytical methods
Consistent field conditions, sampling staff and laboratory analysis	All	Field works conducted by a single staff member and all chemical analysis conducted at the same laboratory
Limits of reporting appropriate and consistent	All	LORs appropriate and generally consistent
Completeness		
COCs completed and appropriate	All	COCs and field documentation complete
Appropriate documentation	All	Documentation complete
Satisfactory frequency/result for QC samples	All	Frequency adequate
Data from critical samples is considered valid	All	Generally valid

1. See discussion of DQI exceedances in **Section 7.2.**

7.2 Soil QA/QC Discussion

7.2.1 Precision

Duplicates (intra-laboratory) and Triplicates (inter-laboratory)

Field blind duplicate (intra-laboratory) and triplicate (inter-laboratory) samples for soil were analysed at a rate of 2 per 34 primary samples analysed, meeting the 1/20 DQI frequency.

RPDs for the primary and duplicate sample analyses were generally within the acceptance criteria of 0-30% with the exception of some metals, PAHS and TRH fractions. The results of asbestos analysis in QC02 and QC02A (asbestos not detected) was in agreement with the primary sample. Elevated RPDs for metals, TRH and PAHs between sample pairs are considered to be due to the heterogeneity of the fill material. However, these elevated RPDs are considered to not affect the suitability of the data for the site assessment as all concentrations were significantly less than the adopted health based assessment criteria. As a conservative measure, the highest reported concentration of each contaminant (from either the primary or duplicate sample) was considered when assessing the data.

Due to the low sample density, groundwater field blind duplicate and triplicate samples were not collected as part of this investigation.

With the exceptions of one PAH compound and TRH C15-C28 in one sample, RPDs for laboratory duplicates for soil were within the acceptable limits. The elevated RPDs in the laboratory duplicates is attributed to heterogeneity of the fill material sampled. The elevated RPDs are considered to not affect the suitability of the data for the site assessment as the concentrations of contaminants were all low with respect to the assessment criteria.

7.2.2 Accuracy

Soil Surrogate Spikes

All surrogate recoveries were within the acceptable range with the exception of some PAH, BTEX and PCB compound surrogates. Elevated surrogate recoveries potentially indicate reported concentrations may be greater than actual concentration, with low surrogate recoveries indicating reported concentrations may be less than actual concentrations present in the sample. Although certain surrogate recoveries were reported outside the DQI range, they still fell within the laboratory's dynamic control limits, which are based on statistical evaluation of processed surrogate recoveries by the laboratory and as such, are considered to be acceptable.

Laboratory Control Samples

Laboratory control samples analysed reported recoveries within the acceptable range.

Matrix Spikes

Matrix spike recoveries were within the acceptable range of 70-130%.

7.2.3 Representativeness

Sampling appropriate for media and analytes

All soil and groundwater sampling works completed during the investigation were conducted in accordance with JBS&G standard operating procedures. The sampling was conducted as summarised in **Section 5.2**.

Holding Times

The groundwater analyses were undertaken within the recommended holding times. In addition, the majority of soil analyses were undertaken within the recommended holding times with the exception of certain organic constituents. However, given that all trip spike recoveries were within acceptable limits, the samples were appropriately stored under refrigeration at the laboratory

during the period prior to analysis and that the primary contaminants of concern were semi-volatile, the rate of relative breakdown is considered such that generally minor exceedances in holding times are of minor concern.

Method Blanks

The concentrations of analytes in method blanks were all less than the LORs.

Trip Spike

The trip spike recoveries were within acceptable limits, which indicates there was low potential for volatile losses from samples.

Trip Blank

The results of analysis for a trip spike sample were all less than the limits of reporting, which indicates there was a low potential for cross contamination of samples by volatile compounds.

7.2.4 Comparability

An experienced JBS&G field scientist undertook all sampling in accordance with standard JBS&G sampling methods. Field works and sampling were undertaken by the same JBS&G field scientist throughout the works.

All field documentation was appropriately completed. The nominated laboratories undertook all analysis in accordance with the relevant NATA accredited methods.

7.2.5 Completeness

Samples were transported under full COC documentation. The COC documentation was completed correctly and the selected analyses were correctly conducted.

All field documentation was completed appropriately including borehole logs and calibration sheets presented in **Appendix J**.

The frequency of analysis and result for all QC samples were appropriate.

7.2.6 Sensitivity

Laboratory analysis methods for most contaminants during the investigation used limits of reporting significantly less than the site assessment criteria to ensure the contaminant concentrations could be confidently identified as being less than the adopted soil site assessment criteria. It is noted that the analysis of some PAH compounds in water samples had higher laboratory reporting limits than the adopted site criteria – however in the absence of any significant PAH impacts identified in soil, this is not considered to significantly affect the outcomes of the assessment.

7.3 QA/QC Assessment

The field sampling and handling procedures produced QA/QC results which indicate that the soil and groundwater data are of an acceptable quality and suitable for use in site characterisation.

The NATA certified laboratory results sheets indicate that the project laboratory was generally achieving levels of performance within its recommended control limits during the period when the samples of this program were analysed.

On the basis of the results of the field and laboratory QA/QC program, indicate the soil and groundwater data is of an acceptable quality upon which to draw conclusions regarding the environmental condition of the site.

8. Investigation Results

8.1 Soil Sampling

Representative soil samples from twelve locations (**Figure 3**) were analysed for a range of COPCs. The summarised laboratory results are presented in **Table A** (**Appendix A**) and are discussed below. Detailed laboratory reports and chain of custody documentation are provided in **Appendix H.** It is noted that some of the results of analysis contained within the laboratory reports do not relate to the site.

8.1.1 Field Observations

A total of eleven soil sampling locations were completed by JBS&G on 22 October 2017 for the current investigation. The lithology encountered at the site during the field works is summarised below. Borehole logs are included in **Appendix J.**

Fill material was encountered at depths ranging from 0.6 to 3.2 m bgs and comprised gravelly clay with inclusions of ash, slag, igneous gravels and sandstone. The fill material was underlain by natural brown clay or silty clay.

A shallow groundwater well was installed at BH1 in a thin layer of wet material observed at a depth of 0.5-0.8 m bgs, above the underlying natural silty clay, however, the well was found to be dry at the time of groundwater sampling.

Hydrocarbon odours were noted in fill/soils at several locations, including in close proximity to the fill points at sampling locations B01 and B04. Odours, where noted, were generally most intense in surface and shallow fill soils to a depth of approximately 1.0 m bgs. No odours were observed in underlying natural clay soils. PID readings, recorded for all samples collected, were between 0.1 to 21 ppm, indicating the potential presence of volatile TRH in soils at a number of locations.

8.1.2 Heavy Metals

Review of results of laboratory analysis indicates that the concentrations of heavy metals were all below the adopted human health investigation levels (HILs) for all soil samples selected for analysis.

8.1.3 TRH/BTEX

Review of results of laboratory analysis indicate that TRH and BTEX concentrations in the analysed samples were reported to be less than the adopted health screening levels (HSLs).

With the following exceptions concentrations of TRH in soil samples were the adopted management limits:

- 3800 mg/kg TRH >C10-C16 and 5100 mg/kg TRH >C16-C34 in BH1 (0.5-0.6); and
- 1500 mg/kg TRH >C10-C16 in BH2 (0.5-0.6).

8.1.4 PAHs

PAH concentrations in the analysed samples were less than the adopted HIL.

8.1.5 OCP/PCBs

OCP and PCB concentrations in the analysed samples were reported to be less than laboratory LOR and therefore less than the adopted HIL.

8.1.6 Asbestos

Asbestos was not detected above the laboratory LOR in any samples selected for analysis.

8.2 Groundwater Sampling

The groundwater monitoring locations are shown on **Figure 3** and summarised laboratory results are presented in **Table B**. Copies of groundwater field sampling sheets and field meter calibration records are provided in **Appendix K**. Concentrations of contaminants of potential concern exceeding adopted assessment criteria are shown on **Figure 5**. Analytical results are discussed in the following sections.

8.2.1 Field Parameters

Groundwater sampling was conducted in groundwater monitoring wells MW1 to MW3 and MW05 on 3 November 2017. MW01 was identified to be dry and no sample was able to be obtained. Groundwater samples obtained from MW02, MW03 and MW05 were typically brown and moderately turbid. There were no odours, sheen or NAPL observed within any of the monitoring wells. The field measured parameters for the water samples were as follows:

- pH range of 6.09-6.33;
- Redox potential of 144 to 168 mV (vs Ag/AgCl);
- Electrical conductivity between 5820 and 18 250 µS/cm; and
- Dissolved oxygen (DO) range of 1.41 to 3.2 ppm.

Review of the field parameters indicate that the groundwater is low in oxygen, slightly to moderately saline and with a pH close to neutral in all wells.

The depth to groundwater was between 4.15 m (MW5) and 4.75 m (MW2) below top of casing (TOC). The inferred direction of groundwater flow could not be assessed because the relative standing water elevations indicate localised shallow perched water was encountered at the monitoring locations. However, it is considered that groundwater flow would be to the north and north-west towards the Cooks River.

8.2.2 Heavy Metals

Heavy metals were detected in groundwater samples extracted from site monitoring wells, with reported copper concentrations in MW2 and MW5 and nickel concentrations in MW2, MW3 and MW5 exceeding the site assessment criteria. It is considered unlikely that the copper and nickel concentrations are related to an on-site source as no significant soil impacts have been detected at the site. On this basis, the reported concentrations of copper and nickel are considered likely to be representative of background levels of groundwater in the area.

Elevated levels of zinc were reported in all monitoring wells. The highest concentration was reported at MW3 (46 mg/L) and is approximately three orders of magnitude higher than zinc concentrations in groundwater collected from MW2 and MW5. In the absence of any soil impacts identified, the source of the zinc groundwater impact is unknown, but maybe due to isolated pockets of leachable zinc in fill.

8.2.3 TRH/BTEX

Review of results of laboratory analysis indicate that TRH and BTEX concentrations in all groundwater samples were reported to be less than the laboratory LOR and therefore less than the adopted site criteria.

8.2.4 PAHs

No PAHs were reported in any samples above the adopted site criteria, however, some laboratory LORs exceeded the adopted criteria. In the absence of any significant sources of PAH contamination in soil, it is considered unlikely that these compounds are likely to be present in groundwater.

8.2.5 VOCs

All VOC concentrations were reported below the laboratory LOR and therefore below the adopted assessment criteria.

9. Site Characterisation

Based on the decision making process for assessing urban redevelopment sites detailed in EPA (2017) and discussed in **Section 5.1.5,** the decisions required to be made are detailed below.

9.1 Potential Risks to Future On-site Receptors

Representative soil samples were analysed for COPCs identified at the site (as listed in **Section 4.2**). All reported concentrations for each COPC were below the adopted health based criteria. On this basis, it considered that soils do not pose an unacceptable health risk to future site receptors.

It is noted that shallow soils at BH1 and BH4 exceeded management limit criteria for some TRH fractions. Management limit criteria are applicable as screening levels following evaluation of human health and ecological risks. They are designed to address a number of potential risks including the formation of observable LNAPL and effects on buried infrastructure e.g. penetration of, or damage to, in-ground services by hydrocarbons. The identified TRH impacts were confirmed to be isolated to shallow soils <1 m and further confirmed to not be contributing to the formation of LNAPL at the site. The identified impacts do not pose a risk to future on-site receptors under the current land-use, however, do require consideration to the impact of any underground utilities (if any) at the site.

There are no identified beneficial uses for groundwater at the site. In addition, the reported TRH concentrations in groundwater were below the adopted health screening levels (HSLs) for vapour intrusion. On this basis, groundwater impacts do not affect the suitability of the site for its current use. However, zinc levels at MW3 require appropriate management during periods of construction when groundwater is encountered.

9.2 Chemical Mixtures

There were no potential chemical mixtures identified during the investigation that may pose a management issue at the site.

9.3 Aesthetic Issues

Potential aesthetic issues identified at the site are limited to surface oil staining and associated hydrocarbon odours in shallow soils at locations in close proximity to the fuel dispenser and fuel spill trap. Given that these impacts are relatively isolated and that the site is used for commercial and industrial purposes, they are not considered to be significant with respect to the suitability of the site under its current use.

9.4 Potential Migration of Contaminants

The potential risk of migration of contaminants from the site is limited to the probability of impacted groundwater moving offsite. Groundwater impacts primarily comprise of elevated zinc at location MW3. Based on the topography of the area, groundwater is inferred to flow to the north and north-west in the direction of the Cooks River, which is located approximately 50 m from the area of the investigation. The rate of groundwater movement is anticipated to be relatively slow based on the presence of low permeability clays on site. However, given that the source and age of the impact is unknown and the absence of any monitoring wells downgradient of MW3, the potential for off-site migration cannot be discounted.

9.5 Site Management

As detailed in **Section 9.1**, zinc in groundwater at location MW3 exceed the adopted screening criteria. Further investigation is required to determine whether the site poses a risk to off-site receptors. On-site management (remediation) may be required to minimise the potential for further degradation of groundwater quality and/or to minimise risks posed to off-site receptors.

10. Conclusion and Recommendation

Conclusion

Based on the findings of the investigations, and subject to the limitations presented in **Section 11**, it is concluded the site is suitable for ongoing commercial/industrial land use subject to management of identified zinc impacts to site groundwater.

Recommendation

It is recommended that an Environmental Management Plan (EMP) be prepared to document the required measures to be implemented at the site during construction activities. Zinc impacts within groundwater restrict potential beneficial uses (i.e. irrigation) or discharge during construction dewatering. The EMP will also be required to detail the required controls for potential contact with impacted groundwater during excavation activities.

11. Limitations

This report has been prepared for use by the client who has commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the client and other parties.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by JBS&G, and should not be relied upon by other parties, who should make their own enquiries.

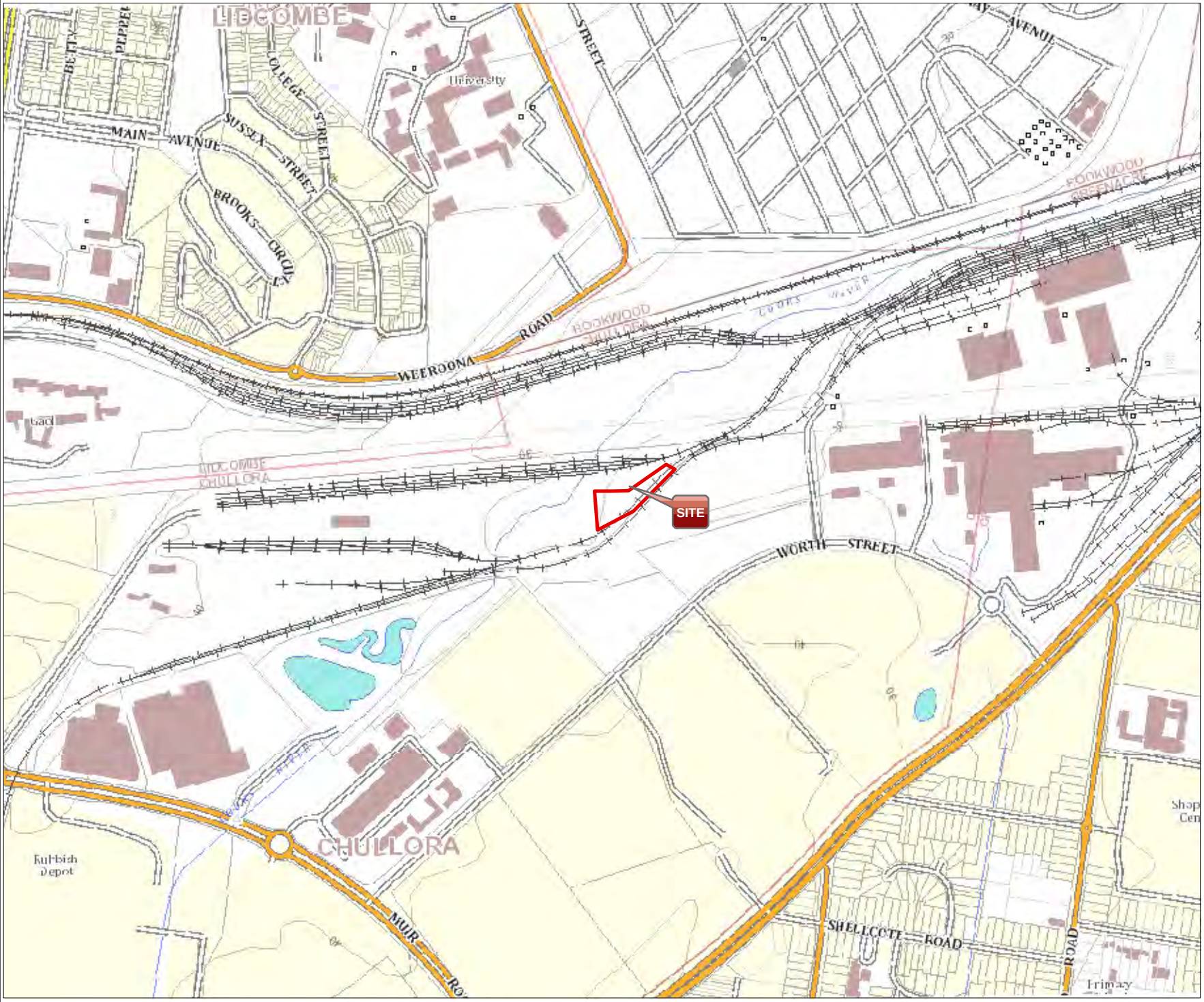
Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements.

Limited sampling and laboratory analyses were undertaken as part of the investigations undertaken, as described herein. Ground conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history and which may not be expected at the site.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, JBS&G reserves the right to review the report in the context of the additional information.

Figures



Legend:

Approximate Site Boundary

JBS&G

Job No: 54005

Client: Pacific National

Version: R01 Rev B	Date: 11-Dec-2019
Drawn By: RF	Checked By: JD

Scale 1:8,500

0 100 200

metres

Coor. Sys. GDA 1994 MGA Zone 56

20 Dasea Street
Chullora, NSW

SITE LOCATION

FIGURE: 1

File Name: 54005_01
Reference: SixMaps - https://maps.six.nsw.gov.au/ - Imagery 04-01-14

Legend:

Approximate Site Boundary

JBS&G

Job No: 54005	
Client: Pacific National	
Version: R01 Rev B	Date: 11-Dec-2019
Drawn By: RF	Checked By: JD
Scale 1:800	

0 10 20
metres

Coor. Sys. GDA 1994 MGA Zone 56

20 Dasea Street
Chullora, NSW

SITE LAYOUT

FIGURE: 2

File Name: 54005_02
Reference: Nearmap - nearmap.com.au - Imagery - 22-08-2017

Legend:

- Approximate Site Boundary
- Groundwater Monitoring Wells
- Soil Sample Location

JBS&G

Job No: 54005	
Client: Pacific National	
Version: R01 Rev B	Date: 11-Dec-2019
Drawn By: RF	Checked By: JD
Scale 1:800	

0 10 20
metres

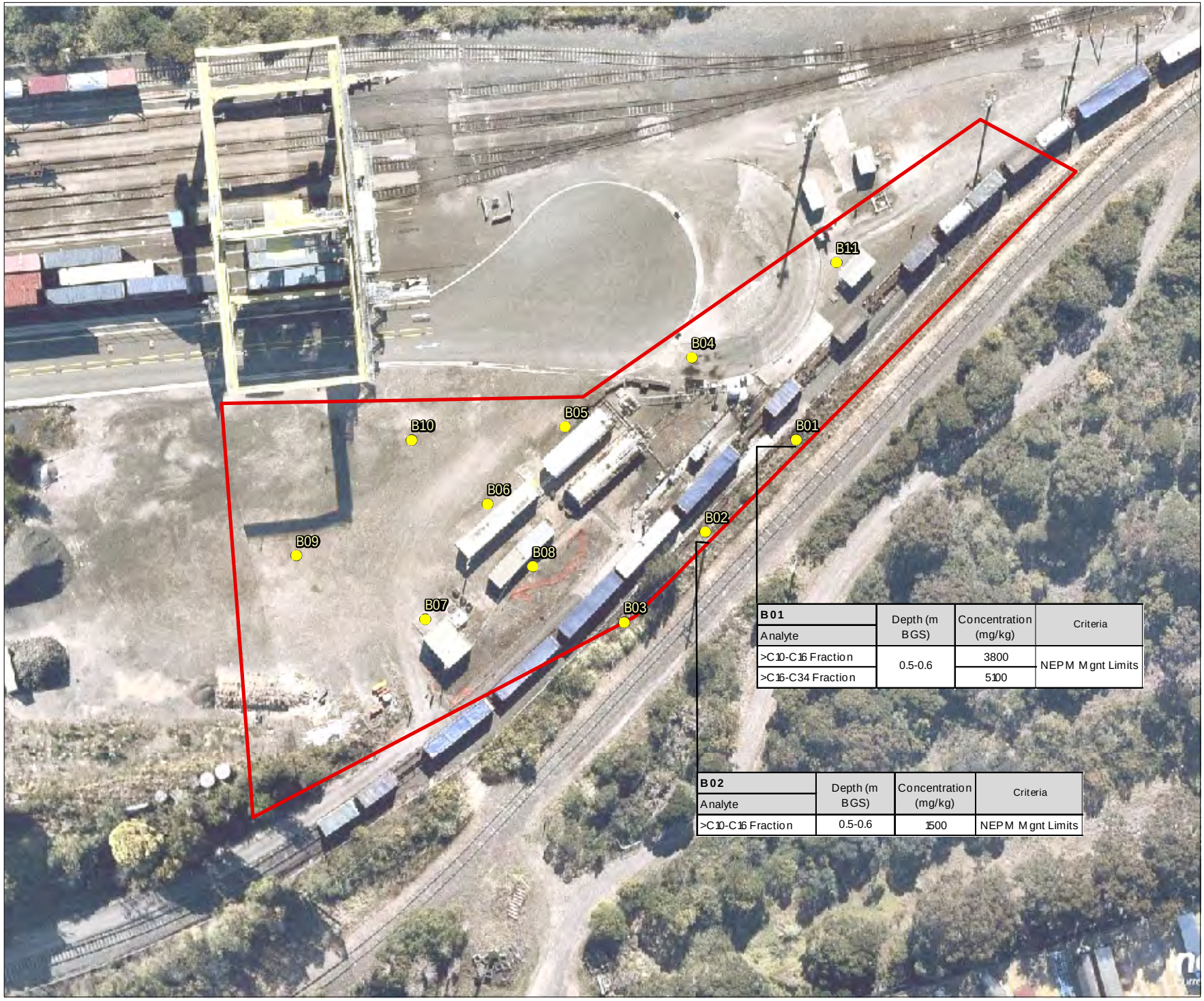
Coor. Sys. GDA 1994 MGA Zone 56

20 Dasea Street
Chullora, NSW

SAMPLE LOCATIONS

FIGURE: 3

File Name: 54005_03
Reference: Nearmap - nearmap.com.au - Imagery - 22-08-2017



B01 Analyte	Depth (m BGS)	Concentration (mg/kg)	Criteria
>C10-C16 Fraction	0.5-0.6	3800	NEPM Mgnt Limits
>C16-C34 Fraction		5100	

B02 Analyte	Depth (m BGS)	Concentration (mg/kg)	Criteria
>C10-C16 Fraction	0.5-0.6	1500	NEPM Mgnt Limits

Legend:

- Soil Sample Location
- Approximate Site Boundary

JBS&G

Job No: 54005

Client: Pacific National

Version: R01 Rev B | Date: 11-Dec-2019

Drawn By: RF | Checked By: JD

Scale 1:800

0 10 20
metres

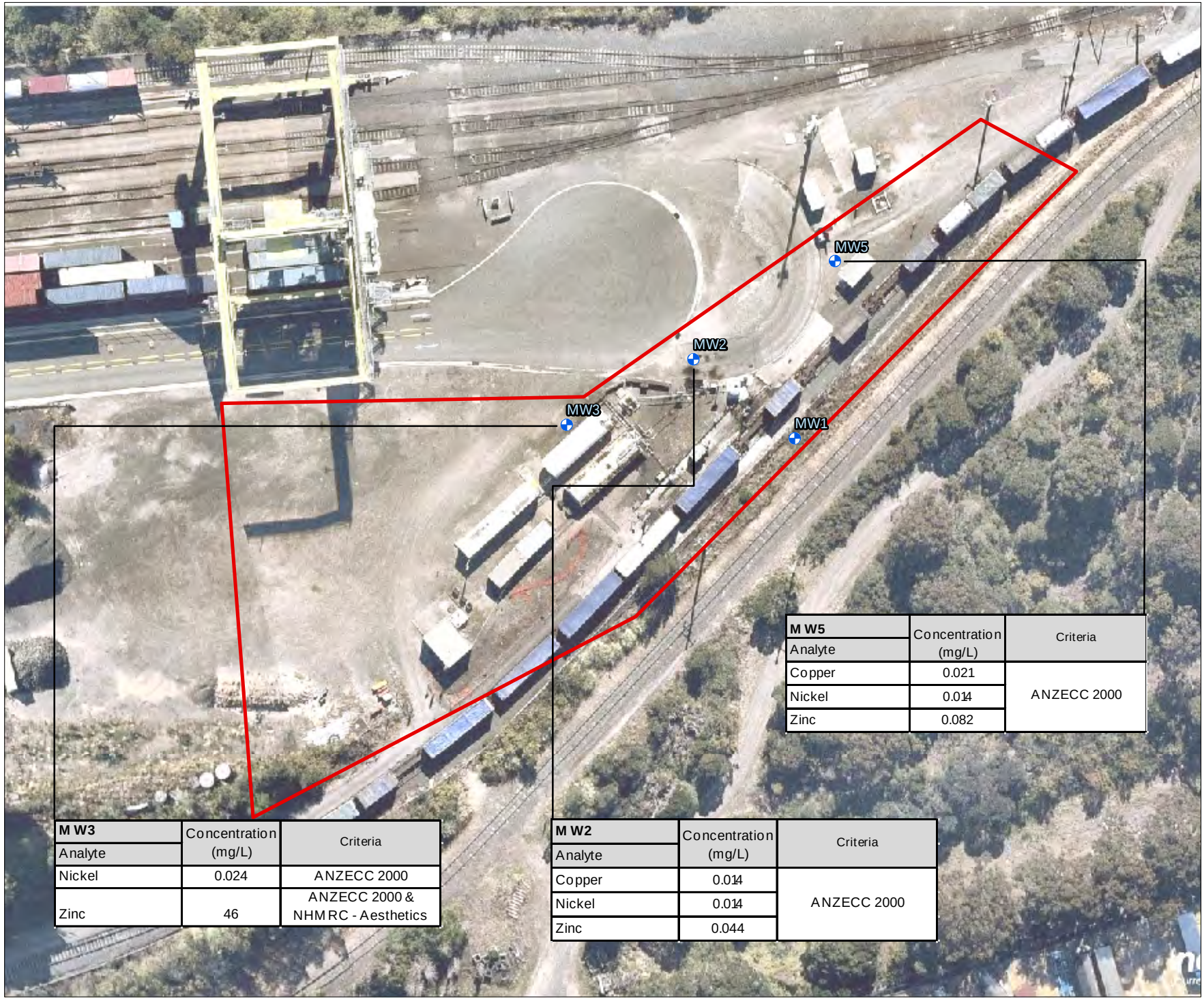
Coor. Sys. GDA 1994 MGA Zone 56

20 Dasea Street
Chullora, NSW

SOIL SAMPLE EXCEEDANCES

FIGURE: 4

File Name: 54005_04
Reference: Nearmap - nearmap.com.au - Imagery - 22-08-2017



M W5 Analyte	Concentration (mg/L)	Criteria
Copper	0.021	ANZECC 2000
Nickel	0.014	
Zinc	0.082	

M W3 Analyte	Concentration (mg/L)	Criteria
Nickel	0.024	ANZECC 2000
Zinc	46	ANZECC 2000 & NHMRC - Aesthetics

M W2 Analyte	Concentration (mg/L)	Criteria
Copper	0.014	ANZECC 2000
Nickel	0.014	
Zinc	0.044	

Legend:

Approximate Site Boundary

Groundwater Monitoring Wells

JBS&G

Job No: 54005

Client: Pacific National

Version: R01 Rev B | Date: 11-Dec-2019

Drawn By: AV | Checked By: JD

Scale 1:800

0 10 20

metres

Coor. Sys. GDA 1994 MGA Zone 56

20 Dasea Street
Chullora, NSW

GROUNDWATER MONITORING WELLS EXCEEDANCES

FIGURE: 5

File Name: 54005_05
Reference: Nearmap - nearmap.com.au - Imagery - 22-08-2017

Appendix A Tables

Table A: Soil Analytical Results
Project Number: 54005
Project Name: Chullora

				Metals & Metalloids								TRHs (NEPC 2013)							BTEX						Polycyclic Aromatic Hydrocarbons																					
				Arsenic (Total)	Cadmium	Chromium (Total)	Copper	Lead	Mercury (Inorganic)	Nickel	Zinc	>C10-C16 Fraction	>C16-C34 Fraction	>C34-C40 Fraction	>C10-C40 Fraction (Total)	>C10-C16 less Naphthalene (F2)	C6-C10 Fraction	C6-C10 less BTEX (F1)	Benzene	Ethylbenzene	Toluene	Xylene (o)	Xylene (m & p)	Xylene (Total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (lower bound)*	Benzo(a)pyrene TEQ (medium bound)*	Benzo(a)pyrene TEQ (upper bound)*	Benzo(b,j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	PAHs (Total)	Total Positive PAHs
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				2.00	0.40	1.00	1.00	1.00	0.10	1.00	1.00	50.00	100.00	100.00		50.00	20.00	20.00	0.10	0.10	0.10	0.10	0.20	0.30	0.10	0.10	0.10	0.10	0.05	0.50	0.50	0.50	0.50	0.10	0.50	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.50	
NEPM 2013 HSL Asbestos in Soil - Bonded ACM - Commercial/Industrial - HSL D																																															
NEPM 2013 HSL Asbestos in Soil - FA & AF - HSL																																															
NEPM 2013 Mgnt Limits - Commercial and Industrial, Coarse												1000	3500	10000			700																														
NEPM 2013 Soil HIL D				3000	900	3600	240000	1500	730	6000	400000																				40													4000	
NEPM 2013 Soil HSL D for Vapour Intrusion - Sand 0 to <1m																NL		260	3	NL	NL			230																	NL				
Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time																																												
B1 0.5-0.6	B1	0.5-0.6	22/10/2017	8.3	<0.4	8.6	72	9.4	<0.1	40	90	3800	5100	180	-	3800	21	21	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	-
B1 0-0.8	B1	0-0.8	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B1 1.0-1.1	B1	1-1.1	22/10/2017	-	-	-	-	-	-	-	-	<50	<100	<100	-	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
B2 0.5-0.6	B2	0.5-0.6	22/10/2017	6.2	<0.4	7	72	13	<0.1	13	66	1500	2500	190	-	1500	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	0.6	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	1	2.4	-
B2 0-0.6	B2	0-0.6	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2 1.0-1.1	B2	1-1.1	22/10/2017	-	-	-	-	-	-	-	-	<50	<100	<100	-	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
B3 0.0-0.1	B3	0-0.1	22/10/2017	-	-	-	-	-	-	-	-	<50	<100	<100	-	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
B3 0-0.6	B3	0-0.6	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3 1.0-1.1	B3	1-1.1	22/10/2017	-	-	-	-	-	-	-	-	<50	<100	<100	-	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
B4 1.5-1.6	B4	1.5-1.6	22/10/2017	-	-	-	-	-	-	-	-	63	<100	<100	-	63	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
B4 2.0-2.1	B4	2-2.1	22/10/2017	-	-	-	-	-	-	-	-	<50	<100	<100	-	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
B5 0.0-0.1	B5	0-0.1	22/10/2017	-	-	-	-	-	-	-	-	<50	300	190	-	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	1.2	2.5	4	4	4	1.8	3.3	2.2	2	0.7	6.1	<0.5	2	<0.5	1.2	5.8	28.8	-
B5 0-1	B5	0-1	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B5 1.0-1.1	B5	1-1.1	22/10/2017	8.4	<0.4	18	23	18	<0.1	5.6	42	<50	<100	<100	-	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
B6 0.5-0.6	B6	0.5-0.6	22/10/2017	-	-	-	-	-	-	-	-	<50	<100	<100	-	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
B6 0-1	B6	0-1	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6 2.0-2.1	B6	2-2.1	22/10/2017	10	<0.4	20	34	17	<0.1	7	44	<50	<100	<100	-	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
B7 0.5-0.6	B7	0.5-0.6	22/10/2017	10	<0.4	18	41	22	0.2	30	69	<50	<100	<100	-	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
B7 2.0-2.1	B7	2-2.1	22/10/2017	-	-	-	-	-	-	-	-	<50	190	<100	-	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	0.6	<0.5	1.3	<0.5	<0.5	<0.5	1.7	0.8	4.4	-
B8 0.0-0.1	B8	0-0.1	22/10/2017	-	-	-	-	-	-	-	-	<50	100	140	-	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	0.6	0.6	0.9	1.1	1.4	0.8	1.1	0.6	0.7	<0.5	1.3	<0.5	0.8	<0.5	<0.5	1.2	7.7	-
B8 0-1	B8	0-1	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8 1.0-1.1	B8	1-1.1	22/10/2017	3.7	<0.4	5.1	39	12	<0.1	11	23	<50	<100	<100	-	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
B9 0.5-0.6	B9	0.5-0.6	22/10/2017	-	-	-	-	-	-	-	-	<50	260	350	-	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	1.9	2.1	3.8	3.8	3.8	2.9	2.7	1.7	2	0.8	3.5	<0.5	2.1	<0.5	0.6	3.5	23.8	-
B9 0-1	B9	0-1	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B9 3.0-3.1	B9	3-3.1	22/10/2017	19	0.4	31	33	37	<0.1	11	60	<50	<100	<100	-	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
B10 1.0-1.1	B10	1-1.1	22/10/2017	21	0.4	40	56	52	<0.1	43	180	<50	<100	<100	-	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
QC01	B10 1.0-1.1	Duplicate of B10 1.0-1.1	22/10/2017	97	<0.4	26	42	54	<0.1	14	210	<50	<100	<100	-	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
QC01A	QC01A	Triiplicate of 1.0-1.1	22/10/2017	75	3	51	150	120	<0.1	31	900	<50	<100	<100	<50	<50	<25	<25	<0.2	<1	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	0.05	<0.5	<0.5	<0.5	-	<0.1	-	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.2	0.2	-	0.63
B10 0-1	B10	0-1	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC02	B10 0-1	Duplicate of B10 0-1.0	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QC02A	QC02A	Triplicate of B10 0-1.0	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B10 3.0-3.1	B10	3-3.1	22/10/2017	-	-	-	-	-	-	-	-	<50	<100	<100	-	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
B11 0.2-0.3	B11	0.2-0.3	22/10/2017	-	-	-	-	-	-	-	-	<50	<100	230	-	<50	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-
B11 1.0-1.1	B11	1-1.1	22/10/2017	10	<0.4	22	51	38	<0.1	23	82	580	450	<100	-	580	<20	<20	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-

Table A: Soil Analytical Results
Project Number: 54005
Project Name: Chullora

				Chlorinated Benzenes	Polychlorinated Biphenyls								Organochlorine Pesticides																									Asbestos								
				Hexachlorobenzene	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	PCBs (Total)	4,4-DDE	Aldrin	Aldrin + Dieldrin (Sum of Total)	alpha-BHC	alpha-Chlordane	beta-BHC	Dieldrin	DDD	DDT	DDT+DDE+DDD (Sum of Total)	Chlordane	delta-BHC	Endosulfan alpha	Endosulfan beta	gamma-Chlordane	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor Epoxide	Lindane	Methoxychlor	Toxaphene	Approx. Sample Mass	Asbestos from ACM in Soil	Asbestos from FA & AF in Soil	Mass ACM	Mass Asbestos in ACM	Mass FA	Mass Asbestos in FA	Mass AF	Mass Asbestos in FA & AF
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	g	%w/w	%w/w	g	g	g	g	g	g
EQL				0.05	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.05	0.05	0.05	0.05		0.05	0.05	0.05	0.05	0.05	0.10	0.05	0.05	0.05		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	1.00									
NEPM 2013 HSL Asbestos in Soil - Bonded ACM - Commercial/Industrial - HSL D																																						0.05							
NEPM 2013 HSL Asbestos in Soil - FA & AF - HSL																																							0.001						
NEPM 2013 Mgnt Limits - Commercial and Industrial, Coarse																																													
NEPM 2013 Soil HIL D				80								7			45							3600	530						100			50			2500	160									
NEPM 2013 Soil HSL D for Vapour Intrusion - Sand 0 to <1m																																													
Field_ID	LocCode	Sample_Depth_Range	Sampled_Date-Time																																										
B1 0.5-0.6	B1	0.5-0.6	22/10/2017	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	-	-	-	-	-	-	-	-	-
B1 0-0.8	B1	0-0.8	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	512	0	0	0	0	0	0	0	0
B1 1.0-1.1	B1	1-1.1	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2 0.5-0.6	B2	0.5-0.6	22/10/2017	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	-	-	-	-	-	-	-	-	-
B2 0-0.6	B2	0-0.6	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	581	0	0	0	0	0	0	0	0
B2 1.0-1.1	B2	1-1.1	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3 0.0-0.1	B3	0-0.1	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B3 0-0.6	B3	0-0.6	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	731	0	0	0	0	0	0	0	0
B3 1.0-1.1	B3	1-1.1	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4 1.5-1.6	B4	1.5-1.6	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B4 2.0-2.1	B4	2-2.1	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B5 0.0-0.1	B5	0-0.1	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B5 0-1	B5	0-1	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	500	0	0	0	0	0	0	0	0
B5 1.0-1.1	B5	1-1.1	22/10/2017	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	-	-	-	-	-	-	-	-	-
B6 0.5-0.6	B6	0.5-0.6	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B6 0-1	B6	0-1	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	524	0	0	0	0	0	0	0	0
B6 2.0-2.1	B6	2-2.1	22/10/2017	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	-	-	-	-	-	-	-	-	-
B7 0.5-0.6	B7	0.5-0.6	22/10/2017	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	-	-	-	-	-	-	-	-	-
B7 2.0-2.1	B7	2-2.1	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8 0.0-0.1	B8	0-0.1	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B8 0-1	B8	0-1	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	643	0	0	0	0	0	0	0	0
B8 1.0-1.1	B8	1-1.1	22/10/2017	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	-	-	-	-	-	-	-	-	-
B9 0.5-0.6	B9	0.5-0.6	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B9 0-1	B9	0-1	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	489	0	0	0	0	0	0	0	0
B9 3.0-3.1	B9	3-3.1	22/10/2017	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	-	-	-	-	-	-	-	-	-
B10 1.0-1.1	B10	1-1.1	22/10/2017	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	-	-	-	-	-	-	-	-	-
QC01	B10 1.0-1.1	Duplicate of B10 1.0-1.1	22/10/2017	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	-	-	-	-	-	-	-	-	-
QC01A	QC01A	Triiplicate of 1.0-1.1	22/10/2017	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
B10 0-1	B10	0-1	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	503	0	0	0	0	0	0	0	0
QC02	B10 0-1	Duplicate of B10 0-1.0	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	743	0	0	0	0	0	0	0	0
QC02A	QC02A	Triplicate of B10 0-1.0	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B10 3.0-3.1	B10	3-3.1	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11 0.2-0.3	B11	0.2-0.3	22/10/2017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B11 1.0-1.1	B11	1-1.1	22/10/2017	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	-	-	-	-	-	-	-	-	-

Table B: Groundwater Analytical Results
Project Number: 54005
Project Name: Chullora

			Metals & Metalloids								Chlorinated Alkanes															Chlorinated Alkenes										Trihalomethanes				TRHs (NEPC 2013)						BTEX					
			Arsenic (Total) (Filtered)	Cadmium (Filtered)	Chromium (Total) (Filtered)	Copper (Filtered)	Lead (Filtered)	Mercury (Inorganic) (Filtered)	Nickel (Filtered)	Zinc (Filtered)	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,2,3-trichloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	Bromochloromethane	Carbon tetrachloride	Chloroethane	Chloromethane	Dichlorodifluoromethane	Dichloromethane	Trichlorofluoromethane	1,1-dichloroethene	3-chloropropene	4-chlorotoluene	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Trichloroethene	Vinyl Chloride	Bromodichloromethane	Chloroform	Dibromochloromethane	Tribromomethane	>C10-C16 Fraction	>C16-C34 Fraction	>C34-C40 Fraction	>C10-C16 less Naphthalene (F2)	C6-C10 Fraction	C6-C10 less BTEX (F1)	Benzene	Ethylbenzene	Toluene	Xylene (o)	Xylene (m & p)	Xylene (Total)
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.10	0.10	0.05	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
ANZECC 2000 Marine Water Low Reliability			0.0023									0.27	0.4	1.9	0.25						0.24				4		0.7	0.003				0.07			0.33			0.37									0.5	0.005	0.18	0.35		
ANZECC 2000 Marine Water Slightly to Moderately Disturbed Ecosystems				0.0007	0.0274	0.0013	0.0044	0.0001	0.007	0.015				1.9																																0.5					
NHMRC (2011) (as amended December 2014) (Factor 10) – Aesthetics						10				30																																					0.03	0.25			0.02
NHMRC (2011) (as amended December 2014) (Factor 10) – Health			0.1	0.02		20	0.1	0.01	0.2								0.03				0.03				0.04		0.3					0.5			0.2	0.003	2.5	2.5	2.5	2.5							0.001	0.3	0.8			6
Field_ID	WellCode	Sampled_Date-Time																																																		
MW2	MW2	3/11/2017	0.001	<0.0002	0.002	0.014	0.004	0.0001	0.014	0.044	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.05	0.1	<0.1	<0.05	<0.02	<0.02	<0.001	<0.001	<0.001	<0.001	<0.002	<0.003
MW3	MW3	3/11/2017	<0.001	0.0002	<0.001	<0.001	<0.001	<0.0001	0.024	46	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.05	<0.1	<0.1	<0.05	<0.02	<0.02	<0.001	<0.001	<0.001	<0.001	<0.002	<0.003
MW5	MW5	3/11/2017	0.001	0.0006	0.002	0.021	0.002	0.0001	0.014	0.082	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.05	<0.1	<0.1	<0.05	<0.02	<0.02	<0.001	<0.001	<0.001	<0.001	<0.002	<0.003

Table B: Groundwater Analytical Results
Project Number: 54005
Project Name: Chullora

			Polycyclic Aromatic Hydrocarbons																	Monocyclic Aromatic Hydrocarbons					Miscellaneous Hydrocarbons						Chlorinated Benzenes				Solvents	Organic Sulfur Compounds
			Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (WHO)	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	PAHs (Total)	1,2,4-trimethyl benzene	1,3,5-trimethyl benzene	Bromobenzene	Isopropylbenzene	Styrene	1,2-dibromoethane	2-Butanone (MEK)	4-Methyl-2-pentanone (MIBK)	Bromomethane	Dibromomethane	Iodomethane	1,2-Dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Chlorobenzene	2-Propanone (Acetone)	Carbon disulfide
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L
EQL			0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
ANZECC 2000 Marine Water Low Reliability					0.00001		0.0001						0.001			0.05	0.0006																			
ANZECC 2000 Marine Water Slightly to Moderately Disturbed Ecosystems																0.05																				
NHMRC (2011) (as amended December 2014) (Factor 10) – Aesthetics																								0.04							0.01	0.2	0.03	0.1		
NHMRC (2011) (as amended December 2014) (Factor 10) – Health							0.0001																	0.3	0.01			0.01			15		0.4	3		
Field_ID	**WellCode**	**Sampled_Date-Time**																																		
MW2	MW2	3/11/2017	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	14	<0.001
MW3	MW3	3/11/2017	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	10	<0.001
MW5	MW5	3/11/2017	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<1	<0.001

Appendix B Selected Registered Bore Information

All Groundwater

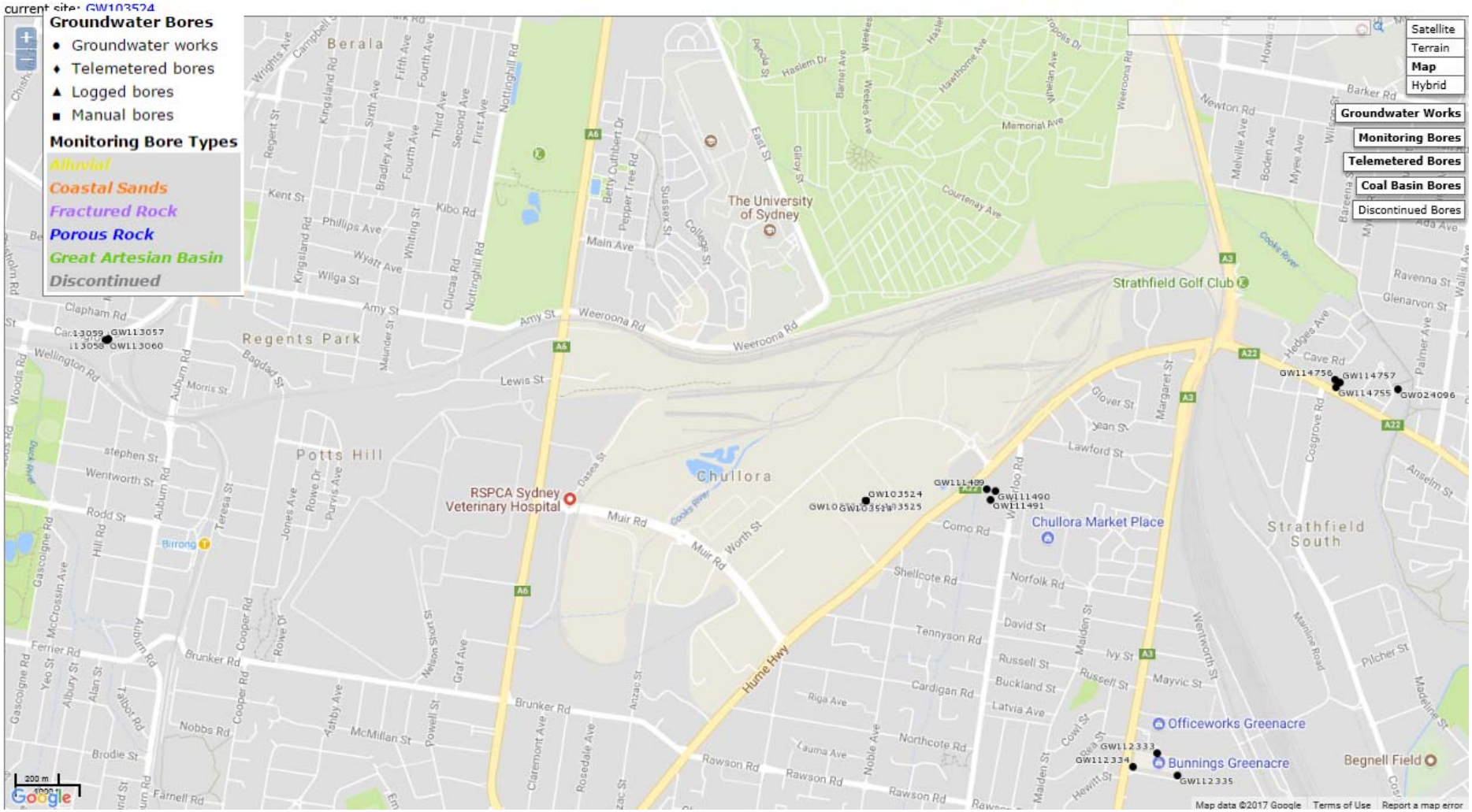
All Groundwater Map

bookmark this page

All data times are Eastern Standard Time

Map | Info

current site: GW103524



NSW Office of Water
Work Summary

GW103514

Licence: 10BL159972
Licence Status: ACTIVE

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

Work Type: Bore
Work Status:
Construct.Method:
Owner Type:

Commenced Date:
Completion Date: 10/07/2000
Final Depth: 5.00 m
Drilled Depth: 5.00 m

Contractor Name: ENGINEERING EXPLORATIONS PTY LTD
Driller:
Assistant Driller:

Property: AUST POST HUME HWY CHULLORA 2190 NSW
GWMA: -
GW Zone: -
Standing Water Level:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.26	1020//871836
Licensed:	CUMBERLAND	LIBERTY PLAINS	Whole Lot 1020//871836

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248144.0
Easting: 319996.0
Latitude: 33°53'30.2"S
Longitude: 151°03'12.3"E

GS Map: -
MGA Zone: 0
Coordinate Source: Unknown

Construction

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

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	5.00	50			Auger

Water Bearing Zones

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

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.00	1.00	SILT/SAN/GRAVEL	Silt	
1.00	1.50	0.50	CLAY,BROWN,GREY	Clay	
1.50	5.00	3.50	SILT,DRY,NON PLASTIC,BROWN	Silt	

Remarks

10/07/2000: Form A Remarks:
DATA FROM AG FORM ONLY.

***** End of GW103514 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

NSW Office of Water
Work Summary

GW103519

Licence: 10BL159972
Licence Status: ACTIVE

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

Work Type: Bore
Work Status:
Construct.Method: Auger
Owner Type:

Commenced Date:
Completion Date: 10/07/2000
Final Depth: 3.50 m
Drilled Depth: 3.50 m

Contractor Name: ENGINEERING EXPLORATIONS PTY LTD
Driller:
Assistant Driller:

Property: AUST POST HUME HWY CHULLORA 2190 NSW
GWMA: -
GW Zone: -
Standing Water Level:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.26	1020//871836
Licensed:	CUMBERLAND	LIBERTY PLAINS	Whole Lot 1020//871836

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248144.0
Easting: 319996.0
Latitude: 33°53'30.2"S
Longitude: 151°03'12.3"E

GS Map: -
MGA Zone: 0
Coordinate Source: Unknown

Construction

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

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	3.50	50			Auger

Water Bearing Zones

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

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	2.00	2.00	Clay,moist,dark brown/grey	Clay	
2.00	3.50	1.50	Silt,dry, non plastic,becoming weathered shale	Silt	

Remarks

***** End of GW103519 *****

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NSW Office of Water
Work Summary

GW103520

Licence: 10BL159972
Licence Status: ACTIVE

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

Work Type: Bore
Work Status:
Construct.Method: Auger
Owner Type:

Commenced Date:
Completion Date: 10/07/2000
Final Depth: 5.00 m
Drilled Depth: 5.00 m

Contractor Name: ENGINEERING EXPLORATIONS PTY LTD
Driller:
Assistant Driller:

Property: AUST POST HUME HWY CHULLORA 2190 NSW
GWMA: -
GW Zone: -
Standing Water Level:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.26	1020//871836
Licensed:	CUMBERLAND	LIBERTY PLAINS	Whole Lot 1020//871836

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248144.0
Easting: 319996.0
Latitude: 33°53'30.2"S
Longitude: 151°03'12.3"E

GS Map: -
MGA Zone: 0
Coordinate Source: Unknown

Construction

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

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	5.00	50			Auger

Water Bearing Zones

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

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.00	1.00	SILT/SAND/GRAVEL,FINE,NON PLASTIC	Silt	
1.00	3.00	2.00	CLAY,WET,LOW PLASTICITY	Clay	
3.00	5.00	2.00	SILT,DRY,PALE BROWN,GREY/WET SHALE	Silt	

Remarks

***** End of GW103520 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

NSW Office of Water
Work Summary

GW103521

Licence: 10BL159972
Licence Status: ACTIVE

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

Work Type: Bore
Work Status:
Construct.Method: Auger
Owner Type:

Commenced Date:
Completion Date: 09/01/2001
Final Depth: 6.00 m
Drilled Depth: 6.00 m

Contractor Name: ENGINEERING EXPLORATIONS PTY LTD
Driller:
Assistant Driller:

Property: AUST POST HUME HWY CHULLORA 2190 NSW
GWMA: -
GW Zone: -
Standing Water Level:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.26	1020//871836
Licensed:	CUMBERLAND	LIBERTY PLAINS	Whole Lot 1020//871836

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248144.0
Easting: 319996.0
Latitude: 33°53'30.2"S
Longitude: 151°03'12.3"E

GS Map: -
MGA Zone: 0
Coordinate Source: Unknown

Construction

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

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	6.00	100			Auger
1	1	Casing	Pvc Class 18	0.00	4.20	50	49		
1	1	Opening	Screen	0.00	4.20	50		1	PVC Class 18

Water Bearing Zones

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

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.50	1.50	FILL,SANDSTONE/SILT/GRAVEL	Fill	
1.50	4.50	3.00	FILL/SILTY CLAY,BROWN,MINOR GRAVEL	Fill	
4.50	5.30	0.80	SILTY CLAY	Silty Clay	
5.30	5.40	0.10	WEATHERED SHALE,BROWN	Shale	
5.40	6.00	0.60	SILTY CLAY	Silty Clay	

Remarks

***** End of GW103521 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

NSW Office of Water
Work Summary

GW103522

Licence: 10BL159972
Licence Status: ACTIVE

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

Work Type: Bore
Work Status:
Construct.Method: Auger
Owner Type:

Commenced Date:
Completion Date: 09/01/2001
Final Depth: 3.80 m
Drilled Depth: 3.80 m

Contractor Name: ENGINEERING EXPLORATIONS PTY LTD
Driller:
Assistant Driller:

Property: AUST POST HUME HWY CHULLORA 2190 NSW
GWMA: -
GW Zone: -
Standing Water Level:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.26	1020//871836
Licensed:	CUMBERLAND	LIBERTY PLAINS	Whole Lot 1020//871836

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248144.0
Easting: 319996.0
Latitude: 33°53'30.2"S
Longitude: 151°03'12.3"E

GS Map: -
MGA Zone: 0
Coordinate Source: Unknown

Construction

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

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	3.80	100			Auger
1	1	Casing	Pvc Class 18	0.00	0.70	50			

Water Bearing Zones

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

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.50	1.50	FILL,ASH,BLACK,SOME FINE GRAVEL	Fill	
1.50	3.80	2.30	SILTY CLAY,ORANGE,BROWN,SOFT	Invalid Code	

Remarks

***** End of GW103522 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

NSW Office of Water
Work Summary

GW103523

Licence: 10BL159972
Licence Status: ACTIVE

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

Work Type: Bore
Work Status:
Construct.Method: Auger
Owner Type:

Commenced Date:
Completion Date: 09/01/2001
Final Depth: 6.00 m
Drilled Depth: 6.00 m

Contractor Name: ENGINEERING EXPLORATIONS PTY LTD
Driller:
Assistant Driller:

Property: AUST POST HUME HWY CHULLORA 2190 NSW
GWMA: -
GW Zone: -
Standing Water Level:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.26	1020//871836
Licensed:	CUMBERLAND	LIBERTY PLAINS	Whole Lot 1020//871836

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248144.0
Easting: 319996.0
Latitude: 33°53'30.2"S
Longitude: 151°03'12.3"E

GS Map: -
MGA Zone: 0
Coordinate Source: Unknown

Construction

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

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	6.00	100			Auger
1	1	Casing	Pvc Class 18	0.00	0.90	50			

Water Bearing Zones

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

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	4.50	4.50	FILL,GRAVEL,SAND,SILT:BROWN/GREY	Fill	
4.50	6.00	1.50	SILTY CLAY,ORANGE/BROWN/FIRM	Invalid Code	

Remarks

***** End of GW103523 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

NSW Office of Water
Work Summary

GW103524

Licence: 10BL159972
Licence Status: ACTIVE

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

Work Type: Bore
Work Status:
Construct.Method: Auger
Owner Type:

Commenced Date:
Completion Date: 09/01/2001
Final Depth: 2.50 m
Drilled Depth: 2.50 m

Contractor Name: ENGINEERING EXPLORATIONS PTY LTD
Driller:
Assistant Driller:

Property: AUST POST HUME HWY CHULLORA 2190 NSW
GWMA: -
GW Zone: -
Standing Water Level:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.26	1020//871836
Licensed:	CUMBERLAND	LIBERTY PLAINS	Whole Lot 1020//871836

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248144.0
Easting: 319996.0
Latitude: 33°53'30.2"S
Longitude: 151°03'12.3"E

GS Map: -
MGA Zone: 0
Coordinate Source: Unknown

Construction

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

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	2.50	100			Auger
1	1	Casing	Pvc Class 18	0.00	0.60	50			

Water Bearing Zones

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

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.30	0.30	FILL: CLAY/GRAVEL/SILT	Fill	
0.30	2.50	2.20	SILTY CLAY,ORANGE/BROWN	Invalid Code	

Remarks

***** End of GW103524 *****

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NSW Office of Water
Work Summary

GW103525

Licence: 10BL159972
Licence Status: ACTIVE

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

Work Type: Bore
Work Status:
Construct.Method: Auger
Owner Type:

Commenced Date:
Completion Date: 09/01/2001
Final Depth: 3.00 m
Drilled Depth: 3.00 m

Contractor Name: ENGINEERING EXPLORATIONS PTY LTD
Driller:
Assistant Driller:

Property: AUST POST HUME HWY CHULLORA 2190 NSW
GWMA: -
GW Zone: -
Standing Water Level:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.26	1020//871836
Licensed:	CUMBERLAND	LIBERTY PLAINS	Whole Lot 1020//871836

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248144.0
Easting: 319996.0
Latitude: 33°53'30.2"S
Longitude: 151°03'12.3"E

GS Map: -
MGA Zone: 0
Coordinate Source: Unknown

Construction

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

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	3.00	100			Auger
1	1	Casing	Pvc Class 18	0.00	1.00	50	49		

Water Bearing Zones

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

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.90	0.90	FILL:SAND/SILT/GRAVEL	Fill	
0.90	3.00	2.10	SILTY CLAY,BROWN,MEDIUM GRAVEL	Invalid Code	

Remarks

***** End of GW103525 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

NSW Office of Water
Work Summary

GW111489

Licence: 10BL604479 **Licence Status:** ACTIVE

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

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

Commenced Date: **Final Depth:** 5.80 m
Completion Date: 07/02/2011 **Drilled Depth:** 5.80 m

Contractor Name:
Driller: Daniel Giles Fox
Assistant Driller:

Property: SYDNEY HOLDINGS P / L 93 HUME HIGHWAY GREENACRE 2190 NSW **Standing Water Level:** 5.200
GWMA: **Salinity:**
GW Zone: **Yield:** 0.100

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.3	500//1161478
Licensed:			

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

Elevation: 0.00 m (A.H.D.) **Northing:** 6248202.0 **Latitude:** 33°53'28.6"S
Elevation Source: Unknown **Easting:** 320489.0 **Longitude:** 151°03'31.5"E

GS Map: - **MGA Zone:** 0 **Coordinate Source:** Unknown

Construction

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

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	5.80	0			Auger - Solid Flight
1		Annulus	Bentonite/Grout	1.00	2.00				
1		Annulus	Waterworn/Rounded	2.00	2.80				Graded
1	1	Casing	Pvc Class 18	0.80	2.80	50	46		Cemented, Screwed
1	1	Opening	Slots - Horizontal	2.80	5.80	50		1	Casing - Machine Slotted, PVC Class 18, Screwed

Water Bearing Zones

			WBZ Type						

From (m)	To (m)	Thickness (m)		S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
5.00	5.80	0.80	Unknown	5.20		0.10		00:10:00	

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.20	0.20	FILL,CONCRETE CORE	Fill	
0.20	0.50	0.30	CLAY RED/GREY , MOIST,PLASTIC	Clay	
0.50	0.70	0.20	SAND MOIST,M/GRAINED,GRAVELS	Sand	
0.70	1.30	0.60	CLAY BROWN MOTTLED.MOIST.PLASTIC	Clay	
1.30	2.60	1.30	CLAY RED DRY,MINOR PLASTICITY	Clay	
2.60	3.40	0.80	CLAY RED,DRY,NON PLASTIC	Clay	
3.40	5.80	2.40	SHALE BROWN/GREY,DRY,WEATHERED	Shale	

Remarks

***** End of GW111489 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

NSW Office of Water
Work Summary

GW111490

Licence: 10BL604479
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 07/02/2011
Final Depth: 6.00 m
Drilled Depth: 6.00 m

Contractor Name:
Driller: Daniel Giles Fox
Assistant Driller:

Property: SYDNEY HOLDINGS P / L 93 HUME HIGHWAY GREENACRE 2190 NSW
Standing Water Level: 5.110
GWMA:
GW Zone:
Salinity:
Yield: 0.200

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.3	500//1161478
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248196.0
Easting: 320527.0
Latitude: 33°53'28.8"S
Longitude: 151°03'33.0"E

GS Map: -
MGA Zone: 0
Coordinate Source: Unknown

Construction

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

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	6.00	0			Auger - Solid Flight
1		Annulus	Bentonite/Grout	1.50	2.50				
1		Annulus	Waterworn/Rounded	2.50	6.00				Graded
1	1	Casing	Pvc Class 18	0.00	3.00	50			Cemented, Screwed
1	1	Opening	Slots - Horizontal	3.00	6.00	50		1	Casing - Machine Slotted, PVC Class 18, Screwed

Water Bearing Zones

			WBZ Type						

From (m)	To (m)	Thickness (m)		S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
5.00	6.00	1.00	Unknown	5.11		0.20		00:10:00	

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.20	0.20	FILL CONCRETE CORE	Fill	
0.20	0.70	0.50	CLAY RED MOIST,GREY MOTTLES.PLASTIC	Clay	
0.70	1.30	0.60	CLAY NATURAL.MOIST,BROWN,PLASTIC	Clay	
1.30	2.10	0.80	CLAY RED DRY,MINOR PLASTICITY	Clay	
2.10	2.80	0.70	CLAY GREY DRY HARD NON PLASTIC	Clay	
2.80	3.50	0.70	CLAY GREY DRY HARD NON PLASTIC	Clay	
3.50	6.00	2.50	SHALE WEATHERED,BROWN,DRY	Shale	

Remarks

***** End of GW111490 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

NSW Office of Water
Work Summary

GW111491

Licence: 10BL604479
Licence Status: ACTIVE

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

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

Commenced Date:
Completion Date: 07/02/2011
Final Depth: 6.00 m
Drilled Depth: 6.00 m

Contractor Name:
Driller: Daniel Giles Fox
Assistant Driller:

Property: SYDNEY HOLDINGS P / L 93 HUME HIGHWAY GREENACRE 2190 NSW
Standing Water Level: 3.970
GWMA:
GW Zone:
Salinity:
Yield: 0.100

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBE	CUMBE.3	500//1161478
Licensed:			

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

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6248158.0
Easting: 320507.0
Latitude: 33°53'30.1"S
Longitude: 151°03'32.2"E

GS Map: -
MGA Zone: 0
Coordinate Source: Unknown

Construction

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

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	6.00	0			Auger - Solid Flight
1		Annulus	Bentonite/Grout	1.50	2.50				
1		Annulus	Waterworn/Rounded	2.50	3.00				Graded
1	1	Casing	Pvc Class 18	0.00	3.00	50	46		Cemented, Screwed
1	1	Opening	Slots - Horizontal	3.00	6.00	50		1	Casing - Machine Slotted, PVC Class 18, Screwed

Water Bearing Zones

			WBZ Type						

From (m)	To (m)	Thickness (m)		S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
5.00	6.00	1.00	Unknown	3.97		0.10		00:10:00	

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.20	0.20	FILL,CONCRETE CORE	Fill	
0.20	0.70	0.50	CLAY RED MOIST,GREY MOTTLES,PLASTIC	Clay	
0.70	1.30	0.60	CLAY NATURAL MOIST,BROWN,PLASTIC	Clay	
1.30	2.10	0.80	CLAY RED DRY MINOR PLASTICITY	Clay	
2.10	2.80	0.70	CLAY GREY DRY.HARD,NON PLASTIC	Clay	
2.80	3.50	0.70	CLAY GREY DRY,HARD,NON PLASTIC.ORANGE MOTTLES	Clay	
3.50	6.00	2.50	SHALE WEATHERED,BROWN,DRY,BECOMING GREY AND WET	Shale	

Remarks

***** End of GW111491 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Appendix C NSW EPA Records

Number	Name	Location	Type	Status	Issued date
2920	BLUESCOPE STEEL LIMITED	73 ANZAC STREET, CHULLORA, NSW 2190	POEO licence	No longer in	17-Apr-01
1044259	BLUESCOPE STEEL LIMITED	73 ANZAC STREET, CHULLORA, NSW 2190	s.58 Licence	Issued	6-Feb-05
703	BORAL RESOURCES (NSW) PTY LTD	1-5 NORFOLK RD, CHULLORA, NSW 2190	POEO licence	No longer in	22-Aug-00
5233	FAIRFAX PRINTERS PTY LIMITED	1 WORTH STREET , CHULLORA, NSW 2190	POEO licence	Surrendered	17-Apr-01
1044102	FAIRFAX PRINTERS PTY LIMITED	1 WORTH STREET , CHULLORA, NSW 2190	s.58 Licence	Issued	31-Jan-05
1096095	FAIRFAX PRINTERS PTY LIMITED	1 WORTH STREET , CHULLORA, NSW 2190	s.58 Licence	Issued	17-Apr-09
1526060	FAIRFAX PRINTERS PTY LIMITED	1 WORTH STREET , CHULLORA, NSW 2190	s.58 Licence	Issued	11-Nov-14
11219	G.P.P. EXCAVATION & DEMOLITION CONTRACTORS PTY LIMITED	2 FORD STREET, CHULLORA, NSW 2190	POEO licence	Issued	8-Sep-00
1034998	G.P.P. EXCAVATION & DEMOLITION CONTRACTORS PTY LIMITED	2 FORD STREET, CHULLORA, NSW 2190	s.58 Licence Variation	Issued	1-Mar-04
1096631	G.P.P. EXCAVATION & DEMOLITION CONTRACTORS PTY LIMITED	2 FORD STREET, CHULLORA, NSW 2190	s.58 Licence Variation	Issued	15-May-09
1533391	G.P.P. EXCAVATION & DEMOLITION CONTRACTORS PTY LIMITED	2 FORD STREET, CHULLORA, NSW 2190	s.58 Licence Variation	Issued	18-Nov-15
3923	NATIONWIDE NEWS PTY. LIMITED	26-52 HUME HIGHWAY, CHULLORA, NSW 2190	POEO licence	No longer in force	15-Aug-00
1044247	NATIONWIDE NEWS PTY. LIMITED	26-52 HUME HIGHWAY, CHULLORA, NSW 2190	s.58 Licence Variation	Issued	8-Feb-05
6252	P & M QUALITY SMALLGOODS PTY LTD	18 HUME HIGHWAY, CHULLORA, NSW 2190	POEO licence	Issued	17-Aug-00
1014671	P & M QUALITY SMALLGOODS PTY LTD	18 HUME HIGHWAY, CHULLORA, NSW 2190	s.58 Licence	Issued	26-Feb-02
1528433	P & M QUALITY SMALLGOODS PTY LTD	18 HUME HIGHWAY, CHULLORA, NSW 2190	s.58 Licence	Issued	23-Apr-15
97	RAIL SERVICES AUSTRALIA	WORTH STREET, CHULLORA, NSW 2190	POEO licence	Surrendered	6-Jun-00
5893	SUEZ RECYCLING & RECOVERY PTY LTD	MUIR ROAD, CHULLORA, NSW 2190	POEO licence	Issued	23-Jun-00
1017947	SUEZ RECYCLING & RECOVERY PTY LTD	MUIR ROAD, CHULLORA, NSW 2190	s.58 Licence	Issued	6-Nov-02
1034139	SUEZ RECYCLING & RECOVERY PTY LTD	MUIR ROAD, CHULLORA, NSW 2190	s.58 Licence	Issued	1-Feb-04
1051955	SUEZ RECYCLING & RECOVERY PTY LTD	MUIR ROAD, CHULLORA, NSW 2190	s.58 Licence	Issued	24-Oct-05
1053532	SUEZ RECYCLING & RECOVERY PTY LTD	MUIR ROAD, CHULLORA, NSW 2190	s.58 Licence	Issued	15-Nov-05
1093223	SUEZ RECYCLING & RECOVERY PTY LTD	MUIR ROAD, CHULLORA, NSW 2190	s.58 Licence	Issued	11-Nov-08
1106002	SUEZ RECYCLING & RECOVERY PTY LTD	MUIR ROAD, CHULLORA, NSW 2190	s.58 Licence	Issued	19-Nov-09
1501876	SUEZ RECYCLING & RECOVERY PTY LTD	MUIR ROAD, CHULLORA, NSW 2190	s.58 Licence	Issued	3-Nov-11
1517417	SUEZ RECYCLING & RECOVERY PTY LTD	MUIR ROAD, CHULLORA, NSW 2190	s.58 Licence	Issued	12-Nov-13
1532548	SUEZ RECYCLING & RECOVERY PTY LTD	MUIR ROAD, CHULLORA, NSW 2190	s.58 Licence	Issued	17-Aug-15
1533860	SUEZ RECYCLING & RECOVERY PTY LTD	MUIR ROAD, CHULLORA, NSW 2190	s.58 Licence	Issued	25-Nov-15
1550265	SUEZ RECYCLING & RECOVERY PTY LTD	MUIR ROAD, CHULLORA, NSW 2190	s.91 Clean Up Notice	Issued	16-Mar-17
3173523751	SUEZ RECYCLING & RECOVERY PTY LTD	MUIR ROAD, CHULLORA, NSW 2190	Penalty Notice	Issued	15-Nov-17
3173523742	SUEZ RECYCLING & RECOVERY PTY LTD	MUIR ROAD, CHULLORA, NSW 2190	Penalty Notice	Issued	15-Nov-17
7515	SYDNEY TRAINS	WORTH STREET GATE 1, CHULLORA, NSW 2190	POEO licence	Issued	22-Sep-00
1037710	SYDNEY TRAINS	WORTH STREET GATE 1, CHULLORA, NSW 2190	s.58 Licence Variation	Issued	18-Oct-04
1096254	SYDNEY TRAINS	WORTH STREET GATE 1, CHULLORA, NSW 2190	s.58 Licence Variation	Issued	15-Jan-09
1515074	SYDNEY TRAINS	WORTH STREET GATE 1, CHULLORA, NSW 2190	s.58 Licence Variation	Issued	20-Jun-13
1533241	SYDNEY TRAINS	WORTH STREET GATE 1, CHULLORA, NSW 2190	s.58 Licence Variation	Issued	24-Sep-15
3928	TRANSFIELD SERVICES (AUSTRALIA) PTY LIMITED	2 WORTH STREET, CHULLORA, NSW 2190	POEO licence	No longer in force	9-Jun-00
1027008	TRANSFIELD SERVICES (AUSTRALIA) PTY LIMITED	2 WORTH STREET, CHULLORA, NSW 2190	s.58 Licence Variation	Issued	10-Sep-03
1036496	TRANSFIELD SERVICES (AUSTRALIA) PTY LIMITED	2 WORTH STREET, CHULLORA, NSW 2190	s.58 Licence Variation	Issued	1-Jun-04
1057186	TRANSFIELD SERVICES (AUSTRALIA) PTY LIMITED	2 WORTH STREET, CHULLORA, NSW 2190	s.58 Licence Variation	Issued	13-Jul-06
1070042	TRANSFIELD SERVICES (AUSTRALIA) PTY LIMITED	2 WORTH STREET, CHULLORA, NSW 2190	s.58 Licence Variation	Issued	27-Feb-07
11880	UNITED GROUP RAIL FLEET SERVICES LIMITED	2 WORTH STREET, CHULLORA, NSW 2190	POEO licence	No longer in force	18-Feb-04
1041955	UNITED GROUP RAIL FLEET SERVICES LIMITED	2 WORTH STREET, CHULLORA, NSW 2190	s.58 Licence Variation	Issued	13-Jan-05
1050502	UNITED GROUP RAIL FLEET SERVICES LIMITED	2 WORTH STREET, CHULLORA, NSW 2190	s.58 Licence Variation	Issued	28-Feb-07
1076641	UNITED GROUP RAIL FLEET SERVICES LIMITED	2 WORTH STREET, CHULLORA, NSW 2190	s.58 Licence Variation	Issued	13-Aug-07

Contaminated land

+ Management of contaminated land
+ Consultants and site auditor scheme
+ Underground petroleum storage systems
Guidelines under the CLM Act
NEPM amendment
+ Further guidance
– Record of notices
About the record
Search the record
Search tips
Disclaimer
List of NSW contaminated sites notified to EPA
Frequently asked questions
Forms
+ Other contamination issues
+ Contaminated Land Management Program

Home Contaminated land Record of notices

Search results

Your search for: Suburb: CHULLORA

Search Again Refine Search

did not find any records in our database.

If a site does not appear on the record it may still be affected by contamination. For example:

- Contamination may be present but the site has not been regulated by the EPA under the Contaminated Land Management Act 1997 or the Environmentally Hazardous Chemicals Act 1985.
- The EPA may be regulating contamination at the site through a licence or notice under the Protection of the Environment Operations Act 1997 (POEO Act).
- Contamination at the site may be being managed under the planning process.

Search TIP

To search for a specific site, search by LGA (local government area) and carefully review all sites listed.

... more search tips

More information about particular sites may be available from:

- The POEO public register
- The appropriate planning authority: for example, on a planning certificate issued by the local council under section 149 of the Environmental Planning and Assessment Act.

See What's in the record and What's not in the record.

If you want to know whether a specific site has been the subject of notices issued by the EPA under the CLM Act, we suggest that you search by Local Government Area only and carefully review the sites that are listed.
This public record provides information about sites regulated by the EPA under the Contaminated Land Management Act 1997, including sites currently and previously regulated under the Environmentally Hazardous Chemicals Act 1985. Your inquiry using the above search criteria has not matched any record of current or former regulation. You should consider searching again using different criteria. The fact that a site does not appear on the record does not necessarily mean that it is not affected by contamination. The site may have been notified to the EPA but not yet assessed, or contamination may be present but the site is not yet being regulated by the EPA. Further information about particular sites may be available from the appropriate planning authority, for example, on a planning certificate issued by the local council under section 149 of the Environmental Planning and Assessment Act. In addition the EPA may be regulating contamination at the site through a licence under the Protection of the Environment Operations Act 1997. You may wish to search the POEO public register.POEO public register

23 November 2017

Suburb	Site Name	Site Address	Contamination Activity Type	EPA Management Class	Latitude	Longitude
CHARLESTOWN	Ausgrid Powell Street Depot	8 Powell STREET	Other Industry	Regulation under CLM Act not required	-32.95912375	151.6944136
CHARLESTOWN	Caltex Service Station	81 Pacific HIGHWAY	Service Station	Contamination currently regulated under CLM Act	-32.96708479	151.6955919
CHARLESTOWN	Caltex Woolworths (Former BP Service Station)	91-93 Pacific HIGHWAY	Service Station	Contamination formerly regulated under the CLM Act	-32.96633569	151.6959051
CHARMHAVEN	Caltex Charmhaven Service Station	13-15 Pacific HIGHWAY	Service Station	Regulation under CLM Act not required	-33.21655768	151.5091452
CHATSWOOD	Auto Repairs	2 Devonshire STREET	Service Station	Regulation under CLM Act not required	-33.8015482	151.1859632
CHATSWOOD	Caltex Service Station Chatswood	572 Pacific HIGHWAY	Service Station	Regulation under CLM Act not required	-33.80381271	151.1789656
CHATSWOOD	Coles Express Service Station Chatswood	877-879 Pacific HIGHWAY	Service Station	Regulation under CLM Act not required	-33.79182176	151.1804867
CHATSWOOD	Former Caltex Chatswood Service Station	607 Pacific HIGHWAY	Service Station	Contamination formerly regulated under the CLM Act	-33.80396472	151.1795766
CHATSWOOD	Woolworths Chatswood	364-366 Eastern Valley WAY	Service Station	Regulation under CLM Act not required	-33.78667419	151.2010828
CHATSWOOD WEST	Chatswood Toyota	728 Pacific HIGHWAY	Service Station	Contamination formerly regulated under the CLM Act	-33.79654247	151.1776136
CHERRYBROOK	Caltex Service Station	67 Shepherds DRIVE	Service Station	Under assessment	-33.72069183	151.0451415
CHESTER HILL	Former Orica, Chester Hill	127 Orchard ROAD	Chemical Industry	Contamination formerly regulated under the CLM Act	-33.8869823	150.9952873
CHIPPENDALE	Frasers Development	Wellington STREET	Unclassified	Under assessment	-33.88669108	151.2015805
CHIPPING NORTON	Former ACR	85-107 Alfred STREET	Chemical Industry	Contamination currently regulated under CLM Act	-33.92226795	150.9586496
CHIPPING NORTON	Former Solchem (Mobil) Depot Chipping Norton	49-51 Riverside ROAD	Other Petroleum	Regulation under CLM Act not required	-33.91621314	150.9696948
CHISWICK	Former Sydney Wiremills (BHP) site	Blackwall Point ROAD	Other Industry	Regulation under CLM Act not required	-33.85131849	151.1369131
CHITTAWAY BAY	Former Caltex Chittaway Point	100 Chittaway ROAD	Service Station	Regulation under CLM Act not required	-33.32707555	151.4293546
CHULLORA	Chullora Railway Workshops	Worth STREET	Other Industry	Under assessment	-33.88639388	151.0598201
CLARENCE	Clarence Colliery	Chifley ROAD	Other Industry	Under assessment	-33.46450217	150.2522729
CLARENDON	Coles Express Clarendon Service Station	244 Hawkesbury Valley WAY	Service Station	Under assessment	-33.6083729	150.7890956
CLEARFIELD	Former Pamplings Dip Site	Off Clearfield ROAD	Cattle Dip	Regulation under CLM Act not required	-29.16287185	152.882974
CLYBUCCA	BP Service Station	2171 Pacific HIGHWAY	Service Station	Regulation under CLM Act not required	-30.93913118	152.9417395
CLYDE	7-Eleven Clyde	3 Parramatta (Cnr Harbord Street) ROAD	Service Station	Under assessment	-33.83494433	151.0222628
COBAR	Caltex Service Station	Lot 10 Railway PARADE	Service Station	Regulation under CLM Act not required	-31.49350124	145.8442372
COBAR	Caltex Service Station Cobar	99 Marshall (formerly Cnr Barrier Highway and Bathurst Street)	Service Station	Regulation under CLM Act not required	-31.49631924	145.8275727

Appendix D Heritage Search Records

Search for NSW heritage

Return to search page where you can refine/broaden your search.

ItemName	0

Statutory listed items

Information and items listed in the State Heritage Inventory come from a number of sources. This means that there may be several entries for the same heritage item in the database. For clarity, the search results have been divided into three sections.

- **Section 1** - contains Aboriginal Places declared by the **Minister for the Environment** under the National Parks and Wildlife Act. This information is provided by the Heritage Division.
- **Section 2** - contains heritage items listed by the **Heritage Council of NSW** under the NSW Heritage Act. This includes listing on the State Heritage Register, an Interim Heritage Order or protected under section 136 of the NSW Heritage Act. This information is provided by the Heritage Division.
- **Section 3** - contains items listed by **local councils** on Local Environmental Plans under the Environmental Planning and Assessment Act, 1979 and **State government agencies** under s.170 of the Heritage Act. This information is provided by local councils and State government agencies.

Section 1. Aboriginal Places listed under the National Parks and Wildlife Act.

Your search did not return any matching results.

ItemName	0

Section 2. Items listed under the NSW Heritage Act.

Your search returned 2 records.

Item name	Address	Suburb	LGA	SHR
Pressure Tunnel and Shafts		Potts Hill	Bankstown	01630
Pressure Tunnel Shaft No.1 & associated infrastructure	189 Rookwood Road	Chullora	Bankstown	01334

ItemName	0

Section 3. Items listed by Local Government and State Agencies.

Your search returned 9 records.

Item name	Address	Suburb	LGA	Information source
Chullora Railway Workshops	Beaufort Place	Chullora	Bankstown	SGOV
Ckf 27469 - Flat Wagon	Chullora Railway Workshops	Chullora	Bankstown	SGOV
Jackson's Royal Arms Inn (site)	2/2A Liverpool Road	Chullora	Bankstown	LGOV
Locomotive, Diesel Shunting 7301	Chullora Railway Workshops	Chullora	Bankstown	SGOV
Locomotive, Diesel Shunting 7301	Chullora Railway Workshops	Chullora	Bankstown	SGOV
Locomotive, Steam 3801	Thirlmere Railway Precinct	Thirlmere	Wollondilly	SGOV
Nvmf 2939 - Bogie Guard's Van	Chullora Railway Workshops	Chullora	Bankstown	SGOV
Railcorp Moveable Heritage Collection	'Igloo', Chullora Workshops Beaufort Place	Chullora	Bankstown	SGOV
Site of Liebentritt's Pottery	357 Waterloo Road	Chullora	Bankstown	LGOV

There was a total of 11 records matching your search criteria.

Key:
LGA = Local Government Area
GAZ= NSW Government Gazette (statutory listings prior to 1997), HGA = Heritage Grant Application, HS = Heritage Study, LGOV = Local Government, SGOV = State Government Agency.
Note: While the Heritage Division seeks to keep the Inventory up to date, it is reliant on State agencies and local councils to provide their data. Always check with the relevant State agency or local council for the most up-to-date information.

Search Results

1 result found.

The Pressure Tunnel	Potts Hill Waterloo, NSW, Australia	(Indicative Place) Register of the National Estate (Non-statutory archive)

Report Produced: Thu Nov 23 17:26:21 2017

Appendix E Historical Land Titles

scottASHWOOD PTY.LTD
An InfoTrack Company

ABN: 42 166 543 255
Ph: 02 9099 7400
Fax: 02 9232 7141

Level 14, 135 King Street, Sydney 2000
GPO Box 4103 Sydney NSW 2001
DX 967 Sydney

Summary of Owners Report

LPI **Sydney**

Address: Part of Chullora Rail Yards, Chullora

Description: Part of Lot 35 D.P. 1007367

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
11.01.1915 (1915 to 1923)	Winchcombe Carson Limited	Vol 2546 Fol 118
21.12.1923 (1923 to 2000)	Railway Commissioners for New South Wales Intervening name changes, now State Rail Authority of New South Wales	Vol 2546 Fol 118 Now 35/1007367
30.05.2000 (2000 to Date)	# National Rail Corporation Limited Now # Asciano Services Pty Ltd	35/1007367

# Denotes Current Registered Proprietor

Easements: -

- 27.10.1999 (D.P. 1007363) – Easement for Electricity Purposes variable width
- 27.10.1999 (D.P. 1007363) – Easement for Electricity, Communication and Signalling over Existing Line of Cables

Leases: -NIL

- 17.10.1967 (K957562) – Seatainer Terminals Pty. Ltd – surrendered 14.11.1983 (T826815)

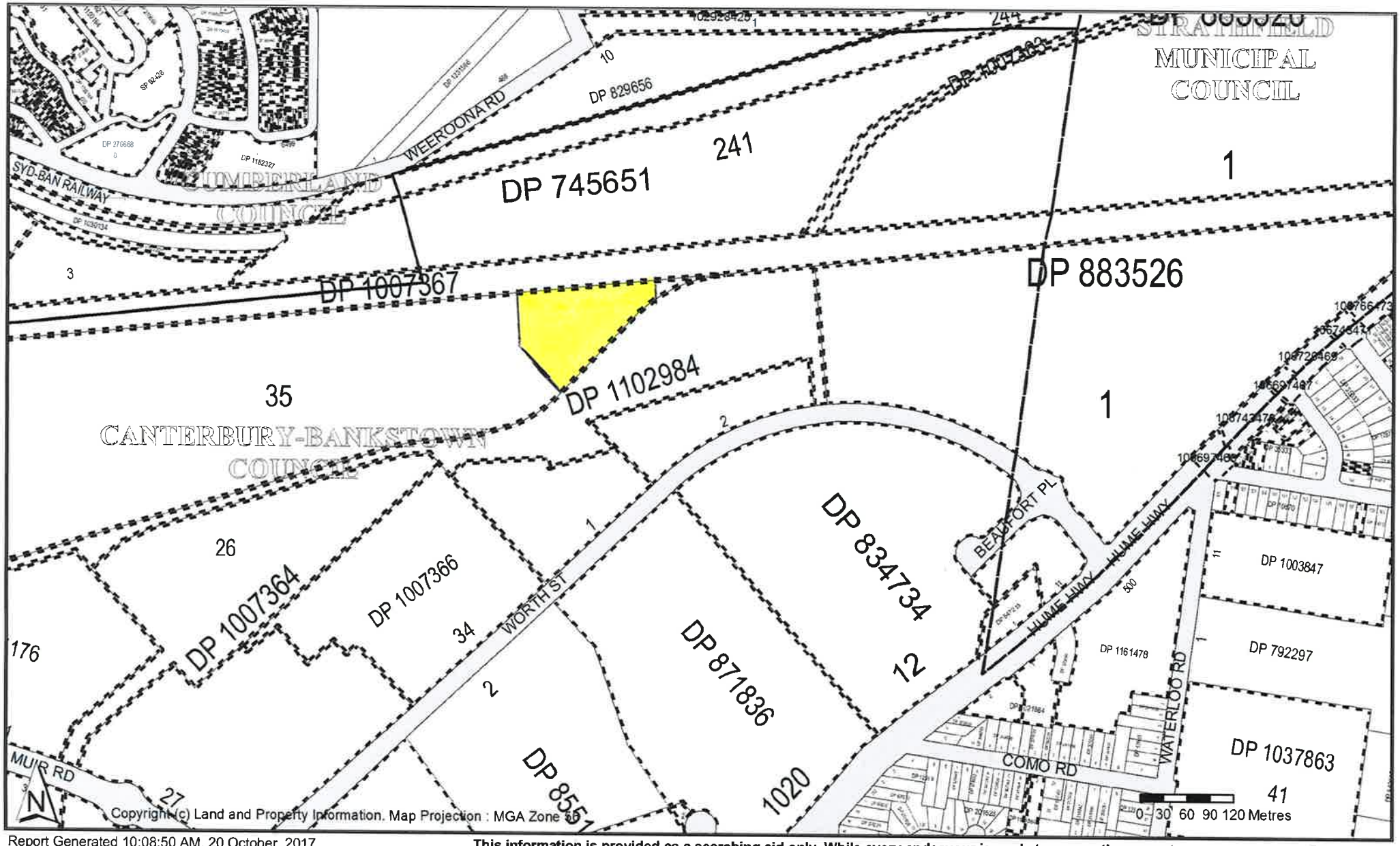
Yours Sincerely
James McDonnell
20 October 2017

Land & Property Information

Cadastral Records Enquiry Report

Requested Parcel : Lot 2 DP 1102984 **Identified Parcel** : Lot 2 DP 1102984

Locality : CHULLORA **LGA** : CANTERBURY-BANKSTOWN **Parish** : LIBERTY PLAINS **County** : CUMBERLAND



Report Generated 10:08:50 AM, 20 October, 2017

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This information is provided as a searching aid only. While every endeavour is made to ensure the current cadastral pattern is accurately reflected, the Registrar General cannot guarantee the information provided. For all ACTIVITY PRIOR to SEPT 2002 you must refer to the RGs Charting and Reference Maps.

PLAN FORM 2A

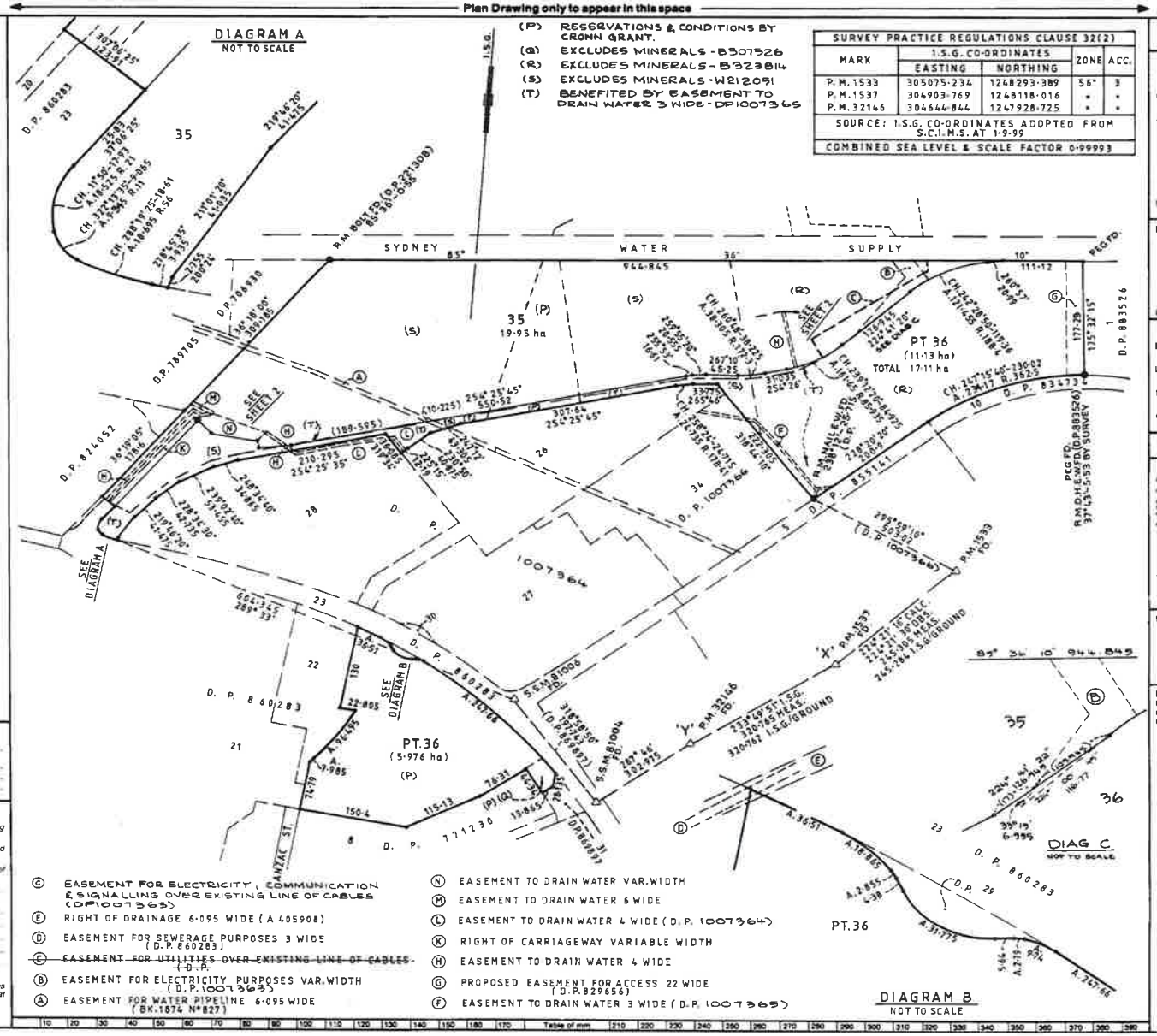
Plan Drawing only to appear in this space

SIGNATURE AND SEALS ONLY

DIAGRAM A
NOT TO SCALE

(P) RESERVATIONS & CONDITIONS BY CROWN GRANT.
(Q) EXCLUDES MINERALS - B307526
(R) EXCLUDES MINERALS - B323814
(S) EXCLUDES MINERALS - W212091
(T) BENEFITED BY EASEMENT TO DRAIN WATER 3 WIDE - DP1007365

SURVEY PRACTICE REGULATIONS CLAUSE 32(2)				
MARK	I.S.G. CO-ORDINATES		ZONE	ACC.
	EASTING	NORTHING		
P.M.1533	305075·234	1248293·389	561	3
P.M.1537	304903·769	1248118·016	*	*
P.M.32146	304646·844	1247928·725	*	*
SOURCE: I.S.G. CO-ORDINATES ADOPTED FROM S.C.I.M.S. AT 1-9-99				
COMBINED SEA LEVEL & SCALE FACTOR 0·99993				



(C) EASEMENT FOR ELECTRICITY, COMMUNICATION & SIGNALLING OVER EXISTING LINE OF CABLES (DP1007363)
(E) RIGHT OF DRAINAGE 6·095 WIDE (A 405908)
(D) EASEMENT FOR SEWERAGE PURPOSES 3 WIDE (D.P. 860283)
~~(C) EASEMENT FOR UTILITIES OVER EXISTING LINE OF CABLES (D.P.~~
(B) EASEMENT FOR ELECTRICITY PURPOSES VAR.WIDTH (D.P.1007363)
(A) EASEMENT FOR WATER PIPELINE 6·095 WIDE (BK.1874 N°827)
(N) EASEMENT TO DRAIN WATER VAR.WIDTH
(M) EASEMENT TO DRAIN WATER 6 WIDE
(L) EASEMENT TO DRAIN WATER 4 WIDE (D.P. 1007364)
(K) RIGHT OF CARRIAGEWAY VARIABLE WIDTH
(H) EASEMENT TO DRAIN WATER 4 WIDE
(G) PROPOSED EASEMENT FOR ACCESS 22 WIDE (D.P.829656)
(F) EASEMENT TO DRAIN WATER 3 WIDE (D.P. 1007365)

Table of mm

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

DP1007367

Registered: 2·11·1999

C.A. SEE CERTIFICATE

Title System TORRENS

Purpose: SUBDIVISION

Ref. Map: U 0045-5* U0045-64

Last Plan: D.P.1007363, DP1007365

PLAN
OF SUBDIVISION OF
LOT 243 IN D.P.1007363
AND
LOT 34 IN D.P.1007365

Lengths are in metres. Reduction Ratio 1 : 4000

LGA: BANKSTOWN
Locality: CHULLORA
Parish: LIBERTY PLAINS
County: CUMBERLAND

This is sheet 1 of my plan in 2 sheets
(Delete if inapplicable)

Surveyors (Practice) Regulation 1996
I, MICHAEL JOHN GORDON
of JOHN M. DALY & ASSOC. PTY. LTD.
P.O. BOX 73 CAMPBELLTOWN
A surveyor registered under the Surveyors Act, 1929, hereby certify that the survey represented in this plan is accurate, has been made in accordance with the Surveyors (Practice) Regulation, 1996 and was completed on 9-9-99
The survey relates to LOTS 35 & PT.36
(Here specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey)
Datum Line 'X'-'Y'
Zone: Suburban-Rural
(Signature)
Surveyor registered under the Surveyors Act 1929

Plans used in preparation of survey/compilation
D.P. 883526 D.P. 1007363
D.P. 1007365

PANEL FOR USE ONLY for statements of intention to dedicate public roads, to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

PURSUANT TO SECTION 88B OF THE CONVEYANCING ACT 1919
IT IS INTENDED TO CREATE:
1. EASEMENT TO DRAIN WATER 4 WIDE
2. RIGHT OF CARRIAGEWAY VARIABLE WIDTH
3. EASEMENT TO DRAIN WATER 6 WIDE
4. EASEMENT TO DRAIN WATER VARIABLE WIDTH

Crown Lands Office Approval
PLAN APPROVED ..... Authorised Officer
Land District .....
Paper No. .....
Field Book ..... pages .....

Subdivision Certificate
I certify that the provisions of s.109J of the Environmental Planning and Assessment Act 1979 have been satisfied in relation to:
* the proposed subdivision set out herein: and (Insert 'subdivision' or 'new road')
* the subdivision is for lease purposes in accordance with s.23H of the Conveyancing Act 1919
K. Gordon
†Authorised Person/~~General Manager/Accredited Certifier~~
Consent Authority: Department of Urban Affairs and Planning
Date of endorsement: ~~24 September 1999~~ 6 October 1999
Accreditation No. N/A
Subdivision Certificate No. 005
File No. 4075
Note: †Then the plan is to be lodged electronically in the Land Titles Office, it should include a signature in an electronic or digital format approved by the Registrar-General.
* Delete whichever is inapplicable

SURVEYOR'S REFERENCE: 94280-17

Req:R298020 /Doc:DP 1007367 P /Rev:04-Nov-1999 /Sts:OK.OK /Pgs:ALL /Prt:04-Sep-2017 09:28 /Seq:1 of 2
Ref:CHULLORA /Src:M

R28930 1/2

PLAN FORM 3

To be used in conjunction with Plan Form 2

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

DP1007367

Registered: 2.11.1999

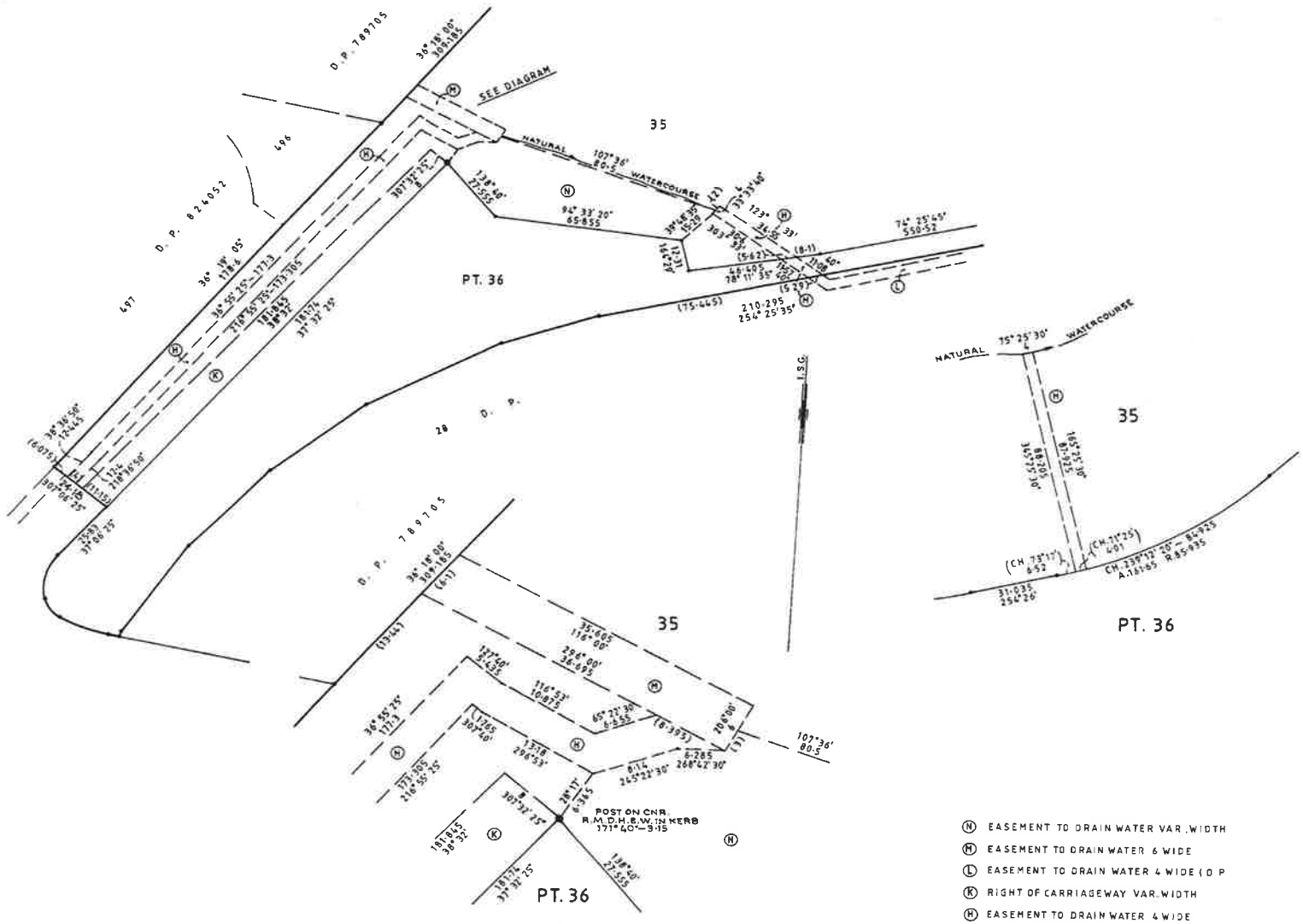
This is sheet 2 of my plan in 2 sheets dated 9.9.99

Surveyor registered under Surveyors Act 1929

This is sheet 2 of the plan of 2 sheets covered by my Certificate No. 005 of 6 October 1999

General Manager/Authorised Person

For use where space is insufficient in any panel on Plan Form 2



DIAGRAM

NOT TO SCALE

Reduction Ratio 1: 1000

Plan Drawing only to appear in this space

R28930 c/f

SURVEYOR'S REFERENCE: 94280-17

Req:R298020 /Doc:DP 1007367 P /Rev:04-Nov-1999 /Sts:OK.OK /Pgs:ALL /Prt:04-Sep-2017 09:28 /Seq:2 of 2
Ref:CHULLORA /Src:M

PLAN FORM 2

Plan Drawing only to appear in this space

*OFFICE USE ONLY

DP 816759 (E)

Registered: 11-6-1992

C.A:

Title System: TORRENS, OLD SYSTEM & CROWN

Purpose: ~~RESUMPTION~~ ACQUISITION (NOT CURRENT PLAN AT REGN - SEE SEC 127A LGA)

Ref. Map: U0045-5 ; 54 ; 61

Last Plan: VARIOUS

PLAN FOR HEADING SEE PANEL ON SHEET 2

Lengths are in metres Reduction Ratio 1 : 8000

Mun./Shire City: MUN. OF AUBURN, MUN. OF STRATHFIELD, CITY OF BANKSTOWN

Locality: CHULLORA

Parish: LIBERTY PLAINS

County: CUMBERLAND

This is sheet 1 of my plan in 5 sheets. (Delete if inapplicable)

I, PIERRE HARTZENBERG of HARD & FORESTER 52 FREDERICK ST, ROCKDALE a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan ... OF CONSOLIDATION is accurate and has been made in accordance with the Survey Practice Regulations, 1933 and are special requirements of the Department of Lands, and was completed on 17/11/92

Signature: P. Hartzenberg

Surveyor registered under Surveyors Act, 1929, as amended

Datum Line of Azimuth: 'X-Y'

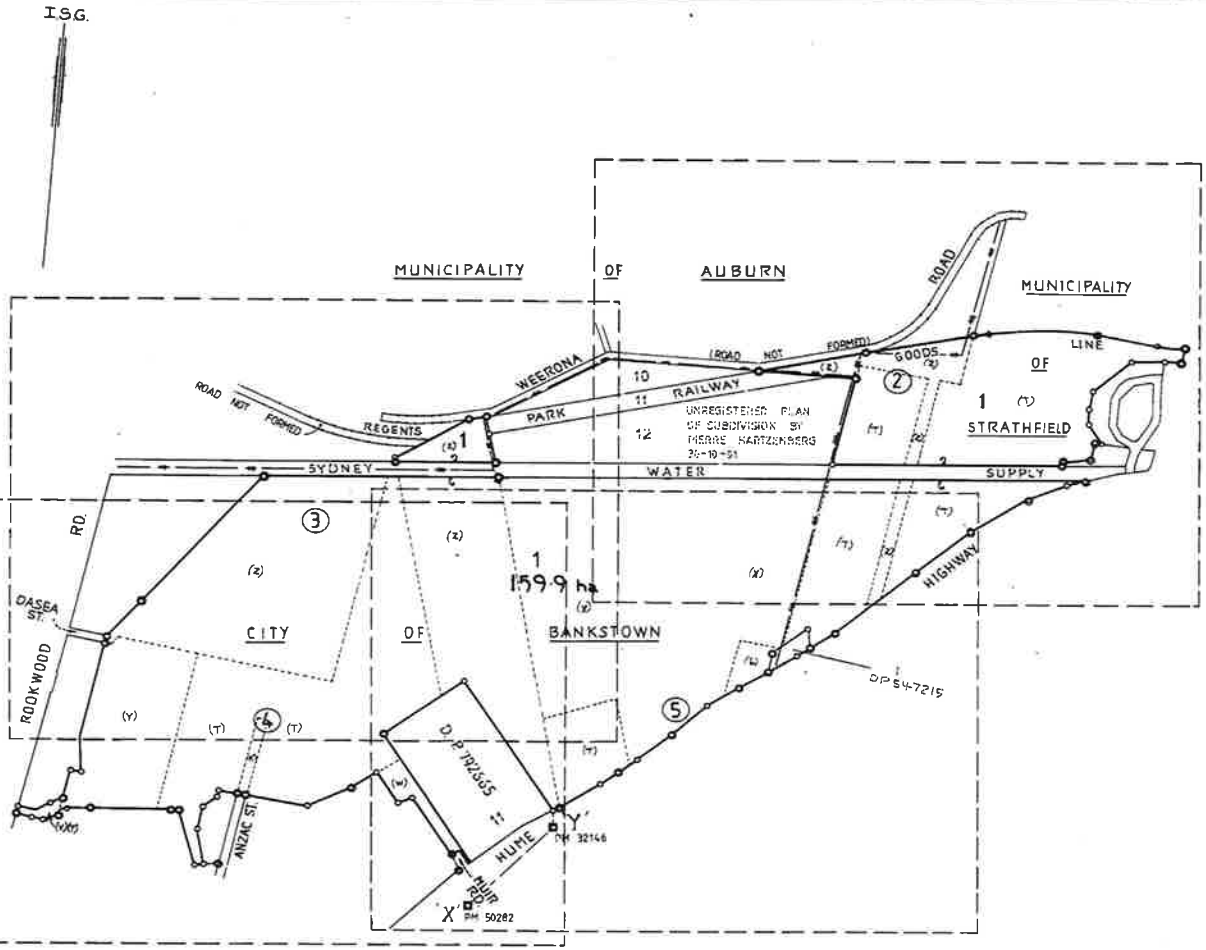
Absent date of survey:

Plans used in preparation of survey/compilation

FOR PLANS USED SEE PANEL ON SHEET 2

PANEL FOR USE ONLY for statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

SIGNATURES, SEALS AND STATEMENTS of intention to dedicate public roads or to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.



(L) LAND EXCLUDES MINERALS - VIDE A947967
(K) LAND EXCLUDES MINERALS - VIDE J104001
(T) RESERVATIONS & CONDITIONS IN CROWN GRANT
(V) LAND EXCLUDES MINERALS - VIDE CROWN GRANT
(W) LAND EXCLUDES MINERALS - VIDE B307924
(X) LAND EXCLUDES MINERALS - VIDE B321816
(Y) LAND EXCLUDES MINERALS - VIDE MEMORANDUM V995431
(Z) LAND EXCLUDES MINERALS - VIDE MEMORANDUM W212051

Crown Lands Office Approval

PLAN APPROVED ..... Authorised Officer

Land District .....

Paper No .....

Field Book ..... pages .....

Council Clerk's Certificate

I hereby certify that –

(a) the requirements of the Local Government Act, 1919 (other than the requirements for the registration of plans), and

*(b) the requirements of Part 3 Division 2 of the * Water Board Act 1987 and * Water Supply Authorities Act 1987

have been complied with by the applicant in relation to the proposed ..... (Insert "new road", "subdivision" or "consolidated lot") set out herein

Subdivision No .....

Date .....

(Signature) ..... Council Clerk

Council File No. .....

* This part of certificate to be deleted where the application is only for a consolidated lot or the opening of a new road or where the land to be subdivided is wholly outside the areas of operations of the Metropolitan Water, Sewerage and Drainage Board and the Hunter District Water Board.

* Delete if inapplicable.

TOS 2

SURVEYOR'S REFERENCE: 7342B MPD

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

AMENDED IN LTO AT SURVEYORS REQUEST

R25878 SHT1

Req:R293899 /Doc:DP 0816759 P /Rev:14-Oct-1998 /Sts:OK.OK /Pgs:ALL /Prt:01-Sep-2017 13:41 /Seq:1 of 5
Ref:CHULLORA /Src:M

PLAN FORM 3

To be used in conjunction with Plan Form 2

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

* OFFICE USE ONLY

DP 816759

Registered: 11-6-1992

This is sheet 2 of my plan in 5 sheets dated 17/1/92

P. Hartzenberg

Surveyor registered under Surveyors Act 1929

This is sheet of the plan of sheets covered by my Certificate No of

Council Clerk

For use where space is insufficient in any panel on Plan Form 2

PLAN OF SUBDIVISION OF LOTS 1,2,3,4 & 6 IN D.P 221308, LOT 12 IN D.P 792665, LOT 13 IN D.P 771230, LOTS 54 TO 74 INCL IN D.P 7741 (RESUMED VIDE GOVT. GAZ. Nº 156 OF 21-12-1923) LOT 1 D.P 301959, LOTS 1 & 2 D.P 112162, LOT 3 IN D.P 231959, LOT 1 IN D.P 953272, LAND CONTAINED IN MS 5251 Sy, LAND CONTAINED IN MS 6764 Sy (APPROPRIATED BY GOVT GAZ Nº 155 OF 26-11-1926) PT OF THE LAND CONTAINED IN MS 6601 Sy (RESUMED VIDE GOVT. GAZ. Nº 156 OF 21-12-1923) PT OF THE LAND CONTAINED IN MS 6600 Sy (RESUMED VIDE GOVT. GAZ Nº 156 OF 21-12-1923), LAND CONTAINED IN DEEDS OF CONVEYANCE BOOK 1060 Nº 330, BOOK 1035 Nº 191, BOOK 1351 Nº 389 & BOOK 1212 Nº 511

PLANS USED IN PREPARATION OF SURVEY / ~~COMPILATION~~

D.P 7741 D.P 112162 D.P 221308
D.P 231959 D.P 217308 D.P 233429
D.P 301959 D.P 431087 D.P 439111
D.P 430414 D.P 447790 D.P 543282
D.P 558060 D.P 572115 D.P 553348
D.P 544530 D.P 620273 D.P 706930
D.P 771230 D.P 792665 D.P 789705
D.P 717569 D.P 711168 D.P 803350
D.P 810030 D.P 805324 D.P 953272
MS 5807 Sy MS 4341 Sy MS 7362 Sy
MS 18872 Sy MS 5251 Sy MS 6764 Sy
MS 6001 Sy MS 6600 Sy MS 10234 Sy
R 19231 1603 R 18534 1603
C 10215 2030 C 4921 2030
D.P 56824
D.P 174085
D.P 947650

Reduction Ratio 1: 3000

SCHEDULE OF SHORT BOUNDARIES

Nº	BEARING	DIST
1	18° 31' 15"	8·07
2	8° 25' 55"	44·65
3	93° 21' 33"	15·93
4	324° 41' 35"	61·15
5	357° 13'	40·22
6	6° 12' 35"	49·36
7	89° 54' 35"	37·685
8	94° 44' 05"	16·77
9	85° 10' 05"	"
10	75° 37' 05"	"
11	66° 03' 05"	"
12	56° 29' 05"	"
13	46° 56' 05"	"
14	37° 22' 05"	"
15	27° 48' 05"	"
16	27° 17' 30"	36·135
17	35° 52' 30"	"
18	44° 22' 30"	"
19	53° 02' 30"	"
20	61° 37' 30"	"
21	70° 12' 30"	"

SCHEDULE OF SHORT BOUNDARIES

Nº	CHORD	ARC	RAD
1	207° 37' 40" 75·3	75·36	181·05
2	266° 29' 15" 259·42	261·31	623·62

(T) RESERVATIONS & CONDITIONS IN CROWN GRANT
(X) LAND EXCLUDES MINERALS - VIDE B323814
(Z) LAND EXCLUDES MINERALS - VIDE MEMORANDUM W212091

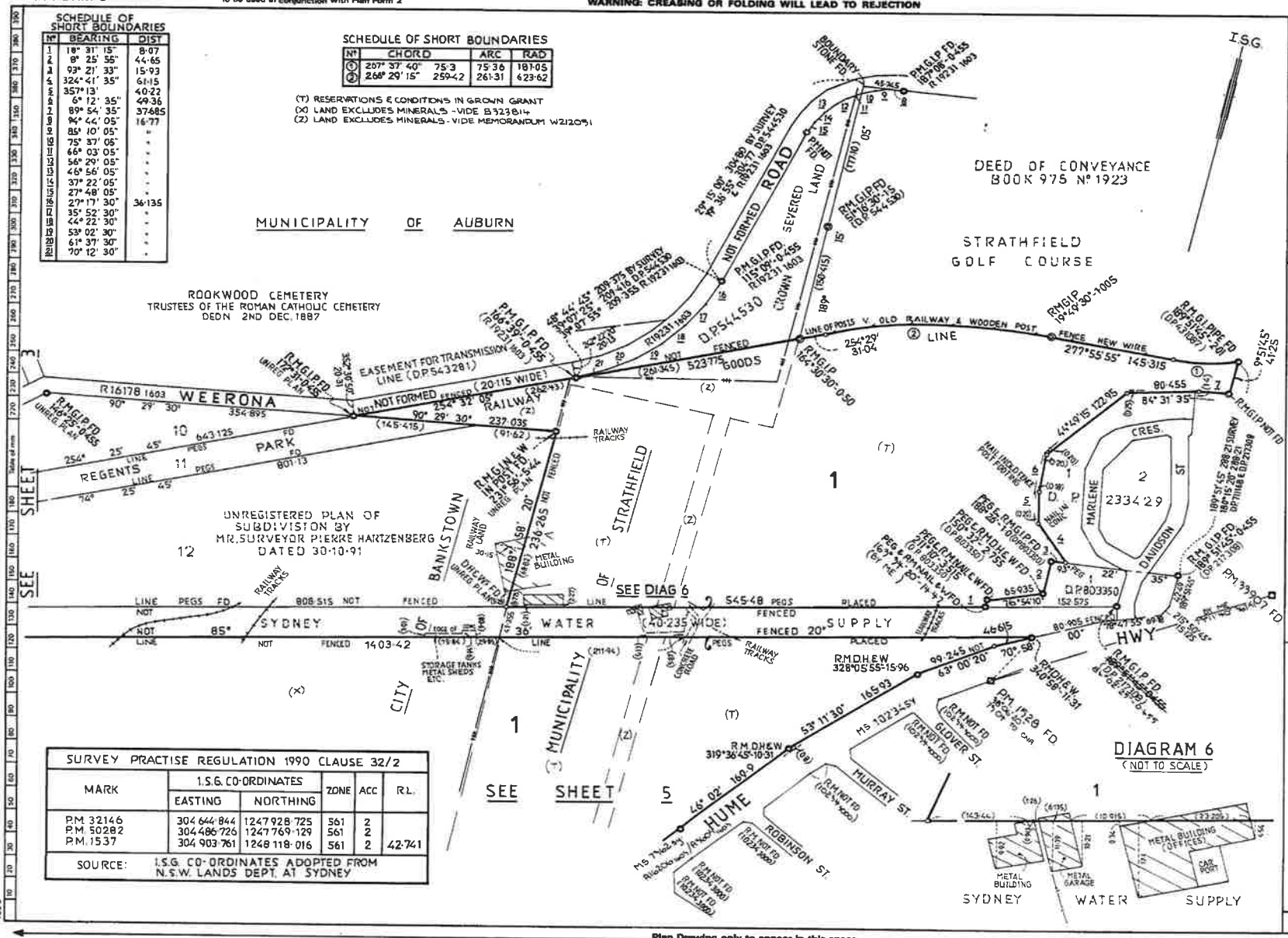


DIAGRAM 6
(NOT TO SCALE)

SURVEY PRACTISE REGULATION 1990 CLAUSE 32/2					
MARK	I.S.G. CO-ORDINATES EASTING	I.S.G. CO-ORDINATES NORTHING	ZONE	ACC	R.L.
P.M 32146	304 644·844	1247 928·725	561	2	
P.M 50282	304 486·726	1247 769·129	561	2	42·741
P.M. 1537	304 903·761	1248 118·016	561	2	
SOURCE: I.S.G. CO-ORDINATES ADOPTED FROM N.S.W. LANDS DEPT. AT SYDNEY					

Plan Drawing only to appear in this space

SURVEYOR'S REFERENCE 7342B

R25878 SHT 2

Req:R293899 /Doc:DP 0816759 P /Rev:14-Oct-1998 /Sts:OK.OK /Pgs:ALL /Prt:01-Sep-2017 13:41 /Seq:2 of 5
Ref:CEULIORA /Src:M

PLAN FORM 3 — To be used in conjunction with Plan Form 2 — WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION — *OFFICE USE ONLY

DP 816759

Registered: 11. 6. 1992

This is sheet 3 of my plan in 5 sheets dated 17/1/92

Surveyor registered under Surveyors Act 1929

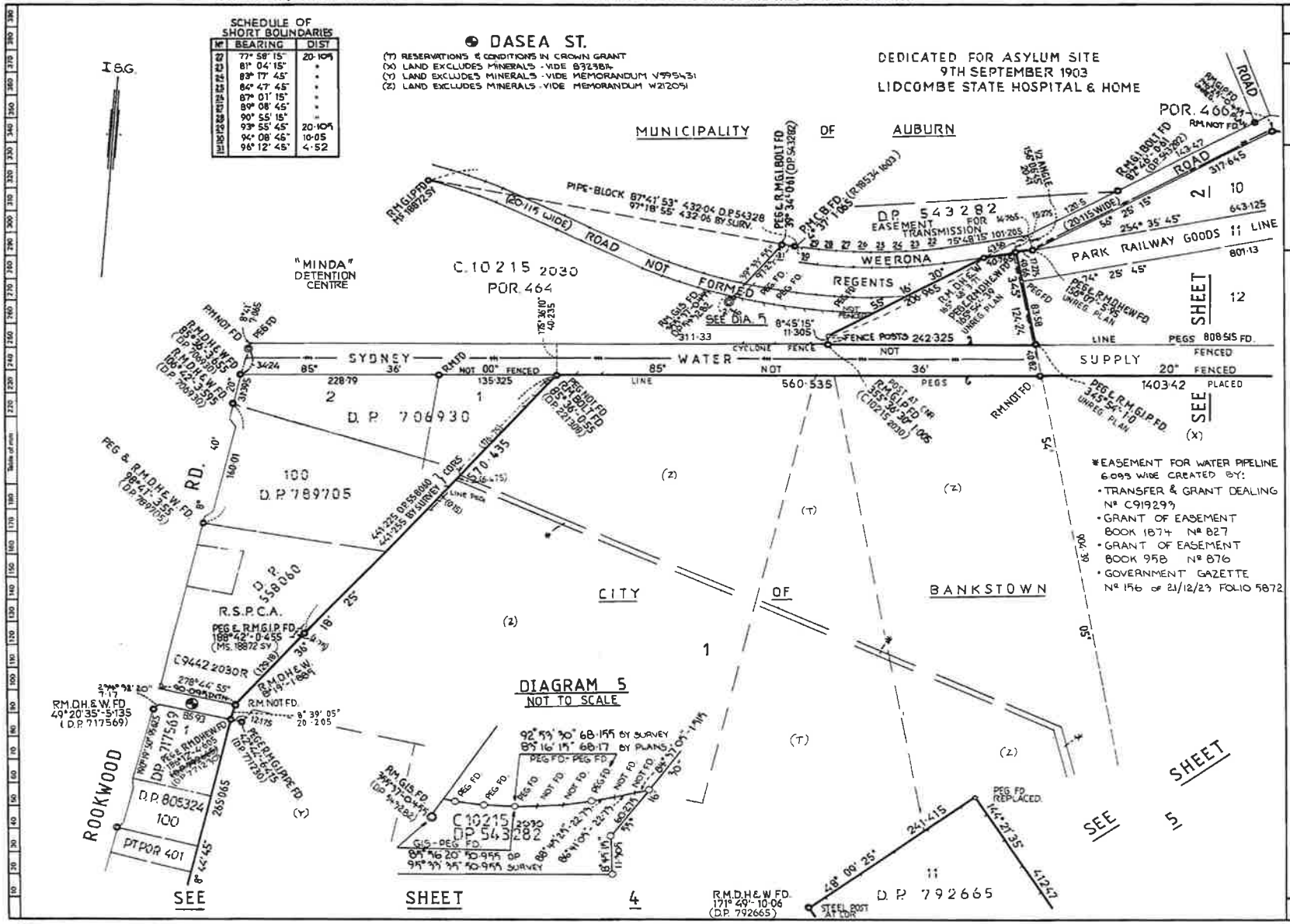
This is sheet of the plan of sheets covered by my Certificate No. of

Council Clerk

For use where space is insufficient in any panel on Plan Form 2.

SCHEDULE OF SHORT BOUNDARIES

Nº	BEARING	DIST
22	77° 58' 15"	20·105
23	81° 04' 15"	*
24	83° 17' 45"	*
25	86° 47' 45"	*
26	87° 01' 15"	*
27	89° 08' 45"	*
28	90° 55' 15"	"
29	93° 55' 45"	20·105
30	94° 08' 45"	10·05
31	96° 12' 45"	4·52



Reduction Ratio 1: 3000

Plan Drawing only to appear in this space

SURVEYOR'S REFERENCE: 7342B

Req:R293899 /Doc:DP 0816759 P /Rev:14-Oct-1998 /Sta:OK.OK /Pgs:ALL /Prt:01-Sep-2017 13:41 /Seq:3 of 5
Ref:CHULLORA /Src:M

PLAN FORM 3 — To be used in conjunction with Plan Form 2 — WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION — *OFFICE USE ONLY

DP 816759

Registered: 11.6.1992

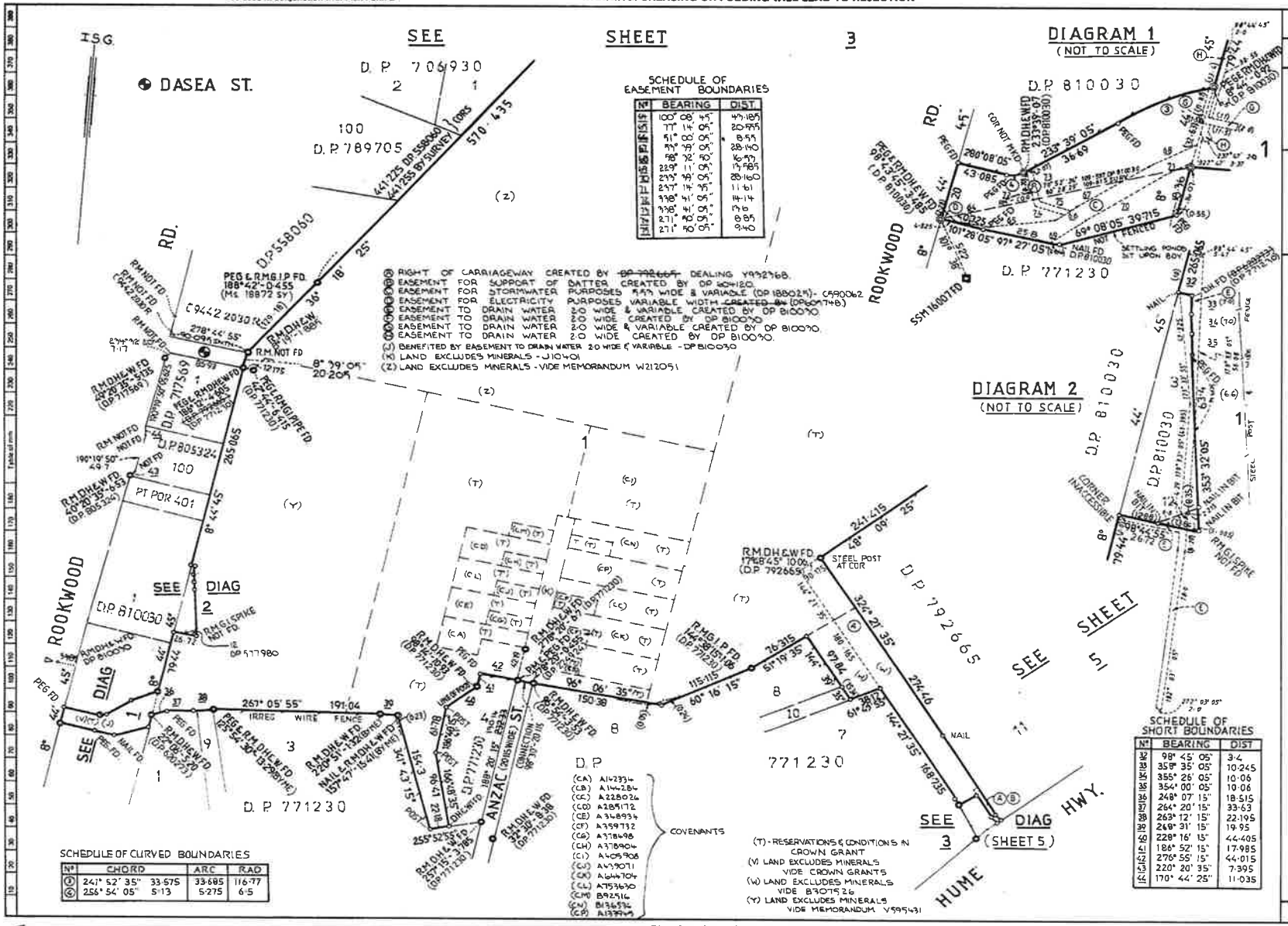
This is sheet 4 of my plan in 5 sheets dated 17/1/92

Surveyor registered under Surveyors Act 1929

This is sheet of the plan of sheets covered by my Certificate No of

Council Clerk

For use where space is insufficient in any panel on Plan Form 2.



Reduction Ratio 1 : 3000

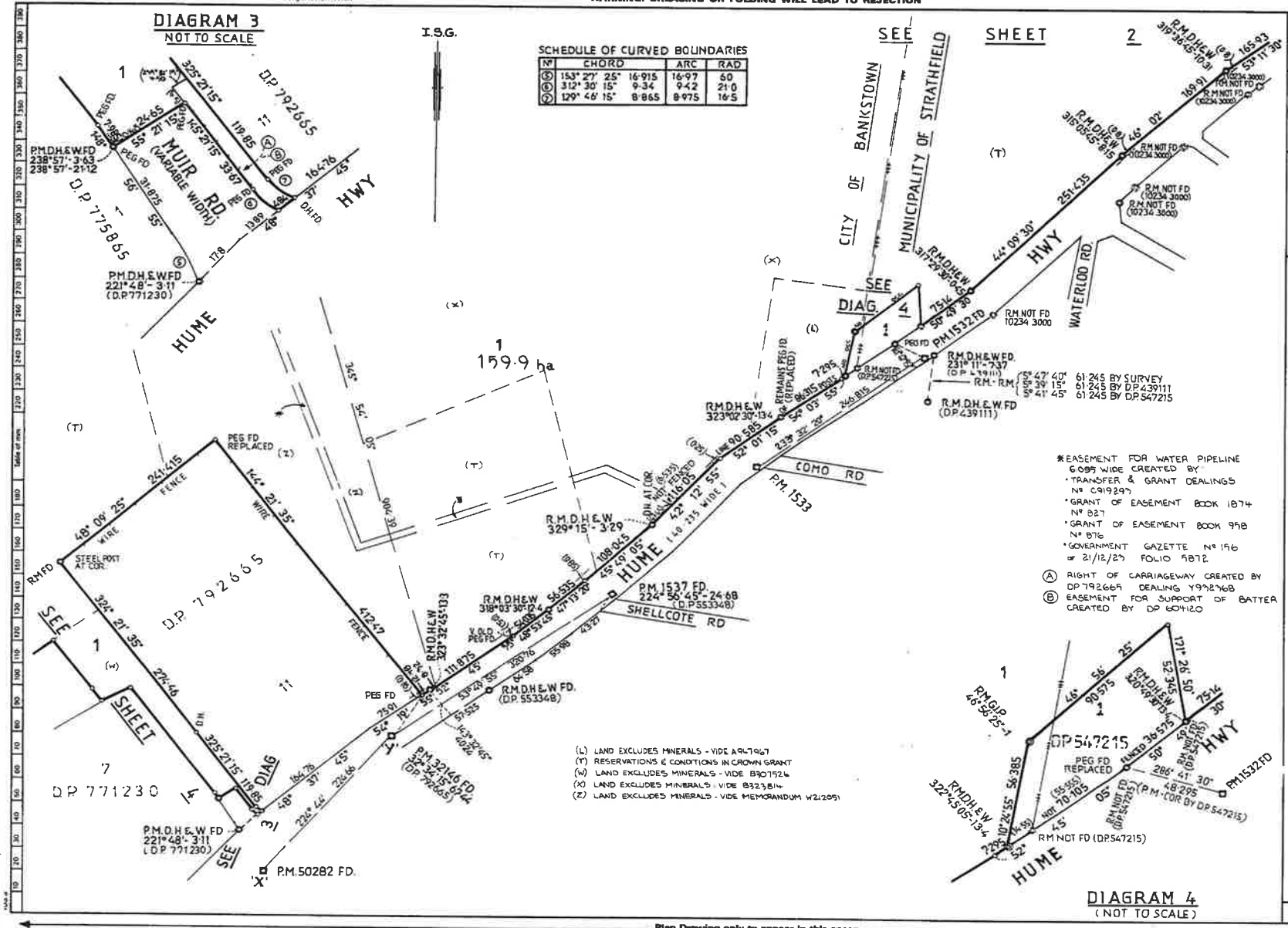
Plan Drawing only to appear in this space

SURVEYOR'S REFERENCE 79428

R25878 SHT4

Req:R293899 /Doc:DP 0816759 P /Rev:14-Oct-1998 /Sts:OK.OK /Pgs:ALL /Prt:01-Sep-2017 13:41 /Seq:4 of 5
Ref:CBULORA /Src:M

PLAN FORM 3 — To be used in conjunction with Plan Form 2 — WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION — *OFFICE USE ONLY



Plan Drawing only to appear in this space

DP 816759

Registered: 11·6·1992

This is sheet 5 of my plan in 5 sheets dated 17/1/92

P. Hastenberg

Surveyor registered under Surveyors Act 1929

This is sheet of the plan of sheets covered by my Certificate No. of

Council Clerk

For use where space is insufficient in any panel on Plan Form 2.

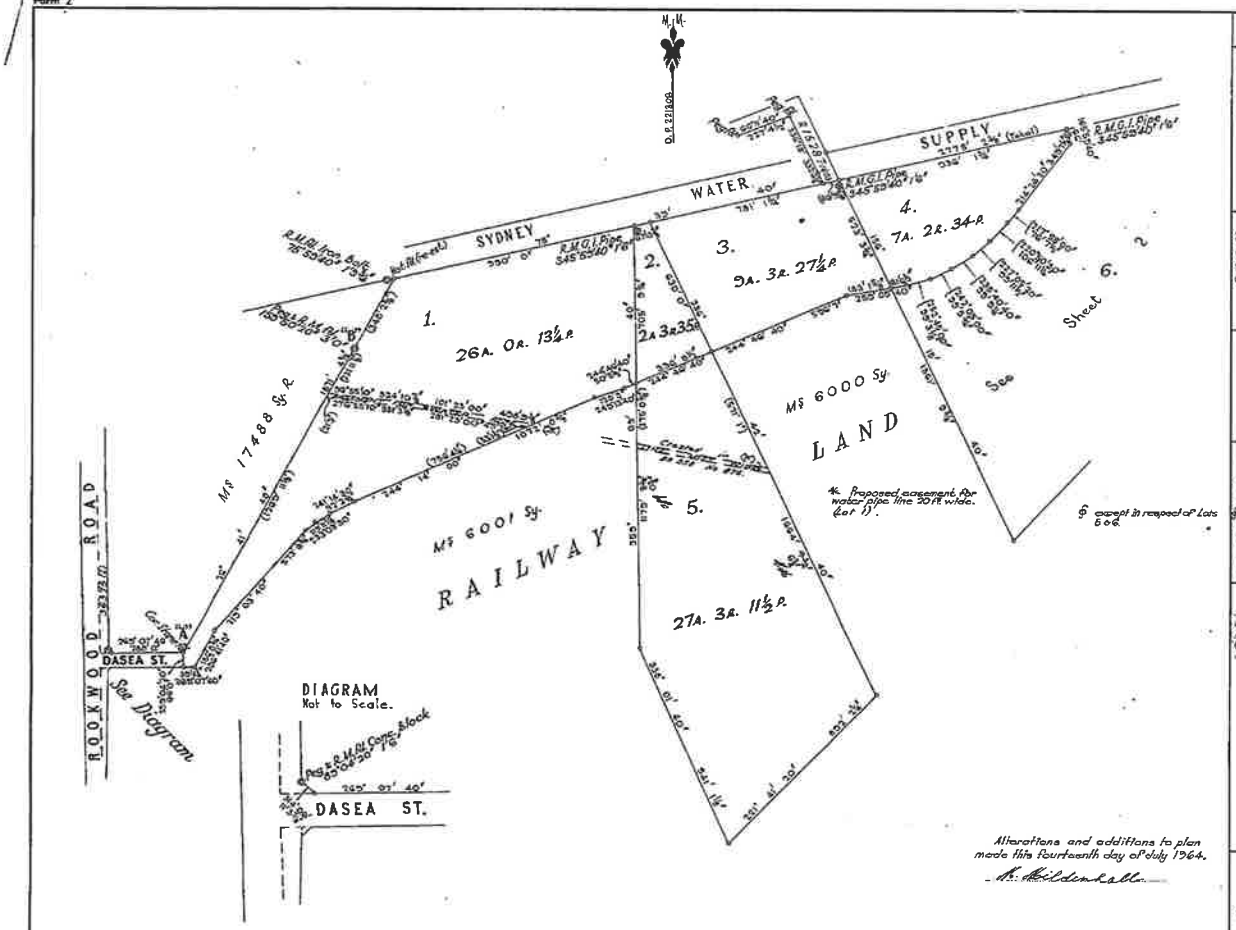
Reduction Ratio 1: 3000

SURVEYOR'S REFERENCE: 73428

R25878 SHT 5

Reg:R293899 /Doc:DP 0816759 P /Rev:14-Oct-1998 /Sts:OK.OK /Pgs:ALL /Prt:01-Sep-2017 13:41 /Seq:5 of 5
Ref:CHULORA /Src:M

Form 2



Alterations and additions to plan made this fourteenth day of July 1964.

M. Mildenhall

DP221308

Registered:

Title System: Torrens Old System

Purpose: Subdn (PA43678 Pt)

Ref. Map: Bankstown Sh. 4

Last Plan: Roll Plan 626 *

PLAN OF LAND IN C/T. Vol 2658 Fol. 215, Vol. 3861 Fol. 189 AND FORMER CROWN LAND RESUMED FOR RAILWAY PURPOSES BY NOTIFICATION IN GOVT. GAZ. OF 21-12-1923.

Scale: 300 feet to an inch

Mun./~~Shire~~ ~~City~~ Bankstown

Locality: CHULLORA

Parish: Liberty Plains

County: Cumberland

I, Mervyn Thomas Mildenhall of DEPT. OF RAILWAYS N.S.W. a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan is accurate and has been made* (1) by me (2) ~~under my supervision~~ in accordance with the Survey Practice Regulations, 1933, and was completed on 9.12.1963

Signature M. Mildenhall

Surveyor registered under Surveyors Act, 1929, as amended.

Datum Line of Azimuth. AB

Statements of Proposed Easements.

It is proposed to create easement for water pipe line over the land shown hereon as "Proposed easement for water pipe line 20 ft wide" in favour of the Metropolitan Water Sewerage & Drainage Board. (Lot 1).

Approved by the Council and Certified in accordance with the provisions of Section 327 of the Local Government Act, 1919.

Date

Subdivision No.

Council Clerk

Pln: 62/870914 R.L.
C.B. 158/147
F.B. Misc 6324

176c/17

OFFICE USE ONLY

D.P. 221308

AMENDMENTS OR ADDITIONS NOTED ON PLAN IN REGISTRAR GENERAL'S OFFICE.

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 13th day of May, 1977

1

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 221308 SH 1/2

FEET	INCHES	METRES
1	6	0.457
1	9 3/4	0.552
3	-	0.914
6	7 1/4	2.013
9	11 5/8	3.035
11	3 7/8	3.491
20	-	6.096
21	3	6.477
24	10 3/8	7.579
33	1 1/2	10.097
39	11 1/4	12.173
48	2 5/8	14.697
49	7 1/8	15.116
50	5 1/2	15.380
51	6 1/2	15.758
66	-	20.117
66	1	20.142
66	9 1/8	20.349
66	11	20.396
67	10 3/8	20.685
67	10 7/8	20.698
75	0 3/8	22.870
76	7 1/2	23.349
99	3 1/8	30.255
99	5 3/4	30.321
99	9 1/4	30.410
99	11 1/2	30.467
106	11 1/4	32.595
112	2 3/4	34.207
119	11 1/4	36.557
128	3	39.091
183	1 5/8	55.820
183	1 7/8	55.826
186	8 3/4	56.915
186	9 3/4	56.940
227	4 1/2	69.304
231	11 7/8	70.710
271	1	82.626
275	0 3/8	83.850
277	5	84.557
288	-	87.782
322	6 1/4	98.304
324	10 7/8	99.051
331	3 7/8	100.987
332	6 1/4	101.552
336	8 1/2	102.629
348	2 5/8	106.137
349	7 1/2	106.366
4 8	5 3/8	152.003
498	9 3/8	152.029
523	3 3/4	159.565
571	1	174.066
573	6 3/4	174.522
596	7	181.559
630	-	192.024
705	9 3/4	215.132
756	4 1/4	230.537
781	1 3/4	238.093
892	2 1/4	271.939
936	1 3/4	285.337
941	1 1/8	286.845
971	1 1/8	295.969
990	-	301.752
1072	0 3/8	326.755
1179	0 3/4	359.378
1269	11 1/8	387.078
1361	9 3/8	415.071
1664	6 3/4	507.359
1664	7 3/4	507.384
2275	2 3/8	693.480
2775	2 3/8	845.880

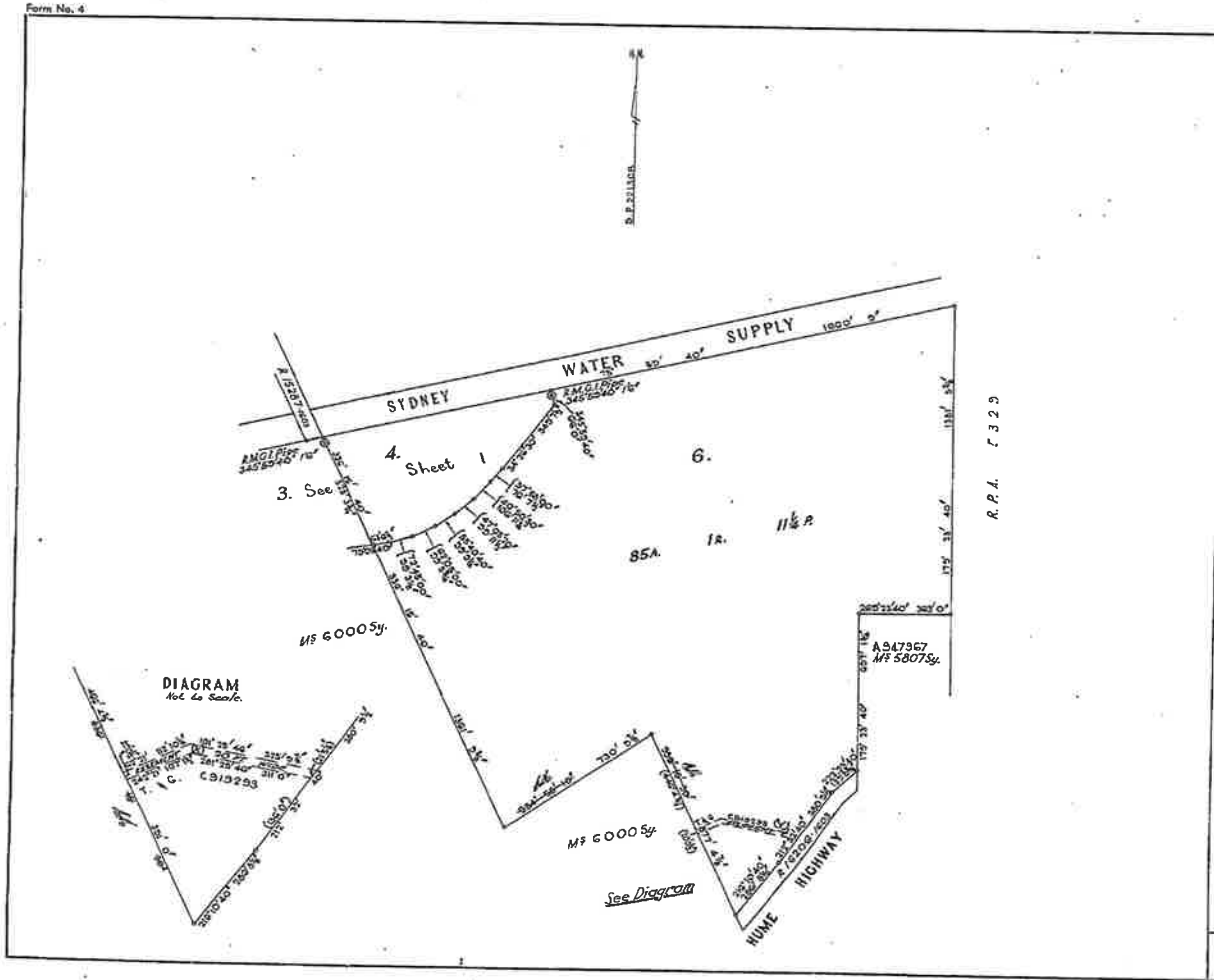
CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 221308 SH 1/2 CONTD

AC	RD	P	HA
2	3	35	3.2
7	2	34	3.121
9	3	27 1/4	9.015
25	-	13 1/4	10.56
27	3	11 1/2	11.26

Req:R297911 /Doc:DP 0221308 P /Rev:15-Sep-1992 /Sts:OK.OK /Pgs:ALL /Prt:04-Sep-2017 09:17 /Seq:1 of 2
Ref:CHULLORA /Src:M

Form No. 4



DP221308

Registered: 6.8.1968

This is Sheet TWO of my plan in TWO Sheets dated 9-12-1963

Surveyor registered under Surveyors Act, 1929, as amended.

This is Sheet ... of the plan of

Sheets covered by my Certificate No. ... of

Council Clerk

Scale: 300 Feet to an inch

File 6218/7031 REC
C.R. 108/147
F.B./Pg. 5204

176c/18

D.P. 221308

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 221308 SH 2/2

FEET	INCHES	METRES
1	6	0.457
2	5 1/4	0.743
6	-	1.829
20	-	6.096
20	0 1/2	6.109
21	5 1/4	6.534
61	6 1/2	18.758
66	-	20.117
76	7 1/2	23.355
99	3 1/8	30.255
99	5 3/4	30.321
99	9 1/4	30.410
99	11 1/2	30.467
106	11 1/4	32.595
107	1 1/2	32.652
112	10 1/4	34.398
136	-	41.453
139	8 5/8	42.386
139	8 7/8	42.393
200	0 1/2	60.973
286	8 1/8	87.379
311	-	94.793
325	9 7/8	99.311
349	7 1/2	106.366
363	-	110.642
380	9 1/8	116.056
380	9 1/2	116.065
391	-	119.177
446	4 3/8	136.052
466	4 3/8	142.148
523	3 3/4	159.506
697	1 3/4	212.498
730	9 7/8	222.755
877	4 5/8	267.427
1361	8 5/8	415.086
1361	10 3/8	415.096
1381	4 3/8	421.040
1381	5 3/8	421.055
1660	9	506.197

AC	RD	P	HA
85	1	11 1/4	34.83

AMENDMENTS OR ADDITIONS NOTED ON PLAN IN REGISTRAR GENERAL'S OFFICE.

I, Bruce Richard Davies, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 13th day of May, 1977

2

Req:R297911 /Doc:DP 0221308 P /Rev:15-Sep-1992 /Sts:OK.OK /Pgs:ALL /Prt:04-Sep-2017 09:17 /Seq:2 of 2
Ref:CHULLORA /Src:M

Req:R297526 /Doc:CP 06000-3000 P /Rev:29-Nov-2012 /Sts:OK.OK /Prt:04-Sep-2017 08:40 /Seq:1 of 1
Ref:CHULLORA /Src:M

PLAN

Shewing land to be acquired for Railway purposes

Parish of Liberty Plains — County of Cumberland

Scale 8 Chains to an inch

POR 47

POR

Railway Commissioners for N S W (owners)

23½ LINE

Geo Morris

SYDNEY WATER 10" SUPPLY PIPE

Pr H. G Douglas (100ac G)

30ac

70

Minister for Public Works

PIPE

Railway Commissioners for N S W owners

pt Por 70

Pr H. G Douglas

1100ac

LINE

ROAD

Nº	OWNER	Vol.	Fol
1	Dedicated to Municipality of Bankstown		
2			
3	Catherine Wise (¼ Share)		
	Robert William and S Wise		
4	Edward Simmonds		
5	Maria Wright Simmonds		
6			
7	Bankstown Sports Club		
8	Daughters Lime Works Limited		
9	Robert Stanton (¼ Share)		
	Hilton Hall Gregg (¼ Share)		
10	Robert Stanton (¼ Share)		
	Hilton Hall Gregg (¼ Share)		
11	Crown Land		
12	N S W Gas & Coke Co. Pipe Line Reg		
13	Road Dr R.6176		

Diagram A

Diagram B

Area of lots 15 - 18 vide D.P. 8263 is 3r 2¼p.
do do do do Cas. is 3r 22p.

PLAN MICROFILMED
NO ADDITIONS OR ANNOTATIONS TO BE MADE

6000-3000 Mr 6300 S

Req:R297898 /Doc:CT 09787-170 CT /Rev:23-Feb-2011 /Sts:OK.SC /Pgs:ALL /Prt:04-Sep-2017 09:16 /Seq:1 of 2
Ref:CHULLORA /Src:M

09787170

[redacted]IFICATE OF TITLE
[redacted]ERTY ACT, 1900, as amended.

NEW SOUTH WALES
Applications Nos.8788 and 9746
Prior Title Vol.3861 Fol.189

Vol. 9787 Fol. 170

1st Edition issued 25-8-1964

MA

(Page 1) Vol. 9787 Fol. 170

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

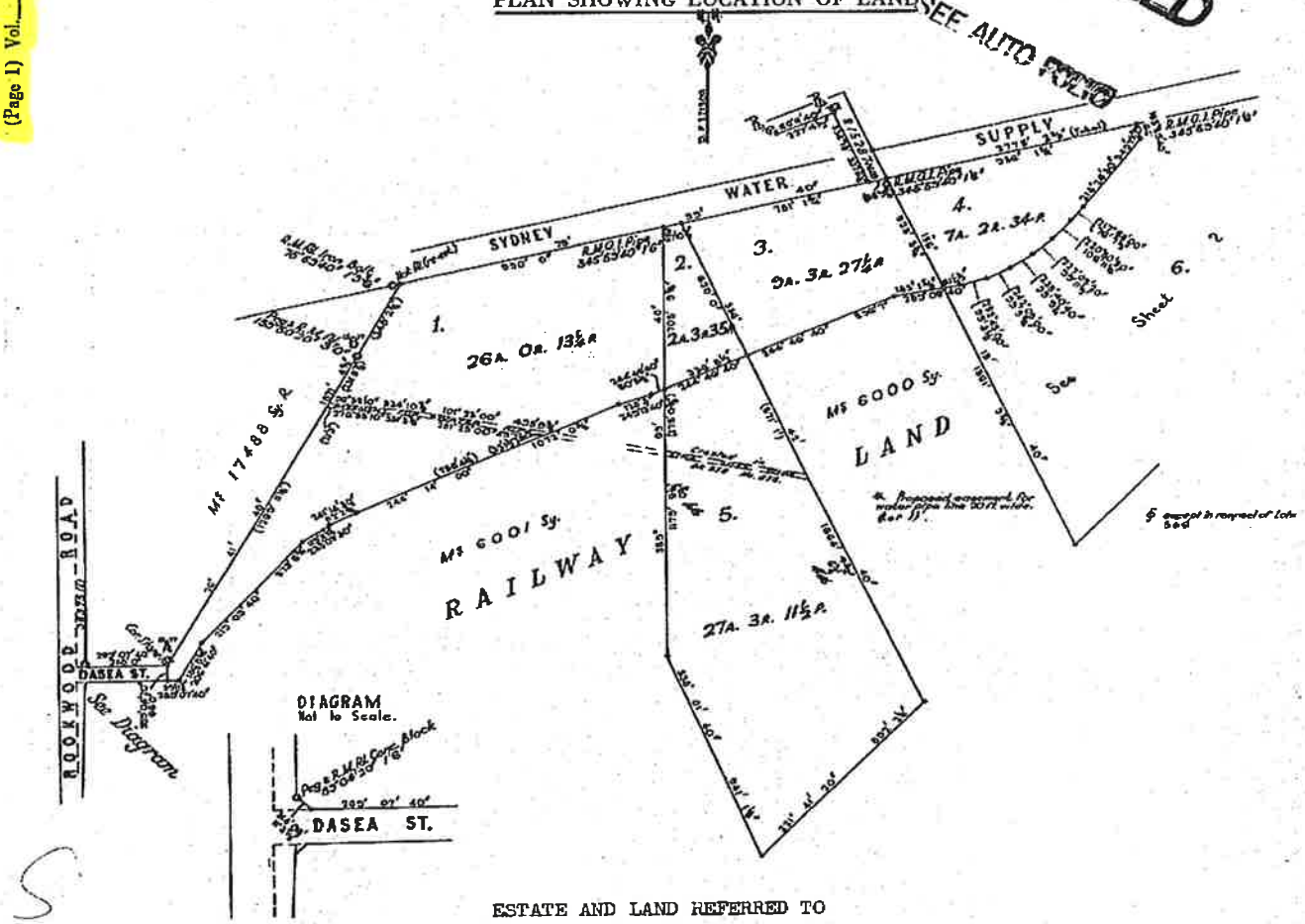
Witness

Registrar General.

CANCELLED

SEE AUTO FOLIO

PLAN SHOWING LOCATION OF LAND



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 4 in Deposited Plan 221308 at Chullora in the Municipality of Bankstown Parish of Liberty Plains and County of Cumberland being part of Portion 70 granted to Henry Grattan Douglas on 6-7-1833, excepting thereout the mines and deposits specified in Section 141 Public Works Act 1912.

FIRST SCHEDULE (continued overleaf)

~~THE COMMISSIONER FOR RAILWAYS.~~

Registrar General.

SECOND SCHEDULE (continued overleaf)

GRN
XC

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED.

67 1608 V. C. N. BLIGHT, GOVERNMENT PRINTER

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar General
State Rail Authority of New South Wales. See T826815. Registered ~~16-11-1983.~~ 14.11.1983.					

K957502
57 W. Nyk
3 c
P834829 SUBLEASE
(& K957502)
T826815 DLR

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION		
						Surrendered	T826815	

CANCELLED

SEE AUTO FOLIO

FORM No. 62

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

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Historical Title

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
4/9/2017 9:15AM

FOLIO: 4/221308

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 9787 FOL 170

Recorded	Number	Type of Instrument	C.T. Issue
4/6/1987		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
4/5/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
17/6/1992	DP816759	DEPOSITED PLAN	EDITION 1
3/5/1993	I298780	DEPARTMENTAL DEALING	FOLIO CANCELLED
14/10/1993		AMENDMENT: LOCAL GOVT AREA	

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
1/9/2017 1:23PM

FOLIO: 1/816759

First Title(s):	OLD SYSTEM	VOL 3444 FOL 195
	VOL 4068 FOL 107	VOL 6561 FOL 209
Prior Title(s):	~~54-61/7741~~	~~64-66/7741~~
	~~69-74/7741~~	~~1-2/112162~~
	~~1/210835~~	~~1~~-4/221308
	~~6/221308~~	~~3/231959~~
	~~1/301959~~	~~13/771230~~
	~~12/792665~~	~~2/810030~~
	~~VOL 2518 FOL~~ 28	~~VOL 2530 FOL 88~~
	~~VOL 2542 FOL 231~~	~~VOL 2697 FOL 170~~
	~~VOL 3556 FOL 152~~	~~VOL 10798 FOL 195~~
	~~PA63368~~	~~PA63369~~
	~~PA63370~~	

Recorded	Number	Type of Instrument	C.T. Issue
15/6/1992	DP816759	DEPOSITED PLAN	LOT RECORDED FOLIO NOT CREATED
5/5/1993	PA63368	PRIMARY APPLICATION	FOLIO CREATED EDITION 1
14/9/1993	DP648241	DEPOSITED PLAN	
25/11/1993	DP834734	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

CHULLORA PRINTED ON 1/9/2017

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
1/9/2017 1:23PM

FOLIO: 13/834734

First Title(s): OLD SYSTEM VOL 3444 FOL 195
VOL 4068 FOL 107 VOL 6561 FOL 209
Prior Title(s): 1/816759

Recorded	Number	Type of Instrument	C.T. Issue
25/11/1993	DP834734	DEPOSITED PLAN	FOLIO CREATED EDITION 1
25/7/1994	DP839392	DEPOSITED PLAN	FOLIO CANCELLED
15/10/1998	5331793	DEPARTMENTAL DEALING	FOLIO CANCELLED

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
1/9/2017 1:23PM

FOLIO: 721/839392

First Title(s): OLD SYSTEM VOL 3444 FOL 195
VOL 4068 FOL 107 VOL 6561 FOL 209
Prior Title(s): 13/834734

Recorded	Number	Type of Instrument	C.T. Issue
25/7/1994	DP839392	DEPOSITED PLAN	FOLIO CREATED EDITION 1
12/12/1995	DP855141	DEPOSITED PLAN	FOLIO CANCELLED
15/10/1998	5331793	DEPARTMENTAL DEALING	FOLIO CANCELLED

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
1/9/2017 1:23PM

FOLIO: 6/855141

First Title(s): OLD SYSTEM VOL 3444 FOL 195
VOL 4068 FOL 107 VOL 6561 FOL 209
Prior Title(s): 721/839392

Recorded	Number	Type of Instrument	C.T. Issue
12/12/1995	DP855141	DEPOSITED PLAN	FOLIO CREATED EDITION 1
16/7/1996	DP860283	DEPOSITED PLAN	FOLIO CANCELLED
15/10/1998	5331793	DEPARTMENTAL DEALING	FOLIO CANCELLED

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
1/9/2017 1:23PM

FOLIO: 24/860283

First Title(s): OLD SYSTEM VOL 3444 FOL 195
VOL 4068 FOL 107 VOL 6561 FOL 209
Prior Title(s): 6/855141

Recorded	Number	Type of Instrument	C.T. Issue
16/7/1996	DP860283	DEPOSITED PLAN	FOLIO CREATED EDITION 1
13/8/1997	DP869897	DEPOSITED PLAN	FOLIO CANCELLED
15/10/1998	5331793	DEPARTMENTAL DEALING	FOLIO CANCELLED

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
1/9/2017 1:22PM

FOLIO: 32/869897

First Title(s): OLD SYSTEM VOL 6561 FOL 209
VOL 4068 FOL 107 VOL 3444 FOL 195
Prior Title(s): 24/860283

Recorded	Number	Type of Instrument	C.T. Issue
13/8/1997	DP869897	DEPOSITED PLAN	FOLIO CREATED EDITION 1
29/6/1998	5058054	REQUEST	EDITION 2
7/7/1998	DP878185	DEPOSITED PLAN	FOLIO CANCELLED
15/10/1998	5331793	DEPARTMENTAL DEALING	FOLIO CANCELLED

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
1/9/2017 1:21PM

FOLIO: 101/878185

First Title(s): OLD SYSTEM VOL 3444 FOL 195
Prior Title(s): ~~12/577980~~ 32/869897

Recorded	Number	Type of Instrument	C.T. Issue
22/7/1998	DP878185	DEPOSITED PLAN	FOLIO CREATED EDITION 1
15/10/1998	5331792	DEPARTMENTAL DEALING	
11/3/1999	5671517	DEPARTMENTAL DEALING	
16/3/1999	DP883526	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
1/9/2017 1:21PM

FOLIO: 2/883526

First Title(s): OLD SYSTEM VOL 3444 FOL 195
VOL 6561 FOL 209 VOL 4068 FOL 107
Prior Title(s): 101/878185

Recorded	Number	Type of Instrument	C.T. Issue
17/3/1999	DP883526	DEPOSITED PLAN	FOLIO CREATED CT NOT ISSUED
26/3/1999	5708279	DEPARTMENTAL DEALING	EDITION 1
27/10/1999	DP1007363	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
1/9/2017 1:21PM

FOLIO: 243/1007363

First Title(s): OLD SYSTEM
Prior Title(s): 2/883526

Recorded	Number	Type of Instrument	C.T. Issue
27/10/1999	DP1007363	DEPOSITED PLAN	FOLIO CREATED CT NOT ISSUED
2/11/1999	DP1007367	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
1/9/2017 1:20PM

FOLIO: 35/1007367

First Title(s): OLD SYSTEM
Prior Title(s): 243/1007363 ~~34/1007365~~

Recorded	Number	Type of Instrument	C.T. Issue
2/11/1999	DP1007367	DEPOSITED PLAN	FOLIO CREATED EDITION 1
30/5/2000	6817740	TRANSFER	EDITION 2
27/12/2001	DP1037033	DEPOSITED PLAN	
21/6/2010	AF564846	CAVEAT	
19/7/2011	DP1166890	DEPOSITED PLAN	
26/8/2011	AG458820	CHANGE OF NAME	EDITION 3
26/9/2011	AG508836	TRANSFER GRANTING EASEMENT	EDITION 4
28/5/2013	AH763682	DEPARTMENTAL DEALING	
27/3/2014	AI474238	CAVEAT	
27/6/2014	AI693708	CAVEAT	

*** END OF SEARCH ***

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97-01TE

TRANSFER
including easement

Real Property Act 1900

6817740A

Office of State Revenue use only

OFFICE OF STATE REVENUE
STAMP DUTY (N.S.W. TREASURY) P40
1996/97
DUTY $ 2.00 1ST REC Nº 150136

(A) **LAND TRANSFERRED**
Show no more than 20 References to Title.
If appropriate, specify the share transferred.

Folio Identifier 241/1007363 and Folio Identifier 35/1007367

(B) **TENEMENTS**

Servient (land burdened)	Dominant (land benefited)
241/1007363 35/1007367	STATE RAIL AUTHORITY OF NEW SOUTH WALES

(C) **LODGED BY**

L.T.O. Box	Name, Address or DX and Telephone
38W	NRALPH & CO. LEVEL 9, 99 ELIZABETH ST SYDNEY 2000 DX 347 SYDNEY FAX 9233 8645 PH 9233 8088 DEACONS REFERENCE (max. 15 characters): 38W

(D) **TRANSFEROR** STATE RAIL AUTHORITY OF NEW SOUTH WALES

(E) acknowledges receipt of the consideration of $20,131,790.00 and subject to the following

(F) **ENCUMBRANCES** 1. 2. 3. as regards the above land

(G) transfers to the transferee an estate in fee simple and the transferor — ~~grants an easement as set out in Schedule One hereto~~

(H) — reserves an easement as set out in Schedule Two hereto

(I) **TRANSFEREE**

T	NATIONAL RAIL CORPORATION LIMITED ACN 052 134 362

(J) **TENANCY:** S ALL-ON-EA.

(K) We certify this dealing correct for the purposes of the Real Property Act 1900.

DATED 11 NOV 1999

Signed in my presence by the transferor who is personally known to me.

Signature of Witness

Mr Bob Irving
Name of Witness (BLOCK LETTERS)

Central Station, Eddy Avenue SYDNEY
Address of Witness

STATE RAIL AUTHORITY OF NEW SOUTH WALES

Signature of Transferor

Signed in my presence by the transferee who is personally known to me.

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

The Common Seal of STATE RAIL AUTHORITY OF NEW SOUTH WALES was hereunto affixed in the presence of:-

AUTHORISED OFFICER

CTS → 38W.

Signature of Transferee's solicitor
Alan Anthony Bradbury

CHECKED BY (office use only)

0794LTO

INSTRUCTIONS FOR FILLING OUT THIS FORM ARE GIVEN ON PAGE 4

(L)

SCHEDULE ONE
grant of easement

Complete the Tenements panel on the front

The transferor grants

(M)

SCHEDULE TWO
reservation of easement

Complete the Tenements panel on the front

1.1 The transferor reserves for itself and RAC and their respective assigns and successors and all persons authorised by either of them the right to cause such electrolysis, noise and vibration as may arise from its or their Operations to be transmitted across and/or through the Land Burdened;

AND

For the benefit of the right reserved the Transferee as owner of the Land Burdened covenants with the Transferor and RAC their successors and assigns as follows:

(a) to waive all claims, actions, demands, proceedings or liability which it might otherwise have had against the Transferor and/or RAC or any Agent of the Transferor and/or RAC arising out of the exercise of rights under this instrument.

For the purposes of this easement "Operations" includes all activities infrastructure and works related to the operation of railway services and any such transport service which is additional to or in substitution for any railway service;

1.2 The Transferee for itself, its successors and assigns covenants with the Transferor for the benefit of the Transferor its successors and assigns that the Transferee will not without the prior written approval of the Transferor (all costs and expenses of the Transferor in connection therewith to be met by the Transferee):

(a) permit, allow or cause any additional stormwater or surface drainage to leave the Land Burdened unless such stormwater or surface drainage is substantially directed away from the rail corridor within land owned by the Transferor to the intent that there will be no adverse effect on such rail corridor;

(b) erect or allow any drainage works to be erected on the Land Burdened unless they are also approved by the Council in the Local Government area in which the Land Burdened is situate and/or by Sydney Water Corporation.

1.3 These covenants may be released varied or modified by the Transferor and Rail Access Corporation or the successors to their respective functions and duties.

1.4 In this instrument:

"Agent" means any agent, employee, servant, contractor, tenant, licensee, invitee or any other person who is within the control of a party;

"Land Burdened" means the land hereby transferred;

"RAC" means Rail Access Corporation, the statutory corporation constituted pursuant to the Transport Administration Act 1988;

"Rail Infrastructure Facilities" shall have the same meaning as in s.19A of the Transport Administration Act 1988;

"Transferee" means the registered proprietor for the time being of the Land Burdened and includes the successors and assigns of that party;

"Transferor" includes and assigns of the Transferor and any successor to the functions and duties of the Transferor herein.

Title Search

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 35/1007367

SEARCH DATE	TIME	EDITION NO	DATE
20/10/2017	10:41 AM	4	26/9/2011

LAND

LOT 35 IN DEPOSITED PLAN 1007367
AT CHULLORA
LOCAL GOVERNMENT AREA CANTERBURY-BANKSTOWN
PARISH OF LIBERTY PLAINS COUNTY OF CUMBERLAND
TITLE DIAGRAM DP1007367

FIRST SCHEDULE

ASCIANO SERVICES PTY LTD (CN AG458820)

SECOND SCHEDULE (16 NOTIFICATIONS)

* 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S) WITHIN THE PART(S) SHOWN SO INDICATED IN THE TITLE DIAGRAM

2 ~~BK 1874 NO 827 EASEMENT FOR WATER PIPELINE 6.095 METRE(S) WIDE AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM~~

3 B323814 LAND EXCLUDES MINERALS AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM

4 W212051 LAND EXCLUDES MINERALS AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM

5 DP1007363 EASEMENT FOR ELECTRICITY PURPOSES VARIABLE WIDTH AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM

6 DP1007363 EASEMENT FOR ELECTRICITY, COMMUNICATION AND SIGNALLING OVER EXISTING LINE OF CABLES AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM

7 DP1007365 EASEMENT TO DRAIN WATER 3 METRE(S) WIDE APPURTENANT TO THE LAND ABOVE DESCRIBED

~~8 DP1007367 EASEMENT TO DRAIN WATER 4 METRE(S) WIDE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM~~

~~9 DP1007367 RIGHT OF CARRIAGEWAY VARIABLE WIDTH AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM~~

~~10 DP1007367 EASEMENT TO DRAIN WATER 6 METRE(S) WIDE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM~~

~~11 DP1007367 EASEMENT TO DRAIN WATER VARIABLE WIDTH AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM~~

~~12 6817740 EASEMENT FOR ELECTROLYSIS, NOISE & VIBRATION AFFECTING THE LAND ABOVE DESCRIBED~~

13 DP1037033 EASEMENT FOR RAILWAY PURPOSES APPURTENANT TO THE LAND ABOVE DESCRIBED

END OF PAGE 1 - CONTINUED OVER

FOLIO: 35/1007367 PAGE 2

SECOND SCHEDULE (16 NOTIFICATIONS) (CONTINUED)

~~14 AG508836 EASEMENT FOR ELECTRICITY AND OTHER PURPOSES AFFECTING THE SITE DESIGNATED (E) IN DP1166890.~~

* 15 AI474238 CAVEAT BY AUSGRID

* 16 AI693708 CAVEAT BY AUSGRID

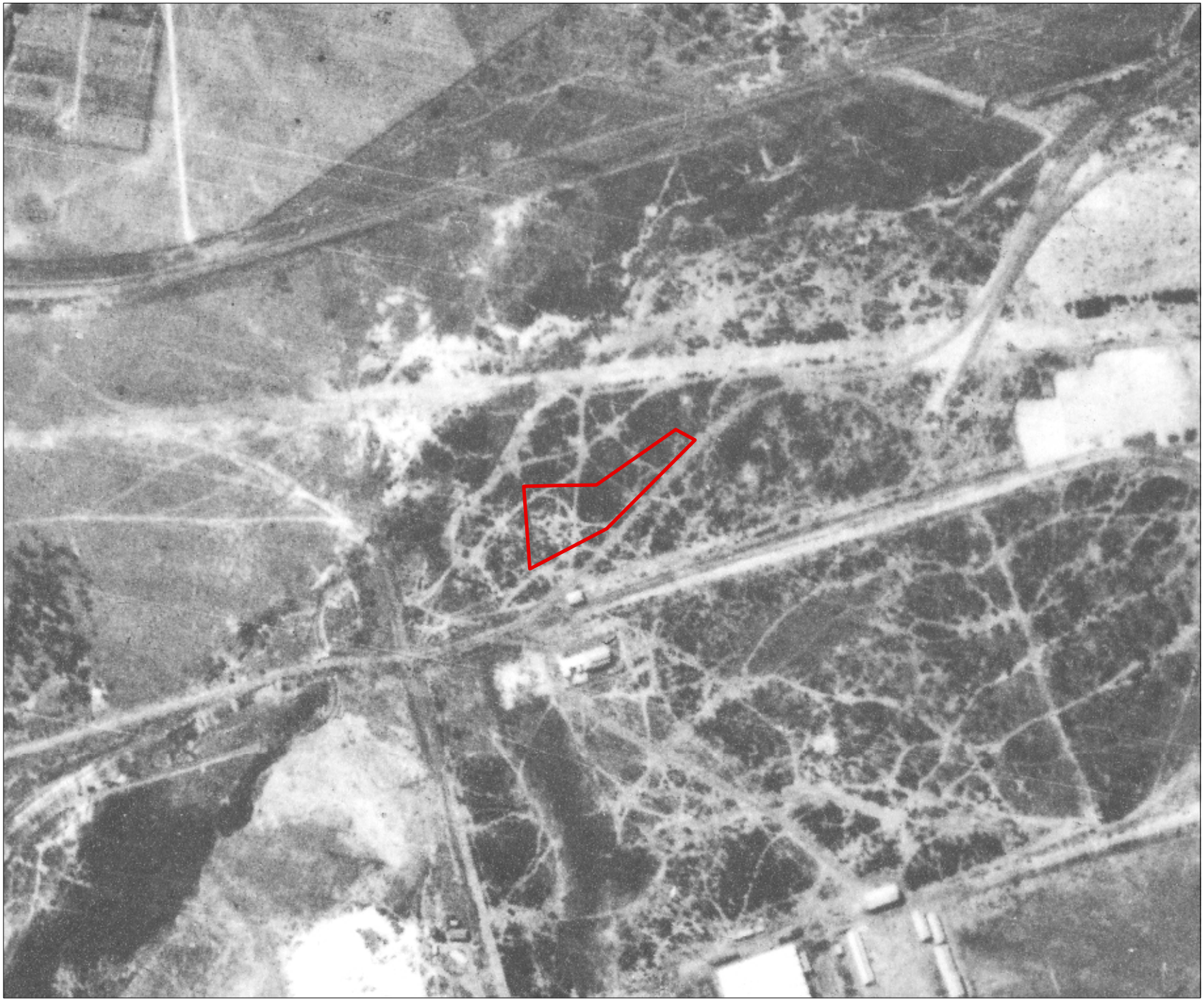
NOTATIONS

UNREGISTERED DEALINGS: DP1234798.

*** END OF SEARCH ***

* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.

Appendix F Historical Aerial Photographs



Legend:

Approximate Site Boundary

JBS&G

Job No: 54005

Client: Pacific National

Version: R01 Rev B	Date: 11-Dec-2019
Drawn By: RF	Checked By: JD

Scale 1:4,000

0 40 80

metres

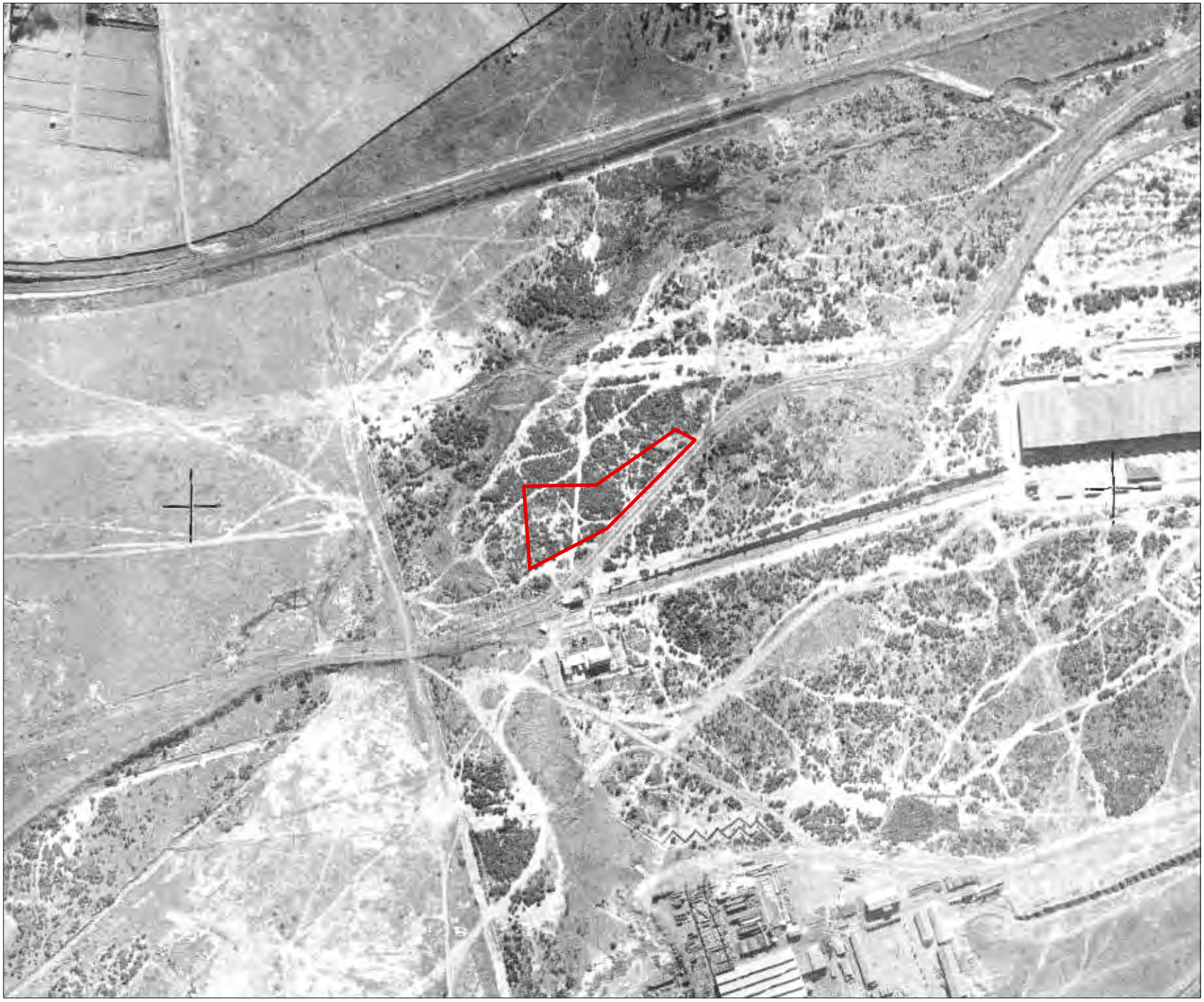
Coor. Sys. GDA 1994 MGA Zone 56

20 Dasea Street
Chullora, NSW

HISTORICAL AERIAL PHOTOGRAPH- 1930

FIGURE: 1930

File Name: 54005_1930
Reference: Spatial Services, NSW



Legend:

Approximate Site Boundary

JBS&G

Job No: 54005

Client: Pacific National

Version: R01 Rev B	Date: 11-Dec-2019
Drawn By: RF	Checked By: JD

Scale 1:4,000

0 40 80

metres

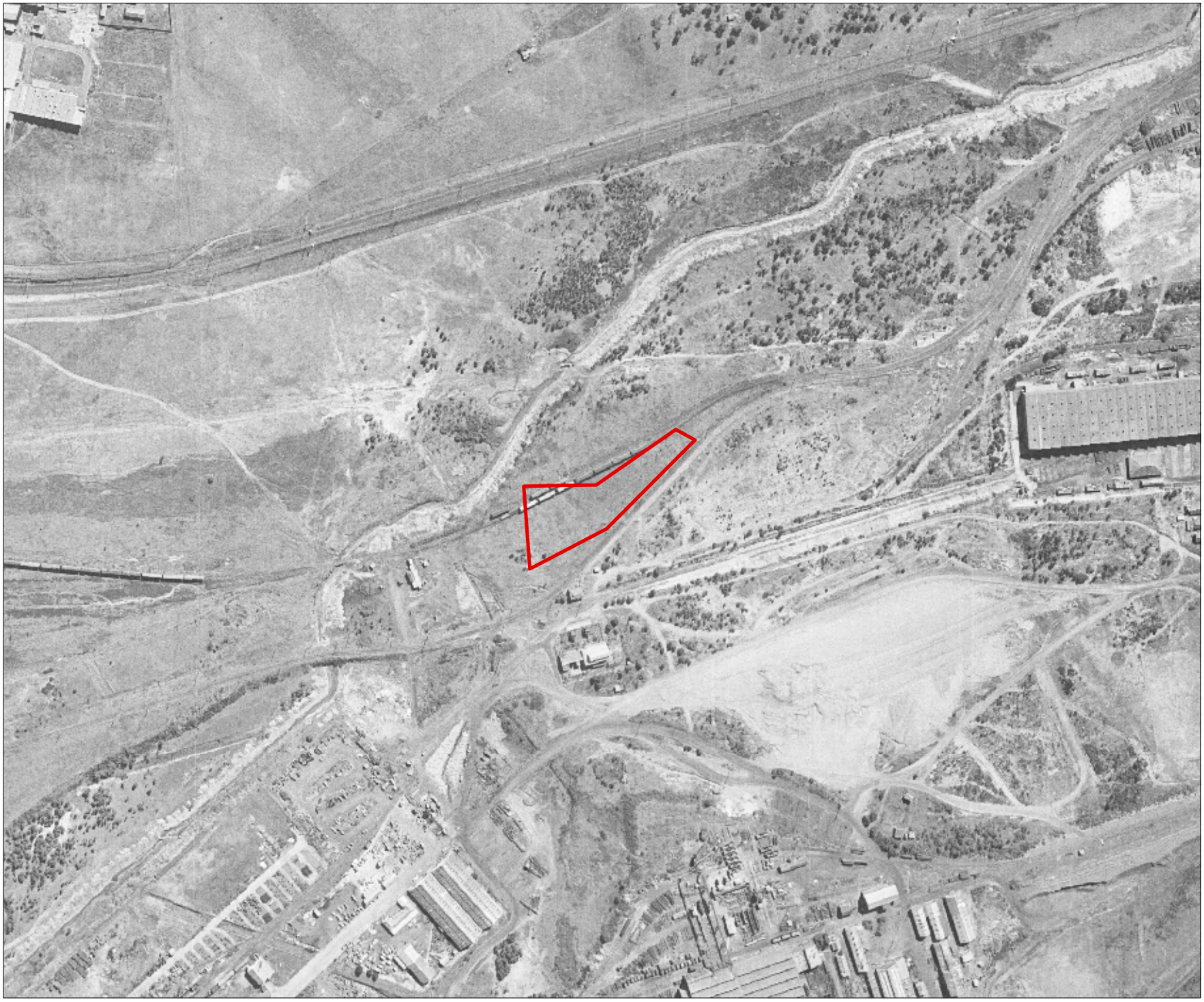
Coor. Sys. GDA 1994 MGA Zone 56

20 Dasea Street
Chullora, NSW

HISTORICAL AERIAL PHOTOGRAPH- 1943

FIGURE: 1943

File Name: 54005_1943
Reference: Six Maps - https://maps.six.nsw.gov.au



Legend:

Approximate Site Boundary

JBS&G

Job No: 54005

Client: Pacific National

Version: R01 Rev B	Date: 11-Dec-2019
Drawn By: RF	Checked By: JD

Scale 1:4,000

0 40 80

metres

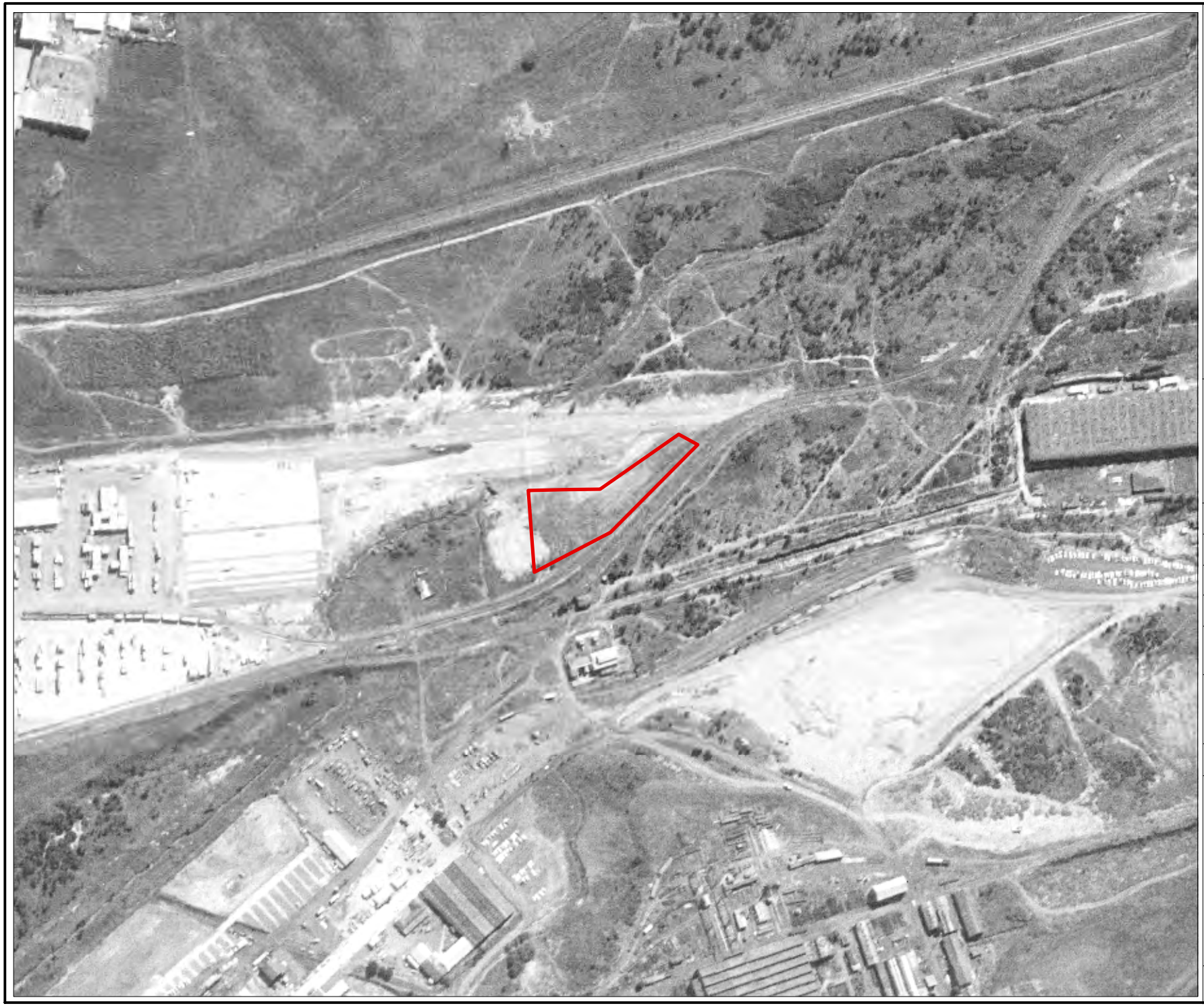
Coor. Sys. GDA 1994 MGA Zone 56

20 Dasea Street
Chullora, NSW

HISTORICAL AERIAL PHOTOGRAPH- 1965

FIGURE: 1965

File Name: 54005_1965
Reference: Spatial Services, NSW



Legend:

Approximate Site Boundary

JBS&G

Job No: 54005	
Client: Pacific National	
Version: R01 Rev B	Date: 11-Dec-2019
Drawn By: RF	Checked By: JD

Scale 1:4,000

0 40 80

metres

Coor. Sys. GDA 1994 MGA Zone 56

20 Dasea Street
Chullora, NSW

HISTORICAL AERIAL PHOTOGRAPH- 1975

FIGURE: 1975

File Name: 54005_1975
Reference: Spatial Services, NSW

Legend:

Approximate Site Boundary

JBS&G

Job No: 54005

Client: Pacific National

Version: R01 Rev B	Date: 11-Dec-2019
Drawn By: RF	Checked By: JD

Scale 1:4,000

0 40 80

metres

Coor. Sys. GDA 1994 MGA Zone 56

20 Dasea Street
Chullora, NSW

HISTORICAL AERIAL PHOTOGRAPH- 1986

FIGURE: 1986

File Name: 54005_1986
Reference: Spatial Services, NSW

Legend:

Approximate Site Boundary

JBS&G

Job No: 54005

Client: Pacific National

Version: R01 Rev B	Date: 11-Dec-2019
Drawn By: RF	Checked By: JD

Scale 1:4,000

0 40 80

metres

Coor. Sys. GDA 1994 MGA Zone 56

20 Dasea Street
Chullora, NSW

HISTORICAL AERIAL PHOTOGRAPH- 1994

FIGURE: 1994

File Name: 54005_1994
Reference: Spatial Services, NSW

Legend:

Approximate Site Boundary

JBS&G

Job No: 54005	
Client: Pacific National	
Version: R01 Rev B	Date: 11-Dec-2019
Drawn By: RF	Checked By: JD
Scale 1:4,000	

0 40 80

metres

Coor. Sys. GDA 1994 MGA Zone 56

20 Dasea Street
Chullora, NSW

HISTORICAL AERIAL PHOTOGRAPH- 2007

FIGURE: 2007

File Name: 54005_2007
Reference: Google Earth - 2007

Legend:

Approximate Site Boundary

JBS&G

Job No: 54005

Client: Pacific National

Version: R01 Rev B	Date: 11-Dec-2019
Drawn By: RF	Checked By: JD

Scale 1:4,000

0 40 80

metres

Coor. Sys. GDA 1994 MGA Zone 56

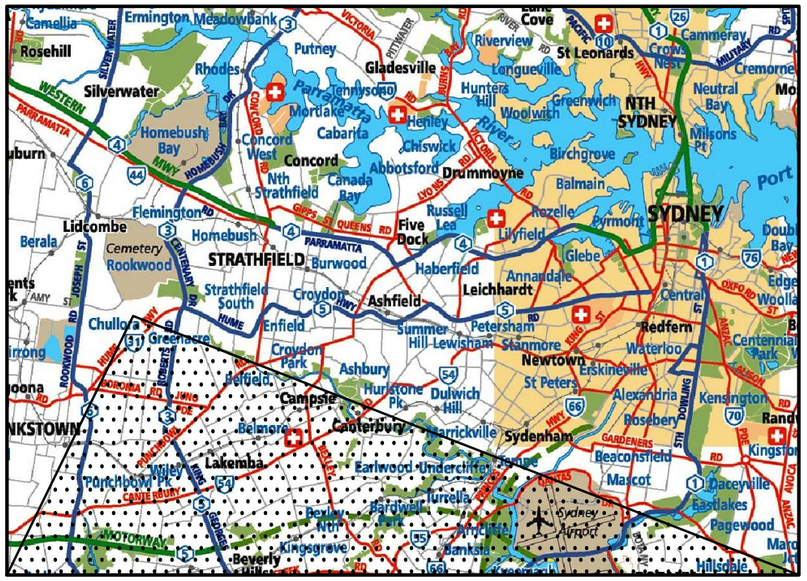
20 Dasea Street
Chullora, NSW

HISTORICAL AERIAL PHOTOGRAPH- 2017

FIGURE: 2017

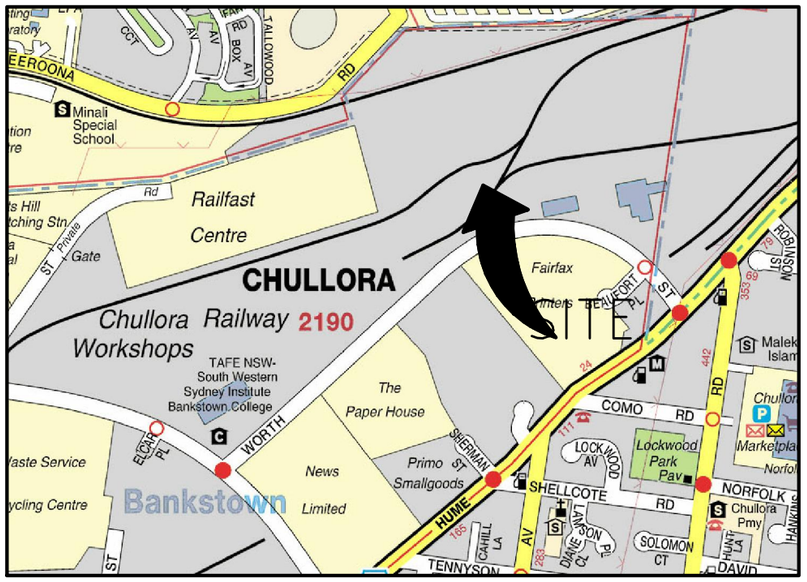
File Name: 54005_2017
Reference: Nearmap - nearmap.com.au - Imagery - 22-08-2017

Appendix G Figures and Summarised Data for Historical Sampling Locations



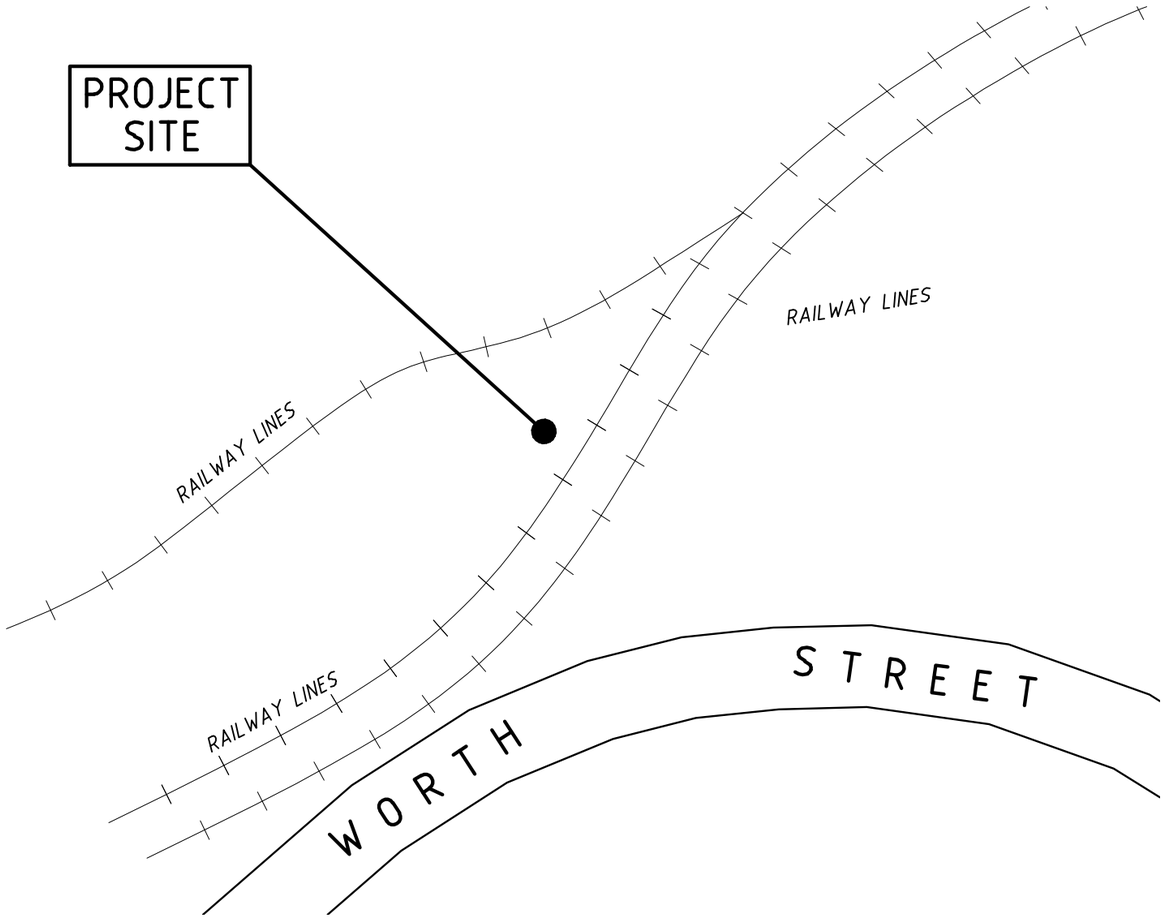
REGIONAL MAP

NOT TO SCALE



LOCALITY MAP

METRES
0 50 100 200 500
APPROXIMATE SCALE ONLY



VICINITY MAP

METRES
0 10 20 30 40 50 100
APPROXIMATE SCALE ONLY

ISSUE	DATE	AMENDMENTS	DRN	CKD
02	15.01.10	TRAIN TRAK DETAIL UPDATE	AL	MN
01	10.12.09	ORIGINAL ISSUE	REM	MG

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ABN 32 054 371 596

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FAX (03) 9593 8555

BRISBANE
TEL (07) 3426 5200
FAX (07) 3426 5299

SYDNEY
TEL (02) 9417 4499
FAX (02) 9417 2314

PERTH
TEL (08) 9227 9000
FAX (08) 9227 9009

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REGIONAL & VICINITY MAPS

ENVIRONMENTAL SITE ASSESSMENT
PACIFIC NATIONAL, CHULLORA, NSW

SHEET SIZE	DRAWN: REM	DATE: 10.12.09	CHECKED	APPROVED	FIG No:
A3	REV: 02	DWG NAME: 4109157F01			FIGURE 1

RAIL

DASEA STREET

COOKS RIVER 100m

PACIFIC NATIONAL

CONCRETE TURNING CIRCLE

MOBILE TANK/VEHICLE REFUELLING AREA

BUNDING

TRADE WASTE SYSTEM

SITE BOUNDRY

RUNOFF DRAIN

DRAINAGE CHANNEL

SB025/MW001

SB015

SB014

SB024

SB023

SB022

SB022A

SB021

SB021A

SB020

SB019

SB013

SB011

SB001

NEW AST (105,000L)

OLD AST

SB004

SB003

SB002

SB007

SB006

TANK FILL POINT

FUEL DISPENSER

CONTRACTOR STORE SHED

OIL STORE SHED

LOCOMOTIVE REFUELLING POINTS

DRIP TRAYS

DRIP TRAYS

RAIL

RAIL

RAIL

RAIL CORP

UNSEALED ROAD

DISTURBED ROCKY SHRUBLAND

LEGEND

- INDICATES BUILDINGS
- INVESTIGATION AREA
- SITE FENCE
- SB###/MW### SOIL BORING/MONITORING WELL
- SB### SOIL BORING
- GRAVEL BALLAST
- SITE BOUNDRY
- SHRUB
- DRAINAGE CHANNEL

METRES 0 2.0 4.0 6.0 8.0 16.0

APPROXIMATE SCALE ONLY

ISSUE	DATE	AMENDMENTS	DRN	CKD
02	15.01.10	UPDATE BOUNDRY DETAILS	AL	MN
01	10.12.09	ORIGINAL ISSUE	REM	MG

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BRISBANE TEL (07) 3426 5200 FAX (07) 3426 5299

SYDNEY TEL (02) 9417 4499 FAX (02) 9417 2314

PERTH TEL (08) 9227 9000 FAX (08) 9227 9009

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SITE MAP & SOIL BORING LOCATIONS

ENVIRONMENTAL SITE ASSESSMENT

PACIFIC NATIONAL, CHULLORA, NSW

SHEET SIZE	DRAWN: REM	DATE: 10.12.09	CHECKED	APPROVED	FIG No:
A3	REV: 02	DWG NAME: 4109157F02			FIGURE 2

TABLE 1
SOIL ANALYTICAL SUMMARY
BTEX, Metals, PAHS and TPH
Pacific National Freight Terminal, Chullora

OTeK Practical Environmental Solutions

			BTEX						TPH					PAHs																		Metals							
			Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Xylene Total	TPH C 6 - C 9 Fraction	TPH C10 - C14 Fraction	TPH C15 - C28 Fraction	TPH C29-C36 Fraction	TPH+C10 - C36 (Sum of total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Total PAHs	Lead	Arsenic	Cadmium	Chromium (III+VI)	Copper	Mercury	Nickel	Zinc
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR			0.2	0.5	0.5	0.5	0.5		10	50	100	100	50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		5	5	1	2	5	0.1	2	5
NSW EPA 1994 Threshold concentrations			**1**	**3.1**	**1.4**	**N/A**	**N/A**	**14**	**65**	**N/A**	**N/A**	**N/A**	**1000 (A)**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**20**	**300**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
NEPM 1999 EIL			**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**600**	**20**	**3**	**401**	**100**	**1**	**60**	**200**
NEPM 1999 HIL F			**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**5**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**100**	**1500**	**500**	**100**	**120500**	**5000**	**75**	**3000**	**35000**
Field ID	**Sample Depth**	**Sample Date**																																					
SB001	0.2	30/11/2009	-	-	-	-	-	-	-	<50	**610**	**3100**	**3710**	<0.5	<0.5	<0.5	<0.5	**0.7**	**0.8**	**0.8**	<0.5	<0.5	<0.5	**1.2**	<0.5	**0.6**	<0.5	**0.6**	**1.3**	**5.4**	-	-	-	-	-	-	-	-
SB001	0.5	30/11/2009	-	-	-	-	-	-	-	<50	**180**	**700**	**880**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	-	-	-	-	-	-	-	-
SB002	0.2	20/11/2009	-	-	-	-	-	-	-	<50	<100	**110**	**110**	<0.5	<0.5	<0.5	**0.5**	**0.5**	**0.9**	**0.9**	<0.5	<0.5	<0.5	**1**	<0.5	<0.5	<0.5	<0.5	**0.9**	**4.7**	-	-	-	-	-	-	-	-
SB003	0.5	20/11/2009	-	-	-	-	-	-	-	<50	<100	**180**	**180**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**0.6**	<0.5	<0.5	<0.5	<0.5	<0.5	**0.6**	-	-	-	-	-	-	-	-
SB003	0.7	20/11/2009	-	-	-	-	-	-	-	<50	**150**	**180**	**330**	<0.5	<0.5	<0.5	**0.7**	<0.5	**0.6**	<0.5	<0.5	**0.6**	<0.5	**1.4**	<0.5	<0.5	<0.5	**1.1**	**1.1**	**5.5**	-	-	-	-	-	-	-	-
SB004	0.2	20/11/2009	-	-	-	-	-	-	-	<50	**400**	<100	**400**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**0.6**	<0.5	<0.5	<0.5	**0.6**	<0.5	<0.5	<0.5	<0.5	**0.5**	**1.7**	-	-	-	-	-	-	-	-
SB004	0.4	20/11/2009	-	-	-	-	-	-	-	**150**	**1000**	<100	**1150**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**0.6**	<0.5	**0.6**	-	-	-	-	-	-	-	-
SB006	0.2	30/11/2009	-	-	-	-	-	-	-	<50	**440**	**610**	**1050**	<0.5	<0.5	**1.2**	**5.8**	**6.6**	**8.2**	**4**	**1.7**	**5.2**	**0.8**	**16.8**	<0.5	**3.3**	<0.5	**4.3**	**15.4**	**73.3**	-	-	-	-	-	-	-	-
SB006	0.5	30/11/2009	-	-	-	-	-	-	-	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**0.7**	<0.5	<0.5	<0.5	<0.5	**0.7**	**1.4**	-	-	-	-	-	-	-	-
SB007	0.2	30/11/2009	-	-	-	-	-	-	-	**440**	**1820**	<100	**2260**	<0.5	<0.5	<0.5	**0.8**	**0.8**	**0.9**	**0.5**	<0.5	**0.7**	<0.5	**2.7**	**2.9**	<0.5	**0.8**	**5.2**	**3**	**18.3**	-	-	-	-	-	-	-	-
SB007	0.5	30/11/2009	-	-	-	-	-	-	-	**470**	**1900**	<100	**2370**	<0.5	<0.5	<0.5	**0.5**	<0.5	**0.6**	<0.5	<0.5	<0.5	<0.5	**1.6**	<0.5	<0.5	<0.5	**3**	**1.8**	**7.5**	-	-	-	-	-	-	-	-
SB011	0.5	30/11/2009	-	-	-	-	-	-	-	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	-	-	-	-	-	-	-	-
SB011	1	30/11/2009	-	-	-	-	-	-	-	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	-	-	-	-	-	-	-	-
SB013	0.5	30/11/2009	<0.2	<0.5	<0.5	<0.5	<0.5	<1	<10	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	**18**	<5	<1	**8**	**41**	<0.1	**42**	**125**
SB013	1	30/11/2009	<0.2	<0.5	<0.5	<0.5	<0.5	<1	<10	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	**10**	**11**	<1	**18**	**21**	<0.1	**3**	**12**
SB013	1.5	30/11/2009	-	-	-	-	-	-	-	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	-	-	-	-	-	-	-	-
SB014	0.2	20/11/2009	-	-	-	-	-	-	-	<50	**210**	<100	**210**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	-	-	-	-	-	-	-	-
SB014	0.5	20/11/2009	-	-	-	-	-	-	-	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	-	-	-	-	-	-	-	-
SB015	0.2	20/11/2009	-	-	-	-	-	-	-	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	-	-	-	-	-	-	-	-
SB015	0.5	20/11/2009	-	-	-	-	-	-	-	<50	**290**	**120**	**410**	<0.5	<0.5	<0.5	**0.6**	<0.5	<0.5	<0.5	<0.5	**0.6**	<0.5	**1.5**	<0.5	<0.5	<0.5	**1.4**	**0.9**	**5**	-	-	-	-	-	-	-	-
SB019	0.5	30/11/2009	-	-	-	-	-	-	-	**70**	**330**	<100	**400**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	-	-	-	-	-	-	-	-
SB019	1	30/11/2009	-	-	-	-	-	-	-	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	-	-	-	-	-	-	-	-
SB020	0.5	30/11/2009	<0.2	<0.5	<0.5	<0.5	<0.5	<1	<10	**200**	**900**	<100	**1100**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	**14**	**10**	<1	**22**	**31**	<0.1	**23**	**86**
SB020	1	30/11/2009	<0.2	<0.5	<0.5	<0.5	<0.5	<1	<10	**60**	**280**	<100	**340**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	**12**	**15**	<1	**20**	**34**	<0.1	**2**	**17**
SB021A	0.2	20/11/2009	<0.2	<0.5	<0.5	<0.5	<0.5	<1	<10	**520**	**2080**	**400**	**3000**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		**24**	**20**	<1	**31**	**18**	<0.1	**3**	**21**
SB021A	0.5	20/11/2009	<0.2	<0.5	<0.5	<0.5	<0.5	<1	<10	<50	<100	<100	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		**10**	**15**	<1	**21**	**32**	<0.1	<2	**9**
SB022A	0.5	20/11/2009	-	-	-	-	-	-	-	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	-	-	-	-	-	-	-	-
SB023	0.2	19/11/2009	-	-	-	-	-	-	-	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	-	-	-	-	-	-	-	-
SB023	0.5	19/11/2009	-	-	-	-	-	-	-	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	-	-	-	-	-	-	-	-
SB024	**0.2**	**19/11/2009**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
SB024	0.5	19/11/2009	-	-	-	-	-	-	-	<50	<100	<100	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	-	-	-	-	-	-	-	-
SB025	0.5	19/11/2009	-	-	-	-	-	-	-	<50	**220**	<100	**220**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**1.1**	<0.5	<0.5	<0.5	**1.5**	**0.6**	**3.2**	-	-	-	-	-	-	-	-
SB025	3	19/11/2009	-	-	-	-	-	-	-	**130**	**440**	<100	**570**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	-	-	-	-	-	-	-	-
SB025	8	19/11/2009	-	-	-	-	-	-	-	<50	**120**	<100	**120**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	-	-	-	-	-	-	-	-
SB025	10	19/11/2009	-	-	-	-	-	-	-	<50	**290**	**120**	**410**	<0.5	<0.5	<0.5	**0.5**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**1.2**	<0.5	<0.5	<0.5	**1.4**	**0.7**	**3.8**	-	-	-	-	-	-	-	-

Notes:
- Sample ID: SB0##/#.# denotes a discrete soil sample obtained from a soil boring at a depth of #.#m.
- < # indicates analyte not detected above laboratory Limit Of Reporting (LOR).
- BTEX = Benzene, Toluene, Ethyl-Benzene and Xylenes, TPH = Total Petroleum Hydrocarbons
- "-" = Sample analysis not requested.
- N/A = criteria not specified.
- mg/kg indicates milligrams of analyte per kilogram of soil.
- NSW EPA (1994) from Table 3 Threshold concentrations for sensitive land use- soils, p10. of the NSW EPA Guidelines for Assessing Service Station Sites. Where two criteria are listed for an analyte the more sensitive threshold concentration has been selected.C54
- NEPM health-based investigation levels (HILs) obtained from National Environmental Protection (Assessment of Site Contamination) Measure, December 1999, Schedule B(1).
- NEPM interim urban ecological investigation levels (EILs) obtained from National Environmental Protection (Assessment of Site Contamination) Measure, December 1999, Schedule B(1). EILs are based on considerations of phytotoxicity, ANZECC B levels, and soil survey data from urban residential properties in four Australian cities.
- Blue shading indicates concentration exceeds NSW EPA (1994) threshold concentrations , yellow shading indicates concentration exceeds NEPM 1999 EIL threshold concentrations , red shading indicates concentration exceeds NEPM HIL A threshold concentrations.
- (A) NSW EPA (1994) threshold for TPH C10-C36 is actually based on C10-C40 criteiron. It is likely this criterion is too sensitive for the C10-C36 fraction.

TABLE 2
GROUNDWATER ANALYTICAL SUMMARY
TPH and PAHs
Pacific National Sydney Freight Terminal, Chullora

		TPH				PAH															
		TPH C10 - C14 Fraction	TPH C15 - C28 Fraction	TPH C29-C36 Fraction	TPH+C10 - C36 (Sum of total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL		50	100	50	50	1	1	1	1	0.5	1	1	1	1	1	1	1	1	1	1	1
ANZECC 2000 FW 95%																			**16**		
Well ID	**Sampled_Date-Time**																				
MW001	2/12/2009	<50	<100	<50	<50	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Notes:
- Sample ID: MW### denotes a groundwater sample obtained from monitoring well MW###.
- < # indicates analyte not detected above laboratory Limit of Reporting (LOR).
- NC = not calculable - no individual fractions of the total parameters were detected.
- N/A = criteria not specified.
- µg/L indicates micrograms of analyte per litre of water.
- Highlighted values indicate concentrations exceeding Australian and New Zealand Guidelines for Fresh Water Quality (ANZECC 2000).
- Trigger values apply to typical slightly-moderately disturbed systems.

Appendix H Laboratory Certificates of Analysis

eurofins | mgt

30 years Testing For Life 1987–2017
Celebrating 30 years Testing and Protecting Human Health

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

JBS & G Australia (NSW) P/L
Level 1, 50 Margaret St
Sydney
NSW 2000

Attention: **Chris Bielby**

Report **569649-S**
Project name CHULLORA
Project ID 54005
Received Date Oct 26, 2017

Client Sample ID			**B1 0.5-0.6**	**B1 1.0-1.1**	**B2 0.5-0.6**	**B2 1.0-1.1**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S17-Oc30685**	**S17-Oc30686**	**S17-Oc30688**	**S17-Oc30689**
Date Sampled			**Oct 22, 2017**	**Oct 22, 2017**	**Oct 22, 2017**	**Oct 22, 2017**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	1800	< 20	610	< 20
TRH C15-C28	50	mg/kg	7800	< 50	3800	56
TRH C29-C36	50	mg/kg	240	< 50	260	< 50
TRH C10-36 (Total)	50	mg/kg	9840	< 50	4670	56
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	79	72	71	60
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	21	< 20	< 20	< 20
TRH C6-C10	20	mg/kg	21	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	3800	< 50	1500	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	3800	< 50	1500	< 50
TRH >C16-C34	100	mg/kg	5100	< 100	2500	< 100
TRH >C34-C40	100	mg/kg	180	< 100	190	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	0.6	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			B1 0.5-0.6	B1 1.0-1.1	B2 0.5-0.6	B2 1.0-1.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Oc30685	S17-Oc30686	S17-Oc30688	S17-Oc30689
Date Sampled			Oct 22, 2017	Oct 22, 2017	Oct 22, 2017	Oct 22, 2017
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	0.8	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 1	< 0.5	1.0	< 0.5
Total PAH*	0.5	mg/kg	< 1	< 0.5	2.4	< 0.5
2-Fluorobiphenyl (surr.)	1	%	69	72	63	69
p-Terphenyl-d14 (surr.)	1	%	87	86	80	90
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	< 0.1	-
4.4'-DDD	0.05	mg/kg	< 0.05	-	< 0.05	-
4.4'-DDE	0.05	mg/kg	< 0.05	-	< 0.05	-
4.4'-DDT	0.05	mg/kg	< 0.05	-	< 0.05	-
a-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Aldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
b-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
d-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Dieldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan I	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan II	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin ketone	0.05	mg/kg	< 0.05	-	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	< 0.05	-
Methoxychlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Toxaphene	1	mg/kg	< 1	-	< 1	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	< 0.05	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-	< 0.05	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	-	< 0.1	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	73	-	65	-
Tetrachloro-m-xylene (surr.)	1	%	57	-	68	-
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1221	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1232	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1242	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1248	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1254	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1260	0.1	mg/kg	< 0.1	-	< 0.1	-
Total PCB*	0.1	mg/kg	< 0.1	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	73	-	65	-
Tetrachloro-m-xylene (surr.)	1	%	57	-	68	-

Client Sample ID			B1 0.5-0.6	B1 1.0-1.1	B2 0.5-0.6	B2 1.0-1.1
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S17-Oc30685**	**S17-Oc30686**	**S17-Oc30688**	**S17-Oc30689**
Date Sampled			**Oct 22, 2017**	**Oct 22, 2017**	**Oct 22, 2017**	**Oct 22, 2017**
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	8.3	-	6.2	-
Cadmium	0.4	mg/kg	< 0.4	-	< 0.4	-
Chromium	5	mg/kg	8.6	-	7.0	-
Copper	5	mg/kg	72	-	72	-
Lead	5	mg/kg	9.4	-	13	-
Mercury	0.1	mg/kg	< 0.1	-	< 0.1	-
Nickel	5	mg/kg	40	-	13	-
Zinc	5	mg/kg	90	-	66	-
% Moisture	1	%	11	20	6.5	20

Client Sample ID			B3 0.0-0.1	B3 1.0-1.1	B4 1.5-1.6	B4 2.0-2.1
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S17-Oc30691**	**S17-Oc30692**	**S17-Oc30694**	**S17-Oc30695**
Date Sampled			**Oct 22, 2017**	**Oct 22, 2017**	**Oct 22, 2017**	**Oct 22, 2017**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	34	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	75	73
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	109	73
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	67	80	71	68
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	63	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	63	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			B3 0.0-0.1	B3 1.0-1.1	B4 1.5-1.6	B4 2.0-2.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Oc30691	S17-Oc30692	S17-Oc30694	S17-Oc30695
Date Sampled			Oct 22, 2017	Oct 22, 2017	Oct 22, 2017	Oct 22, 2017
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	72	77	69	73
p-Terphenyl-d14 (surr.)	1	%	100	101	88	87
% Moisture	1	%	7.7	21	18	19

Client Sample ID			B5 0.0-0.1	B5 1.0-1.1	B6 0.5-0.6	B6 2.0-2.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Oc30696	S17-Oc30697	S17-Oc30699	S17-Oc30700
Date Sampled			Oct 22, 2017	Oct 22, 2017	Oct 22, 2017	Oct 22, 2017
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	140	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	240	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	380	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	73	68	71	74
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	300	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	190	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	4.0	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	4.0	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	4.0	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			B5 0.0-0.1	B5 1.0-1.1	B6 0.5-0.6	B6 2.0-2.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Oc30696	S17-Oc30697	S17-Oc30699	S17-Oc30700
Date Sampled			Oct 22, 2017	Oct 22, 2017	Oct 22, 2017	Oct 22, 2017
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	1.2	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	2.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	1.8	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	3.3	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	2.2	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	2.0	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	0.7	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	6.1	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	2.0	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	1.2	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	5.8	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	28.8	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	59	63	63	68
p-Terphenyl-d14 (surr.)	1	%	70	78	80	92
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	< 0.1	-	< 0.1
4.4'-DDD	0.05	mg/kg	-	< 0.05	-	< 0.05
4.4'-DDE	0.05	mg/kg	-	< 0.05	-	< 0.05
4.4'-DDT	0.05	mg/kg	-	< 0.05	-	< 0.05
a-BHC	0.05	mg/kg	-	< 0.05	-	< 0.05
Aldrin	0.05	mg/kg	-	< 0.05	-	< 0.05
b-BHC	0.05	mg/kg	-	< 0.05	-	< 0.05
d-BHC	0.05	mg/kg	-	< 0.05	-	< 0.05
Dieldrin	0.05	mg/kg	-	< 0.05	-	< 0.05
Endosulfan I	0.05	mg/kg	-	< 0.05	-	< 0.05
Endosulfan II	0.05	mg/kg	-	< 0.05	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	-	< 0.05
Endrin	0.05	mg/kg	-	< 0.05	-	< 0.05
Endrin aldehyde	0.05	mg/kg	-	< 0.05	-	< 0.05
Endrin ketone	0.05	mg/kg	-	< 0.05	-	< 0.05
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	-	< 0.05
Heptachlor	0.05	mg/kg	-	< 0.05	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	-	< 0.05
Methoxychlor	0.05	mg/kg	-	< 0.05	-	< 0.05
Toxaphene	1	mg/kg	-	< 1	-	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	< 0.05	-	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	< 0.05	-	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	< 0.1	-	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	< 0.1	-	< 0.1
Dibutylchlorendate (surr.)	1	%	-	81	-	82
Tetrachloro-m-xylene (surr.)	1	%	-	79	-	79

Client Sample ID			B5 0.0-0.1	B5 1.0-1.1	B6 0.5-0.6	B6 2.0-2.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Oc30696	S17-Oc30697	S17-Oc30699	S17-Oc30700
Date Sampled			Oct 22, 2017	Oct 22, 2017	Oct 22, 2017	Oct 22, 2017
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	< 0.1	-	< 0.1
Aroclor-1221	0.1	mg/kg	-	< 0.1	-	< 0.1
Aroclor-1232	0.1	mg/kg	-	< 0.1	-	< 0.1
Aroclor-1242	0.1	mg/kg	-	< 0.1	-	< 0.1
Aroclor-1248	0.1	mg/kg	-	< 0.1	-	< 0.1
Aroclor-1254	0.1	mg/kg	-	< 0.1	-	< 0.1
Aroclor-1260	0.1	mg/kg	-	< 0.1	-	< 0.1
Total PCB*	0.1	mg/kg	-	< 0.1	-	< 0.1
Dibutylchlorendate (surr.)	1	%	-	81	-	82
Tetrachloro-m-xylene (surr.)	1	%	-	79	-	79
Heavy Metals						
Arsenic	2	mg/kg	-	8.4	-	10
Cadmium	0.4	mg/kg	-	< 0.4	-	< 0.4
Chromium	5	mg/kg	-	18	-	20
Copper	5	mg/kg	-	23	-	34
Lead	5	mg/kg	-	18	-	17
Mercury	0.1	mg/kg	-	< 0.1	-	< 0.1
Nickel	5	mg/kg	-	5.6	-	7.0
Zinc	5	mg/kg	-	42	-	44
% Moisture	1	%	4.3	20	18	20

Client Sample ID			B7 0.5-0.6	B7 2.0-2.1	B8 0.0-0.1	B8 1.0-1.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Oc30702	S17-Oc30703	S17-Oc30704	S17-Oc30705
Date Sampled			Oct 22, 2017	Oct 22, 2017	Oct 22, 2017	Oct 22, 2017
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	190	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	51	110	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	241	110	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	70	59	69	107
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	190	100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	140	< 100

Client Sample ID			B7 0.5-0.6	B7 2.0-2.1	B8 0.0-0.1	B8 1.0-1.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Oc30702	S17-Oc30703	S17-Oc30704	S17-Oc30705
Date Sampled			Oct 22, 2017	Oct 22, 2017	Oct 22, 2017	Oct 22, 2017
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	0.9	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	1.1	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.4	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	0.6	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	0.6	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	0.8	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	1.1	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	0.6	< 0.5
Chrysene	0.5	mg/kg	< 0.5	0.6	0.7	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	1.3	1.3	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	0.8	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	1.7	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	0.8	1.2	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	4.4	7.7	< 0.5
2-Fluorobiphenyl (surr.)	1	%	63	88	94	96
p-Terphenyl-d14 (surr.)	1	%	76	79	88	91
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	-	-	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	-	-	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	-	-	< 0.05
a-BHC	0.05	mg/kg	< 0.05	-	-	< 0.05
Aldrin	0.05	mg/kg	< 0.05	-	-	< 0.05
b-BHC	0.05	mg/kg	< 0.05	-	-	< 0.05
d-BHC	0.05	mg/kg	< 0.05	-	-	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	-	-	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	-	-	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	-	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	-	< 0.05
Endrin	0.05	mg/kg	< 0.05	-	-	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	-	-	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	-	-	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	-	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	-	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	-	-	< 0.05
Toxaphene	1	mg/kg	< 1	-	-	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	-	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-	-	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	-	-	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	-	-	< 0.1
Dibutylchlorendate (surr.)	1	%	69	-	-	82
Tetrachloro-m-xylene (surr.)	1	%	65	-	-	78

Client Sample ID			B7 0.5-0.6	B7 2.0-2.1	B8 0.0-0.1	B8 1.0-1.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Oc30702	S17-Oc30703	S17-Oc30704	S17-Oc30705
Date Sampled			Oct 22, 2017	Oct 22, 2017	Oct 22, 2017	Oct 22, 2017
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	-	-	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	-	-	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	-	-	< 0.1
Dibutylchlorendate (surr.)	1	%	69	-	-	82
Tetrachloro-m-xylene (surr.)	1	%	65	-	-	78
Heavy Metals						
Arsenic	2	mg/kg	10	-	-	3.7
Cadmium	0.4	mg/kg	< 0.4	-	-	< 0.4
Chromium	5	mg/kg	18	-	-	5.1
Copper	5	mg/kg	41	-	-	39
Lead	5	mg/kg	22	-	-	12
Mercury	0.1	mg/kg	0.2	-	-	< 0.1
Nickel	5	mg/kg	30	-	-	11
Zinc	5	mg/kg	69	-	-	23
% Moisture	1	%	9.7	16	6.8	20

Client Sample ID			B9 0.5-0.6	B9 3.0-3.1	B10 1.0-1.1	B10 3.0-3.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Oc30707	S17-Oc30708	S17-Oc30710	S17-Oc30711
Date Sampled			Oct 22, 2017	Oct 22, 2017	Oct 22, 2017	Oct 22, 2017
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	72	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	280	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	352	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	60	54	57	57
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	260	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	350	< 100	< 100	< 100

Client Sample ID			B9 0.5-0.6	B9 3.0-3.1	B10 1.0-1.1	B10 3.0-3.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Oc30707	S17-Oc30708	S17-Oc30710	S17-Oc30711
Date Sampled			Oct 22, 2017	Oct 22, 2017	Oct 22, 2017	Oct 22, 2017
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	3.8	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	3.8	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	3.8	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	1.9	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	2.1	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	2.9	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	2.7	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	1.7	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	2.0	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	0.8	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	3.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	2.1	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	0.6	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	3.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	23.8	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	85	96	92	93
p-Terphenyl-d14 (surr.)	1	%	79	87	85	90
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	< 0.1	< 0.1	-
4.4'-DDD	0.05	mg/kg	-	< 0.05	< 0.05	-
4.4'-DDE	0.05	mg/kg	-	< 0.05	< 0.05	-
4.4'-DDT	0.05	mg/kg	-	< 0.05	< 0.05	-
a-BHC	0.05	mg/kg	-	< 0.05	< 0.05	-
Aldrin	0.05	mg/kg	-	< 0.05	< 0.05	-
b-BHC	0.05	mg/kg	-	< 0.05	< 0.05	-
d-BHC	0.05	mg/kg	-	< 0.05	< 0.05	-
Dieldrin	0.05	mg/kg	-	< 0.05	< 0.05	-
Endosulfan I	0.05	mg/kg	-	< 0.05	< 0.05	-
Endosulfan II	0.05	mg/kg	-	< 0.05	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	< 0.05	-
Endrin	0.05	mg/kg	-	< 0.05	< 0.05	-
Endrin aldehyde	0.05	mg/kg	-	< 0.05	< 0.05	-
Endrin ketone	0.05	mg/kg	-	< 0.05	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	< 0.05	-
Heptachlor	0.05	mg/kg	-	< 0.05	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	< 0.05	-
Methoxychlor	0.05	mg/kg	-	< 0.05	< 0.05	-
Toxaphene	1	mg/kg	-	< 1	< 1	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	< 0.05	< 0.05	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	< 0.05	< 0.05	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	< 0.1	< 0.1	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	< 0.1	< 0.1	-
Dibutylchlorendate (surr.)	1	%	-	77	75	-
Tetrachloro-m-xylene (surr.)	1	%	-	72	75	-

Client Sample ID			B9 0.5-0.6	B9 3.0-3.1	B10 1.0-1.1	B10 3.0-3.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Oc30707	S17-Oc30708	S17-Oc30710	S17-Oc30711
Date Sampled			Oct 22, 2017	Oct 22, 2017	Oct 22, 2017	Oct 22, 2017
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	< 0.1	< 0.1	-
Aroclor-1221	0.1	mg/kg	-	< 0.1	< 0.1	-
Aroclor-1232	0.1	mg/kg	-	< 0.1	< 0.1	-
Aroclor-1242	0.1	mg/kg	-	< 0.1	< 0.1	-
Aroclor-1248	0.1	mg/kg	-	< 0.1	< 0.1	-
Aroclor-1254	0.1	mg/kg	-	< 0.1	< 0.1	-
Aroclor-1260	0.1	mg/kg	-	< 0.1	< 0.1	-
Total PCB*	0.1	mg/kg	-	< 0.1	< 0.1	-
Dibutylchlorendate (surr.)	1	%	-	77	75	-
Tetrachloro-m-xylene (surr.)	1	%	-	72	75	-
Heavy Metals						
Arsenic	2	mg/kg	-	19	21	-
Cadmium	0.4	mg/kg	-	0.4	0.4	-
Chromium	5	mg/kg	-	31	40	-
Copper	5	mg/kg	-	33	56	-
Lead	5	mg/kg	-	37	52	-
Mercury	0.1	mg/kg	-	< 0.1	< 0.1	-
Nickel	5	mg/kg	-	11	43	-
Zinc	5	mg/kg	-	60	180	-
% Moisture	1	%	4.1	18	12	18

Client Sample ID			QC01	B11 0.2-0.3	B11 1.0-1.1	B12 0.2-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Oc30713	S17-Oc30715	S17-Oc30716	S17-Oc30717
Date Sampled			Oct 22, 2017	Oct 22, 2017	Oct 22, 2017	Oct 22, 2017
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	360	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	830	< 50
TRH C29-C36	50	mg/kg	< 50	140	< 50	130
TRH C10-36 (Total)	50	mg/kg	< 50	140	1190	130
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	55	60	57	61
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	580	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	580	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	450	< 100
TRH >C34-C40	100	mg/kg	< 100	230	< 100	200

Client Sample ID			QC01	B11 0.2-0.3	B11 1.0-1.1	B12 0.2-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S17-Oc30713	S17-Oc30715	S17-Oc30716	S17-Oc30717
Date Sampled			Oct 22, 2017	Oct 22, 2017	Oct 22, 2017	Oct 22, 2017
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.6
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.9
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.8
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.7
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.1
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.1
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	5.2
2-Fluorobiphenyl (surr.)	1	%	88	87	91	83
p-Terphenyl-d14 (surr.)	1	%	85	82	86	79
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	< 0.1	-
4.4'-DDD	0.05	mg/kg	< 0.05	-	< 0.05	-
4.4'-DDE	0.05	mg/kg	< 0.05	-	< 0.05	-
4.4'-DDT	0.05	mg/kg	< 0.05	-	< 0.05	-
a-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Aldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
b-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
d-BHC	0.05	mg/kg	< 0.05	-	< 0.05	-
Dieldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan I	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan II	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin ketone	0.05	mg/kg	< 0.05	-	< 0.05	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	< 0.05	-
Methoxychlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Toxaphene	1	mg/kg	< 1	-	< 1	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	< 0.05	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-	< 0.05	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	-	< 0.1	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	73	-	78	-
Tetrachloro-m-xylene (surr.)	1	%	71	-	62	-

Client Sample ID			QC01	B11 0.2-0.3	B11 1.0-1.1	B12 0.2-0.3
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S17-Oc30713**	**S17-Oc30715**	**S17-Oc30716**	**S17-Oc30717**
Date Sampled			**Oct 22, 2017**	**Oct 22, 2017**	**Oct 22, 2017**	**Oct 22, 2017**
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1221	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1232	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1242	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1248	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1254	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1260	0.1	mg/kg	< 0.1	-	< 0.1	-
Total PCB*	0.1	mg/kg	< 0.1	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	73	-	78	-
Tetrachloro-m-xylene (surr.)	1	%	71	-	62	-
Heavy Metals						
Arsenic	2	mg/kg	97	-	10	-
Cadmium	0.4	mg/kg	< 0.4	-	< 0.4	-
Chromium	5	mg/kg	26	-	22	-
Copper	5	mg/kg	42	-	51	-
Lead	5	mg/kg	54	-	38	-
Mercury	0.1	mg/kg	< 0.1	-	< 0.1	-
Nickel	5	mg/kg	14	-	23	-
Zinc	5	mg/kg	210	-	82	-
% Moisture	1	%	19	9.8	13	8.6

Client Sample ID			B12 1.0-1.1	QC03
Sample Matrix			**Soil**	**Soil**
Eurofins | mgt Sample No.			**S17-Oc30718**	**S17-Oc30719**
Date Sampled			**Oct 22, 2017**	**Oct 22, 2017**
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				
TRH C6-C9	20	mg/kg	< 20	< 20
TRH C10-C14	20	mg/kg	220	< 20
TRH C15-C28	50	mg/kg	520	< 50
TRH C29-C36	50	mg/kg	< 50	77
TRH C10-36 (Total)	50	mg/kg	740	77
BTEX				
Benzene	0.1	mg/kg	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	64	70
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20
TRH C6-C10	20	mg/kg	< 20	< 20
TRH >C10-C16	50	mg/kg	360	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	360	< 50
TRH >C16-C34	100	mg/kg	270	< 100
TRH >C34-C40	100	mg/kg	< 100	130

Client Sample ID			B12 1.0-1.1	QC03
Sample Matrix			Soil	Soil
Eurofins | mgt Sample No.			S17-Oc30718	S17-Oc30719
Date Sampled			Oct 22, 2017	Oct 22, 2017
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons				
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.7
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	0.6
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	0.7
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	0.9
Fluorene	0.5	mg/kg	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	0.9
Total PAH*	0.5	mg/kg	< 0.5	3.6
2-Fluorobiphenyl (surr.)	1	%	89	91
p-Terphenyl-d14 (surr.)	1	%	84	83
% Moisture	1	%	14	8.0

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Oct 31, 2017	14 Day
- Method: LTM-ORG-2010 TRH C6-C36			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Oct 31, 2017	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Oct 31, 2017	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
BTEX	Melbourne	Oct 31, 2017	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Oct 31, 2017	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soils by GCMS			
Organochlorine Pesticides	Melbourne	Oct 31, 2017	14 Day
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Melbourne	Oct 31, 2017	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Metals M8	Melbourne	Oct 31, 2017	28 Days
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
% Moisture	Melbourne	Oct 26, 2017	14 Day
- Method: LTM-GEN-7080 Moisture			

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Project Name: CHULLORA
Project ID: 54005

Order No.:
Report #: 569649
Phone: 02 8245 0300
Fax:

Received: Oct 26, 2017 5:20 PM
Due: Nov 2, 2017
Priority: 5 Day
Contact Name: Chris Bielby

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
External Laboratory																
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**											
1	B1 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30685					X	X	X	X	X	X	X
2	B1 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30686					X				X	X	X
3	B1 0-0.8	Oct 22, 2017		Soil	S17-Oc30687	X										
4	B2 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30688					X	X	X	X	X	X	X
5	B2 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30689					X				X	X	X
6	B2 0-0.6	Oct 22, 2017		Soil	S17-Oc30690	X										
7	B3 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30691					X				X	X	X
8	B3 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30692					X				X	X	X
9	B3 0-0.6	Oct 22, 2017		Soil	S17-Oc30693	X										

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NSW 2000

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Order No.:
Report #: 569649
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Received: Oct 26, 2017 5:20 PM
Due: Nov 2, 2017
Priority: 5 Day
Contact Name: Chris Bielby

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
10	B4 1.5-1.6	Oct 22, 2017		Soil	S17-Oc30694					X				X	X	X
11	B4 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30695					X				X	X	X
12	B5 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30696					X				X	X	X
13	B5 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30697					X	X	X	X	X	X	X
14	B5 0-1	Oct 22, 2017		Soil	S17-Oc30698	X										
15	B6 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30699					X				X	X	X
16	B6 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30700					X	X	X	X	X	X	X
17	B6 0-1	Oct 22, 2017		Soil	S17-Oc30701	X										
18	B7 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30702					X	X	X	X	X	X	X
19	B7 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30703					X				X	X	X
20	B8 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30704					X				X	X	X
21	B8 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30705					X	X	X	X	X	X	X

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Site # 23736

Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
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NSW 2000

Project Name: CHULLORA
Project ID: 54005

Order No.:
Report #: 569649
Phone: 02 8245 0300
Fax:

Received: Oct 26, 2017 5:20 PM
Due: Nov 2, 2017
Priority: 5 Day
Contact Name: Chris Bielby

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
22	B8 0-1	Oct 22, 2017		Soil	S17-Oc30706	X										
23	B9 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30707					X				X	X	X
24	B9 3.0-3.1	Oct 22, 2017		Soil	S17-Oc30708					X	X	X	X	X	X	X
25	B9 0-1	Oct 22, 2017		Soil	S17-Oc30709	X										
26	B10 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30710					X	X	X	X	X	X	X
27	B10 3.0-3.1	Oct 22, 2017		Soil	S17-Oc30711					X				X	X	X
28	B10 0-1	Oct 22, 2017		Soil	S17-Oc30712	X										
29	QC01	Oct 22, 2017		Soil	S17-Oc30713					X	X	X	X	X	X	X
30	QC02	Oct 22, 2017		Soil	S17-Oc30714	X										
31	B11 0.2-0.3	Oct 22, 2017		Soil	S17-Oc30715					X				X	X	X
32	B11 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30716					X	X	X	X	X	X	X
33	B12 0.2-0.3	Oct 22, 2017		Soil	S17-Oc30717					X				X	X	X

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Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
34	B12 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30718					X				X	X	X
35	QC03	Oct 22, 2017		Soil	S17-Oc30719					X				X	X	X
36	B12 0-1	Oct 22, 2017		Soil	S17-Oc30720	X										
37	TRIP SPIKE	Oct 22, 2017		Water	S17-Oc30721									X		
38	TRIP BLANK	Oct 22, 2017		Water	S17-Oc30722									X		
39	B1 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30723			X								
40	B1 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30724			X								
41	B2 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30725			X								
42	B2 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30726			X								
43	B3 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30727			X								
44	B3 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30728			X								
45	B4 0.4-0.5	Oct 22, 2017		Soil	S17-Oc30729			X								

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Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
46	B4 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30730			X								
47	B5 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30731			X								
48	B5 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30732			X								
49	B5 3.0-3.1	Oct 22, 2017		Soil	S17-Oc30733			X								
50	B5 1-2	Oct 22, 2017		Soil	S17-Oc30734				X							
51	B6 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30735			X								
52	B6 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30736			X								
53	B6 3.0-3.1	Oct 22, 2017		Soil	S17-Oc30737			X								
54	B6 1-2	Oct 22, 2017		Soil	S17-Oc30738				X							
55	B7 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30739			X								
56	B7 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30740			X								
57	B7 3.0-3.1	Oct 22, 2017		Soil	S17-Oc30741			X								

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Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
58	B7 0-1	Oct 22, 2017		Soil	S17-Oc30742				X							
59	B7 1-2	Oct 22, 2017		Soil	S17-Oc30743				X							
60	B8 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30744			X								
61	B8 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30745			X								
62	B8 1-2	Oct 22, 2017		Soil	S17-Oc30746		X									
63	B9 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30747			X								
64	B9 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30748			X								
65	B9 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30749			X								
66	B9 4.0-4.1	Oct 22, 2017		Soil	S17-Oc30750			X								
67	B9 1-2	Oct 22, 2017		Soil	S17-Oc30751				X							
68	B9 2-3	Oct 22, 2017		Soil	S17-Oc30752				X							
69	B10 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30753			X								

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Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
70	B10 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30754			X								
71	B10 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30755			X								
72	B10 1-2	Oct 22, 2017		Soil	S17-Oc30756				X							
73	B10 2-3	Oct 22, 2017		Soil	S17-Oc30757		X									
74	B11 0-1	Oct 22, 2017		Soil	S17-Oc30758				X							
75	B10 4.0-4.1	Oct 22, 2017		Soil	S17-Oc30759			X								
76	B4 0.4-1.4	Oct 22, 2017		Soil	S17-Oc30760				X							
77	B5 2-2.5	Oct 22, 2017		Soil	S17-Oc30761				X							
78	B6 2-2.5	Oct 22, 2017		Soil	S17-Oc30762				X							
Test Counts						10	2	38	38	26	10	10	10	28	26	26

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

ug/L: micrograms per litre

ppb: Parts per billion

org/100mL: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/L: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	117			70-130	Pass	
TRH C10-C14	%	77			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	78			70-130	Pass	
Toluene	%	80			70-130	Pass	
Ethylbenzene	%	85			70-130	Pass	
m&p-Xylenes	%	80			70-130	Pass	
Xylenes - Total	%	80			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	75			70-130	Pass	
TRH C6-C10	%	119			70-130	Pass	
TRH >C10-C16	%	72			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	118			70-130	Pass	
Acenaphthylene	%	115			70-130	Pass	
Anthracene	%	109			70-130	Pass	
Benz(a)anthracene	%	87			70-130	Pass	
Benzo(a)pyrene	%	109			70-130	Pass	
Benzo(b&j)fluoranthene	%	110			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(g.h.i)perylene			%	96			70-130	Pass	
Benzo(k)fluoranthene			%	107			70-130	Pass	
Chrysene			%	118			70-130	Pass	
Dibenz(a.h)anthracene			%	87			70-130	Pass	
Fluoranthene			%	122			70-130	Pass	
Fluorene			%	116			70-130	Pass	
Indeno(1.2.3-cd)pyrene			%	92			70-130	Pass	
Naphthalene			%	112			70-130	Pass	
Phenanthrene			%	114			70-130	Pass	
Pyrene			%	121			70-130	Pass	
LCS - % Recovery									
Organochlorine Pesticides									
4.4'-DDD			%	111			70-130	Pass	
4.4'-DDE			%	93			70-130	Pass	
4.4'-DDT			%	88			70-130	Pass	
a-BHC			%	80			70-130	Pass	
Aldrin			%	79			70-130	Pass	
b-BHC			%	80			70-130	Pass	
d-BHC			%	84			70-130	Pass	
Dieldrin			%	82			70-130	Pass	
Endosulfan I			%	80			70-130	Pass	
Endosulfan II			%	86			70-130	Pass	
Endosulfan sulphate			%	89			70-130	Pass	
Endrin			%	90			70-130	Pass	
Endrin aldehyde			%	86			70-130	Pass	
Endrin ketone			%	88			70-130	Pass	
g-BHC (Lindane)			%	82			70-130	Pass	
Heptachlor			%	88			70-130	Pass	
Heptachlor epoxide			%	80			70-130	Pass	
Hexachlorobenzene			%	77			70-130	Pass	
Methoxychlor			%	87			70-130	Pass	
LCS - % Recovery									
Polychlorinated Biphenyls									
Aroclor-1260			%	94			70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	81			80-120	Pass	
Cadmium			%	84			80-120	Pass	
Chromium			%	87			80-120	Pass	
Copper			%	91			80-120	Pass	
Lead			%	86			80-120	Pass	
Mercury			%	102			75-125	Pass	
Nickel			%	85			80-120	Pass	
Zinc			%	86			80-120	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M17-Oc30871	NCP	%	100			70-130	Pass	
Acenaphthylene	M17-Oc30871	NCP	%	99			70-130	Pass	
Anthracene	M17-Oc30871	NCP	%	94			70-130	Pass	
Benz(a)anthracene	M17-Oc30871	NCP	%	77			70-130	Pass	
Benzo(a)pyrene	M17-Oc30871	NCP	%	101			70-130	Pass	
Benzo(b&j)fluoranthene	M17-Oc30871	NCP	%	103			70-130	Pass	
Benzo(g.h.i)perylene	M17-Oc30871	NCP	%	84			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(k)fluoranthene	M17-Oc30871	NCP	%	107			70-130	Pass	
Chrysene	M17-Oc30871	NCP	%	102			70-130	Pass	
Dibenz(a.h)anthracene	M17-Oc30871	NCP	%	71			70-130	Pass	
Fluoranthene	M17-Oc30871	NCP	%	117			70-130	Pass	
Fluorene	M17-Oc30871	NCP	%	100			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M17-Oc30871	NCP	%	77			70-130	Pass	
Naphthalene	M17-Oc30871	NCP	%	97			70-130	Pass	
Phenanthrene	M17-Oc30871	NCP	%	100			70-130	Pass	
Pyrene	M17-Oc30871	NCP	%	120			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
4.4'-DDD	M17-Oc31877	NCP	%	127			70-130	Pass	
4.4'-DDE	M17-Oc31877	NCP	%	102			70-130	Pass	
4.4'-DDT	M17-Oc31877	NCP	%	102			70-130	Pass	
a-BHC	M17-Oc31877	NCP	%	86			70-130	Pass	
Aldrin	M17-Oc31877	NCP	%	89			70-130	Pass	
b-BHC	M17-Oc31877	NCP	%	89			70-130	Pass	
d-BHC	M17-Oc31877	NCP	%	93			70-130	Pass	
Dieldrin	M17-Oc31877	NCP	%	90			70-130	Pass	
Endosulfan I	M17-Oc31877	NCP	%	87			70-130	Pass	
Endosulfan II	M17-Oc31877	NCP	%	95			70-130	Pass	
Endosulfan sulphate	M17-Oc31877	NCP	%	100			70-130	Pass	
Endrin	M17-Oc31877	NCP	%	106			70-130	Pass	
Endrin aldehyde	M17-Oc31877	NCP	%	97			70-130	Pass	
Endrin ketone	M17-Oc31877	NCP	%	96			70-130	Pass	
g-BHC (Lindane)	M17-Oc31877	NCP	%	90			70-130	Pass	
Heptachlor	M17-Oc31877	NCP	%	100			70-130	Pass	
Heptachlor epoxide	M17-Oc31877	NCP	%	88			70-130	Pass	
Hexachlorobenzene	M17-Oc31877	NCP	%	84			70-130	Pass	
Methoxychlor	M17-Oc31877	NCP	%	100			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1260	M17-Oc27443	NCP	%	85			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M17-Oc32449	NCP	%	102			75-125	Pass	
Cadmium	M17-Oc32449	NCP	%	104			75-125	Pass	
Chromium	M17-Oc32449	NCP	%	105			75-125	Pass	
Copper	M17-Oc32449	NCP	%	110			75-125	Pass	
Lead	M17-Oc32449	NCP	%	104			75-125	Pass	
Mercury	M17-Oc32347	NCP	%	96			70-130	Pass	
Nickel	M17-Oc32449	NCP	%	105			75-125	Pass	
Zinc	M17-Oc32449	NCP	%	102			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S17-Oc30691	CP	%	78			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S17-Oc30691	CP	%	73			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S17-Oc30704	CP	%	118			70-130	Pass	
TRH C10-C14	S17-Oc30704	CP	%	124			70-130	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
BTEX				Result 1					
Benzene	S17-Oc30704	CP	%	89			70-130	Pass	
Toluene	S17-Oc30704	CP	%	91			70-130	Pass	
Ethylbenzene	S17-Oc30704	CP	%	91			70-130	Pass	
m&p-Xylenes	S17-Oc30704	CP	%	88			70-130	Pass	
o-Xylene	S17-Oc30704	CP	%	88			70-130	Pass	
Xylenes - Total	S17-Oc30704	CP	%	88			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S17-Oc30704	CP	%	110			70-130	Pass	
TRH C6-C10	S17-Oc30704	CP	%	124			70-130	Pass	
TRH >C10-C16	S17-Oc30704	CP	%	122			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	M17-Oc32439	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	M17-Oc32439	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	M17-Oc32439	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	M17-Oc32439	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	M17-Oc32439	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	M17-Oc32439	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	M17-Oc32439	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	M17-Oc32439	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	M17-Oc32439	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	M17-Oc32439	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	M17-Oc32439	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	M17-Oc32439	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	M17-Oc32439	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	M17-Oc32439	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	M17-Oc32439	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	M17-Oc32439	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	M17-Oc32439	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	M17-Oc32439	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	M17-Oc32439	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	M17-Oc32439	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	M17-Oc32439	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	M17-Oc32439	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	M17-Oc32439	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	M17-Oc32439	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	M17-Oc32439	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	M17-Oc32439	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	M17-Oc32439	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1260	M17-Oc32439	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	M17-Oc32439	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M17-No00064	NCP	mg/kg	7.6	7.6	<1	30%	Pass	
Cadmium	M17-No00064	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M17-No00064	NCP	mg/kg	5.2	5.2	1.0	30%	Pass	
Copper	M17-No00064	NCP	mg/kg	5.3	5.3	<1	30%	Pass	
Lead	M17-No00064	NCP	mg/kg	26	26	<1	30%	Pass	
Mercury	M17-No00064	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Nickel	M17-No00064	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	M17-No00064	NCP	mg/kg	32	32	2.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B17-Oc30647	NCP	%	20	21	5.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S17-Oc30689	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S17-Oc30689	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S17-Oc30689	CP	mg/kg	56	94	50	30%	Fail	Q15
TRH C29-C36	S17-Oc30689	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S17-Oc30689	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S17-Oc30689	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S17-Oc30689	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S17-Oc30689	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S17-Oc30689	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S17-Oc30689	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S17-Oc30689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S17-Oc30689	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S17-Oc30689	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S17-Oc30689	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S17-Oc30689	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S17-Oc30689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S17-Oc30689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S17-Oc30689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S17-Oc30689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S17-Oc30689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S17-Oc30689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S17-Oc30689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S17-Oc30689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S17-Oc30689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S17-Oc30689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S17-Oc30689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S17-Oc30689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S17-Oc30689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S17-Oc30689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S17-Oc30689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S17-Oc30689	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S17-Oc30703	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S17-Oc30703	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S17-Oc30703	CP	mg/kg	190	150	26	30%	Pass	
TRH C29-C36	S17-Oc30703	CP	mg/kg	51	< 50	44	30%	Fail	Q15

Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S17-Oc30703	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S17-Oc30703	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S17-Oc30703	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S17-Oc30703	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S17-Oc30703	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S17-Oc30703	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S17-Oc30703	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S17-Oc30703	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S17-Oc30703	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S17-Oc30703	CP	mg/kg	190	140	29	30%	Pass	
TRH >C34-C40	S17-Oc30703	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S17-Oc30703	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S17-Oc30703	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S17-Oc30703	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S17-Oc30703	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S17-Oc30703	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S17-Oc30703	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S17-Oc30703	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S17-Oc30703	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S17-Oc30703	CP	mg/kg	0.6	< 0.5	28	30%	Pass	
Dibenz(a.h)anthracene	S17-Oc30703	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S17-Oc30703	CP	mg/kg	1.3	1.0	26	30%	Pass	
Fluorene	S17-Oc30703	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S17-Oc30703	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S17-Oc30703	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S17-Oc30703	CP	mg/kg	1.7	1.2	37	30%	Fail	Q15
Pyrene	S17-Oc30703	CP	mg/kg	0.8	0.6	19	30%	Pass	

Comments

Sample Integrity

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

Comments

Qualifier Codes/Comments

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

Authorised By

Nibha Vaidya	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Alex Petridis	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Nibha Vaidya	Senior Analyst-Asbestos (NSW)

Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

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Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

JBS & G Australia (NSW) P/L
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Sydney
NSW 2000

Attention: **Chris Bielby**

Report **569649-W**
Project name CHULLORA
Project ID 54005
Received Date Oct 26, 2017

Client Sample ID **Sample Matrix** **Eurofins | mgt Sample No.** **Date Sampled** Test/Reference	LOR	Unit	**TRIP SPIKE** **Water** **S17-Oc30721** **Oct 22, 2017**	**TRIP BLANK** **Water** **S17-Oc30722** **Oct 22, 2017**
BTEX				
Benzene	0.001	mg/L	110	< 0.001
Toluene	0.001	mg/L	90	< 0.001
Ethylbenzene	0.001	mg/L	83	< 0.001
m&p-Xylenes	0.002	mg/L	120	< 0.002
o-Xylene	0.001	mg/L	91	< 0.001
Xylenes - Total	0.003	mg/L	110	< 0.003
4-Bromofluorobenzene (surr.)	1	%	72	101

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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

Description	Testing Site	Extracted	Holding Time
BTEX	Melbourne	Oct 30, 2017	14 Day

- Method: TRH C6-C40 - LTM-ORG-2010

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NSW 2000

Project Name: CHULLORA
Project ID: 54005

Order No.:
Report #: 569649
Phone: 02 8245 0300
Fax:

Received: Oct 26, 2017 5:20 PM
Due: Nov 2, 2017
Priority: 5 Day
Contact Name: Chris Bielby

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
External Laboratory																
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**											
1	B1 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30685					X	X	X	X	X	X	X
2	B1 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30686					X				X	X	X
3	B1 0-0.8	Oct 22, 2017		Soil	S17-Oc30687	X										
4	B2 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30688					X	X	X	X	X	X	X
5	B2 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30689					X				X	X	X
6	B2 0-0.6	Oct 22, 2017		Soil	S17-Oc30690	X										
7	B3 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30691					X				X	X	X
8	B3 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30692					X				X	X	X
9	B3 0-0.6	Oct 22, 2017		Soil	S17-Oc30693	X										

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Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
10	B4 1.5-1.6	Oct 22, 2017		Soil	S17-Oc30694					X				X	X	X
11	B4 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30695					X				X	X	X
12	B5 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30696					X				X	X	X
13	B5 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30697					X	X	X	X	X	X	X
14	B5 0-1	Oct 22, 2017		Soil	S17-Oc30698	X										
15	B6 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30699					X				X	X	X
16	B6 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30700					X	X	X	X	X	X	X
17	B6 0-1	Oct 22, 2017		Soil	S17-Oc30701	X										
18	B7 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30702					X	X	X	X	X	X	X
19	B7 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30703					X				X	X	X
20	B8 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30704					X				X	X	X
21	B8 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30705					X	X	X	X	X	X	X

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Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
22	B8 0-1	Oct 22, 2017		Soil	S17-Oc30706	X										
23	B9 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30707					X				X	X	X
24	B9 3.0-3.1	Oct 22, 2017		Soil	S17-Oc30708					X	X	X	X	X	X	X
25	B9 0-1	Oct 22, 2017		Soil	S17-Oc30709	X										
26	B10 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30710					X	X	X	X	X	X	X
27	B10 3.0-3.1	Oct 22, 2017		Soil	S17-Oc30711					X				X	X	X
28	B10 0-1	Oct 22, 2017		Soil	S17-Oc30712	X										
29	QC01	Oct 22, 2017		Soil	S17-Oc30713					X	X	X	X	X	X	X
30	QC02	Oct 22, 2017		Soil	S17-Oc30714	X										
31	B11 0.2-0.3	Oct 22, 2017		Soil	S17-Oc30715					X				X	X	X
32	B11 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30716					X	X	X	X	X	X	X
33	B12 0.2-0.3	Oct 22, 2017		Soil	S17-Oc30717					X				X	X	X

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Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
34	B12 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30718					X				X	X	X
35	QC03	Oct 22, 2017		Soil	S17-Oc30719					X				X	X	X
36	B12 0-1	Oct 22, 2017		Soil	S17-Oc30720	X										
37	TRIP SPIKE	Oct 22, 2017		Water	S17-Oc30721									X		
38	TRIP BLANK	Oct 22, 2017		Water	S17-Oc30722									X		
39	B1 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30723			X								
40	B1 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30724			X								
41	B2 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30725			X								
42	B2 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30726			X								
43	B3 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30727			X								
44	B3 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30728			X								
45	B4 0.4-0.5	Oct 22, 2017		Soil	S17-Oc30729			X								

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Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
46	B4 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30730			X								
47	B5 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30731			X								
48	B5 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30732			X								
49	B5 3.0-3.1	Oct 22, 2017		Soil	S17-Oc30733			X								
50	B5 1-2	Oct 22, 2017		Soil	S17-Oc30734				X							
51	B6 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30735			X								
52	B6 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30736			X								
53	B6 3.0-3.1	Oct 22, 2017		Soil	S17-Oc30737			X								
54	B6 1-2	Oct 22, 2017		Soil	S17-Oc30738				X							
55	B7 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30739			X								
56	B7 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30740			X								
57	B7 3.0-3.1	Oct 22, 2017		Soil	S17-Oc30741			X								

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Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
58	B7 0-1	Oct 22, 2017		Soil	S17-Oc30742				X							
59	B7 1-2	Oct 22, 2017		Soil	S17-Oc30743				X							
60	B8 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30744			X								
61	B8 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30745			X								
62	B8 1-2	Oct 22, 2017		Soil	S17-Oc30746		X									
63	B9 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30747			X								
64	B9 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30748			X								
65	B9 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30749			X								
66	B9 4.0-4.1	Oct 22, 2017		Soil	S17-Oc30750			X								
67	B9 1-2	Oct 22, 2017		Soil	S17-Oc30751				X							
68	B9 2-3	Oct 22, 2017		Soil	S17-Oc30752				X							
69	B10 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30753			X								

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Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
70	B10 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30754			X								
71	B10 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30755			X								
72	B10 1-2	Oct 22, 2017		Soil	S17-Oc30756				X							
73	B10 2-3	Oct 22, 2017		Soil	S17-Oc30757		X									
74	B11 0-1	Oct 22, 2017		Soil	S17-Oc30758				X							
75	B10 4.0-4.1	Oct 22, 2017		Soil	S17-Oc30759			X								
76	B4 0.4-1.4	Oct 22, 2017		Soil	S17-Oc30760				X							
77	B5 2-2.5	Oct 22, 2017		Soil	S17-Oc30761				X							
78	B6 2-2.5	Oct 22, 2017		Soil	S17-Oc30762				X							
Test Counts						10	2	38	38	26	10	10	10	28	26	26

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

ug/L: micrograms per litre

ppb: Parts per billion

org/100mL: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/L: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank									
BTEX									
Benzene			mg/L	< 0.001			0.001	Pass	
Toluene			mg/L	< 0.001			0.001	Pass	
Ethylbenzene			mg/L	< 0.001			0.001	Pass	
m&p-Xylenes			mg/L	< 0.002			0.002	Pass	
o-Xylene			mg/L	< 0.001			0.001	Pass	
Xylenes - Total			mg/L	< 0.003			0.003	Pass	
LCS - % Recovery									
BTEX									
Benzene			%	104			70-130	Pass	
Toluene			%	100			70-130	Pass	
Ethylbenzene			%	91			70-130	Pass	
m&p-Xylenes			%	85			70-130	Pass	
Xylenes - Total			%	86			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S17-Oc30722	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S17-Oc30722	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S17-Oc30722	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S17-Oc30722	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S17-Oc30722	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	S17-Oc30722	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass	

Comments

Sample Integrity

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

Comments

Authorised By

Nibha Vaidya	Analytical Services Manager
Harry Bacalis	Senior Analyst-Volatile (VIC)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

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Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025–Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

JBS & G Australia (NSW) P/L
Level 1, 50 Margaret St
Sydney
NSW 2000

Attention:	Chris Bielby
Report	569649-AID
Project Name	CHULLORA
Project ID	54005
Received Date	Oct 26, 2017
Date Reported	Nov 02, 2017

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. *NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004. *NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting	The performance limitation of the AS4964 method for inhomogeneous samples is around 0.1 g/kg (0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis where required, this is considered to be at the nominal reporting limit of 0.01 % (w / w).The examination of large sample sizes(500 mL is recommended) may improve the likelihood of identifying ACM in the > 2mm fraction.The NEPM screening level of 0.001 % (w / w) asbestos in soil for FA(friable asbestos) and AF(asbestos fines) then applies where they are able to be quantified by gravimetric procedures.This quantitative screening is not generally applicable to FF(free fibres) and results of Trace Analysis are referred. *NOTE: NATA News March 2014, p.7, states in relation to AS4964: "This is a qualitative method with a nominal reporting limit of 0.01%" and that currently in Australia "there is no validated method available for the quantification of asbestos". Accordingly, NATA Accreditation does not cover the performance of this service (indicated with an asterisk).* *This report is consistent with the analytical procedures and reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended) and the Western Australia Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia, 2009, including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil, June 2011.*

Project Name CHULLORA
Project ID 54005
Date Sampled Oct 22, 2017
Report 569649-AID

Client Sample ID	Eurofins | mgt Sample No.	Date Sampled	Sample Description	Result
B1 0-0.8	17-Oc30687	Oct 22, 2017	Approximate Sample 512g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
B2 0-0.6	17-Oc30690	Oct 22, 2017	Approximate Sample 581g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
B3 0-0.6	17-Oc30693	Oct 22, 2017	Approximate Sample 731g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
B5 0-1	17-Oc30698	Oct 22, 2017	Approximate Sample 500g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
B6 0-1	17-Oc30701	Oct 22, 2017	Approximate Sample 524g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
B8 0-1	17-Oc30706	Oct 22, 2017	Approximate Sample 643g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
B9 0-1	17-Oc30709	Oct 22, 2017	Approximate Sample 489g Sample consisted of: Dark brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
B10 0-1	17-Oc30712	Oct 22, 2017	Approximate Sample 503g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.

Client Sample ID	Eurofins | mgt Sample No.	Date Sampled	Sample Description	Result
QC02	17-Oc30714	Oct 22, 2017	Approximate Sample 743g Sample consisted of: Dark brown coarse grain soil and rocks	Chrysotile asbestos detected in fibre cement fragments. Approximate raw weight of asbestos containing material = 1.2g Total estimated asbestos content in the sample = 0.12g* Total estimated asbestos concentration = 0.017% w/w* Organic fibre detected. No respirable fibres detected.
B12 0-1	17-Oc30720	Oct 22, 2017	Approximate Sample 523g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Oct 26, 2017	Indefinite

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Project Name: CHULLORA
Project ID: 54005

Order No.:
Report #: 569649
Phone: 02 8245 0300
Fax:

Received: Oct 26, 2017 5:20 PM
Due: Nov 2, 2017
Priority: 5 Day
Contact Name: Chris Bielby

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
External Laboratory																
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**											
1	B1 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30685					X	X	X	X	X	X	X
2	B1 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30686					X				X	X	X
3	B1 0-0.8	Oct 22, 2017		Soil	S17-Oc30687	X										
4	B2 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30688					X	X	X	X	X	X	X
5	B2 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30689					X				X	X	X
6	B2 0-0.6	Oct 22, 2017		Soil	S17-Oc30690	X										
7	B3 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30691					X				X	X	X
8	B3 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30692					X				X	X	X
9	B3 0-0.6	Oct 22, 2017		Soil	S17-Oc30693	X										

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Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
10	B4 1.5-1.6	Oct 22, 2017		Soil	S17-Oc30694					X				X	X	X
11	B4 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30695					X				X	X	X
12	B5 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30696					X				X	X	X
13	B5 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30697					X	X	X	X	X	X	X
14	B5 0-1	Oct 22, 2017		Soil	S17-Oc30698	X										
15	B6 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30699					X				X	X	X
16	B6 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30700					X	X	X	X	X	X	X
17	B6 0-1	Oct 22, 2017		Soil	S17-Oc30701	X										
18	B7 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30702					X	X	X	X	X	X	X
19	B7 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30703					X				X	X	X
20	B8 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30704					X				X	X	X
21	B8 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30705					X	X	X	X	X	X	X

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
22	B8 0-1	Oct 22, 2017		Soil	S17-Oc30706	X										
23	B9 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30707					X				X	X	X
24	B9 3.0-3.1	Oct 22, 2017		Soil	S17-Oc30708					X	X	X	X	X	X	X
25	B9 0-1	Oct 22, 2017		Soil	S17-Oc30709	X										
26	B10 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30710					X	X	X	X	X	X	X
27	B10 3.0-3.1	Oct 22, 2017		Soil	S17-Oc30711					X				X	X	X
28	B10 0-1	Oct 22, 2017		Soil	S17-Oc30712	X										
29	QC01	Oct 22, 2017		Soil	S17-Oc30713					X	X	X	X	X	X	X
30	QC02	Oct 22, 2017		Soil	S17-Oc30714	X										
31	B11 0.2-0.3	Oct 22, 2017		Soil	S17-Oc30715					X				X	X	X
32	B11 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30716					X	X	X	X	X	X	X
33	B12 0.2-0.3	Oct 22, 2017		Soil	S17-Oc30717					X				X	X	X

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Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
34	B12 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30718					X				X	X	X
35	QC03	Oct 22, 2017		Soil	S17-Oc30719					X				X	X	X
36	B12 0-1	Oct 22, 2017		Soil	S17-Oc30720	X										
37	TRIP SPIKE	Oct 22, 2017		Water	S17-Oc30721									X		
38	TRIP BLANK	Oct 22, 2017		Water	S17-Oc30722									X		
39	B1 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30723			X								
40	B1 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30724			X								
41	B2 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30725			X								
42	B2 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30726			X								
43	B3 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30727			X								
44	B3 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30728			X								
45	B4 0.4-0.5	Oct 22, 2017		Soil	S17-Oc30729			X								

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Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
46	B4 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30730			X								
47	B5 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30731			X								
48	B5 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30732			X								
49	B5 3.0-3.1	Oct 22, 2017		Soil	S17-Oc30733			X								
50	B5 1-2	Oct 22, 2017		Soil	S17-Oc30734				X							
51	B6 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30735			X								
52	B6 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30736			X								
53	B6 3.0-3.1	Oct 22, 2017		Soil	S17-Oc30737			X								
54	B6 1-2	Oct 22, 2017		Soil	S17-Oc30738				X							
55	B7 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30739			X								
56	B7 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30740			X								
57	B7 3.0-3.1	Oct 22, 2017		Soil	S17-Oc30741			X								

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Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
58	B7 0-1	Oct 22, 2017		Soil	S17-Oc30742				X							
59	B7 1-2	Oct 22, 2017		Soil	S17-Oc30743				X							
60	B8 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30744			X								
61	B8 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30745			X								
62	B8 1-2	Oct 22, 2017		Soil	S17-Oc30746		X									
63	B9 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30747			X								
64	B9 1.0-1.1	Oct 22, 2017		Soil	S17-Oc30748			X								
65	B9 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30749			X								
66	B9 4.0-4.1	Oct 22, 2017		Soil	S17-Oc30750			X								
67	B9 1-2	Oct 22, 2017		Soil	S17-Oc30751				X							
68	B9 2-3	Oct 22, 2017		Soil	S17-Oc30752				X							
69	B10 0.0-0.1	Oct 22, 2017		Soil	S17-Oc30753			X								

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Perth
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Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name: JBS & G Australia (NSW) P/L
Address: Level 1, 50 Margaret St
Sydney
NSW 2000

Project Name: CHULLORA
Project ID: 54005

Order No.:
Report #: 569649
Phone: 02 8245 0300
Fax:

Received: Oct 26, 2017 5:20 PM
Due: Nov 2, 2017
Priority: 5 Day
Contact Name: Chris Bielby

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Polychlorinated Biphenyls	Metals M8	BTEX	Moisture Set	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271								X		X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217						X	X		X							
Brisbane Laboratory - NATA Site # 20794																
Perth Laboratory - NATA Site # 23736																
70	B10 0.5-0.6	Oct 22, 2017		Soil	S17-Oc30754			X								
71	B10 2.0-2.1	Oct 22, 2017		Soil	S17-Oc30755			X								
72	B10 1-2	Oct 22, 2017		Soil	S17-Oc30756				X							
73	B10 2-3	Oct 22, 2017		Soil	S17-Oc30757		X									
74	B11 0-1	Oct 22, 2017		Soil	S17-Oc30758				X							
75	B10 4.0-4.1	Oct 22, 2017		Soil	S17-Oc30759			X								
76	B4 0.4-1.4	Oct 22, 2017		Soil	S17-Oc30760				X							
77	B5 2-2.5	Oct 22, 2017		Soil	S17-Oc30761				X							
78	B6 2-2.5	Oct 22, 2017		Soil	S17-Oc30762				X							
Test Counts						10	2	38	38	26	10	10	10	28	26	26

Internal Quality Control Review and Glossary

General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

Units

% w/w: weight for weight basis	grams per kilogram
Filter loading:	fibres/100 graticule areas
Reported Concentration:	fibres/mL
Flowrate:	L/min

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis
LOR	Limit of Reporting
COC	Chain of Custody
SRA	Sample Receipt Advice
ISO	International Standards Organisation
AS	Australian Standards
WA DOH	Western Australia Department of Health
NOHSC	National Occupational Health and Safety Commission
ACM	Bonded asbestos-containing material means any material containing more than 1% asbestos and comprises asbestos-containing-material which is in sound condition, although possibly broken or fragmented, and where the asbestos is bound in a matrix such as cement or resin. Common examples of ACM include but are not limited to: pipe and boiler insulation, sprayed-on fireproofing, troweled-on acoustical plaster, floor tile and mastic, floor linoleum, transite shingles, roofing materials, wall and ceiling plaster, ceiling tiles, and gasket materials. This term is restricted to material that cannot pass a 7 mm x 7 mm sieve. This sieve size is selected because it approximates the thickness of common asbestos cement sheeting and for fragments to be smaller than this would imply a high degree of damage and hence potential for fibre release.
FA	FA comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. This type of friable asbestos is defined here as asbestos material that is in a degraded condition such that it can be broken or crumbled by hand pressure. This material is typically unbonded or was previously bonded and is now significantly degraded (crumbling).
PACM	Presumed Asbestos-Containing Material means thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later than 1980 that are assumed to contain greater than one percent asbestos but have not been sampled or analyzed to verify or negate the presence of asbestos.
AF	Asbestos fines (AF) are defined as free fibres, or fibre bundles, smaller than 7mm. It is the free fibres which present the greatest risk to human health, although very small fibres (< 5 microns in length) are not considered to be such a risk. AF also includes small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve. (Note that for bonded ACM fragments to pass through a 7 mm x 7 mm sieve implies a substatntial degree of damage which increases the potential for fibre release.)
AC	Asbestos cement means a mixture of cement and asbestos fibres (typically 90:10 ratios).

Comments

The sample Oc30690 received was deemed to be too large for AS4964, i.e. more than about 100 g. It was therefore necessary to reduce its size to that which could be thoroughly examined. Valid sub-sampling procedures were applied so as to ensure that the sub-sample to be analysed accurately represented the sample received.

Sample Integrity

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

Comments

Qualifier Codes/Comments

Code	Description
N/A	Not applicable

Asbestos Counter/Identifier:

Sayeed Abu	Senior Analyst-Asbestos (NSW)

Authorised by:

Laxman Dias	Senior Analyst-Asbestos (NSW)

Glenn Jackson
National Operations Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Uncertainty data is available on request

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Sample Receipt Advice

Company name:	**JBS & G Australia (NSW) P/L**
Contact name:	Chris Bielby
Project name:	CHULLORA
Project ID:	54005
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Oct 26, 2017 5:20 PM
Eurofins | mgt reference:	**569649**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 14.6 degrees Celsius.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☑ Sample containers for volatile analysis received with zero headspace.
- ☒ Split sample sent to requested external lab.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Samples B8 1-2 (Bag) & B10 2-3 (Bag) not received, analysis cancelled. Extra samples received: B10 4.0-4.1 (Jar), B4 0.4-1.4 (Bag), B5 2-2.5 (Bag), B6 2-2.5 (Bag). Extra samples logged on hold.

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8400 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Chris Bielby - cbielby@jbsg.com.au.

08951

CHAIN OF CUSTODY

JBS&G

PROJECT NO.: ~~92343~~ 54005
PROJECT NAME: CHULLORA
DATE NEEDED BY: Standard

LABORATORY BATCH NO.:
SAMPLERS: CB
QC LEVEL: NEPM (2013)

PHONE: Sydney: 02 8245 0300 | Perth: 08 9488 0100 | Brisbane: 07 3112 2688

SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) .....@jbsg.com.au; (3) .....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION / NEPM/WA

NOTES: 569649

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	TPH/BTEX	PAHs	8 heavy metals	OCP/PCB	Asbestos
B1 0.0-0.1	SOIL	22/10/17		JAR +ICE						
B1 0.5-0.6						/	/	/	/	
B1 1.0-1.1						/	/			
B1 2.0-2.1										
B1 0-0.8				BAG						/
B2 0.0-0.1				JAR +ICE						
B2 0.5-0.6						/	/	/	/	
B2 1.0-1.1						/	/			
B2 2.0-2.1										
B2 0-0.6				BAG						/
B3 0.0-0.1				JAR +ICE		/	/			
B3 0.5-0.6										
B3 1.0-1.1						/	/			
B3 2.0-2.1										
B3 0-0.6				BAG						/
B4 0.4-0.5				JAR +ICE						
B4 1.0-1.1										
B4 1.5-1.6						/	/			
B4 2.0-2.1						/	/			

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: CBIELBI DATE: 26/10/17 OF: JBS&G	CONSIGNMENT NOTE NO. TRANSPORT CO.	NAME: Vinod Jacob DATE: 26/10/17 17:20 OF: EFFIMGT	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C 13.5°C
NAME: DATE: OF:	CONSIGNMENT NOTE NO. TRANSPORT CO	NAME: DATE: OF:	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

08952

2

CHAIN OF CUSTODY

JBS&G

PROJECT NO.: 54065

PROJECT NAME: CHULLORA

DATE NEEDED BY: Standard

LABORATORY BATCH NO.:

SAMPLERS: CB

QC LEVEL: NEPM (2013)

PHONE: Sydney: 02 8245 0300 | Perth: 08 9488 0100 | Brisbane: 07 3112 2688

SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) .....@jbsg.com.au; (3) .....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	TPH/BTEX	PAHs	OCP/PCBs	Asbestos	Heavy Metals	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES: 569649
B5 0.0-0.1	SOIL	22/10/17		JAR + ICE		/	/						
B5 0.5-0.6													
B5 1.0-1.1						/	/	/		/			
B5 2.0-2.1						~~/~~	~~/~~	~~/~~					
B5 3.0-3.1													
B5 0-1				BAG					/				
B5 1-2													
B6 0.0-0.1				JAR + ICE									
B6 0.5-0.6						/	/						
B6 1.0-1.1													
B6 2.0-2.1						/	/	/		/			
B6 3.0-3.1													
B6 0-1				BAG					/				
B6 1-2													
B7 0.0-0.1				JAR + ICE									
B7 0.5-0.6						/	/	/		/			
B7 1.0-1.1													
B7 2.0-2.1						/	/						
B7 3.0-3.1													

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: C. BLACK DATE: 26/10/17 OF: JBS&G	CONSIGNMENT NOTE NO. TRANSPORT CO.	NAME: Vinod Jacob DATE: 26/10/17 17.20 OF: EFLABS	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C
NAME: DATE: OF:	CONSIGNMENT NOTE NO. TRANSPORT CO	NAME: DATE: OF:	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

IMSO Forms013 – Chain of Custody - Generic

08953

3

CHAIN OF CUSTODY

JBS&G

PROJECT NO.: 54005
PROJECT NAME: CHULLORA
DATE NEEDED BY: STANDARD
PHONE: Sydney: 02 8245 0300 | Perth: 08 9488 0100 | Brisbane: 07 3112 2688
SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) .....@jbsg.com.au; (3) .....@jbsg.com.au

LABORATORY BATCH NO.:
SAMPLERS: CB
QC LEVEL: NEPM (2013)

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	TRH/BTEX	PAHs	6 Heavy Metals	OCP/PCBs	Asbestos	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES: 569649
B7 0-1	SOIL	22/10/17		BAG									
B7 1-2													
B8 0.0-0.1				JAR + ICE		✓	✓						
B8 0.5-0.6													
B8 1.0-1.1						✓	✓	✓	✓				
B8 2.0-2.1													
B8 0-1				BAG						✓			
B8 1-2													
B9 0.0-0.1				JAR + ICE									
B9 0.5-0.6						✓	✓						
B9 1.0-1.1													
B9 2.0-2.1													
B9 3.0-3.1						✓	✓	✓	✓				
B9 4.0-4.1													
B9 0-1										✓			
B9 1-2													
B9 2-3													

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: CB DATE: 26/10/17 OF: JBS&G	CONSIGNMENT NOTE NO. TRANSPORT CO.	NAME: DATE: 26/10/17 17:20 OF: JBS&G	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C
NAME: DATE: OF:	CONSIGNMENT NOTE NO. TRANSPORT CO	NAME: DATE: OF:	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

IMSO FormsO13 – Chain of Custody - Generic

08954

4

CHAIN OF CUSTODY

JBS&G

PROJECT NO.: 54005
PROJECT NAME: CHULLORA
DATE NEEDED BY: STANDARD
LABORATORY BATCH NO.:
SAMPLERS: CB
QC LEVEL: NEPM (2013)
PHONE: Sydney: 02 8245 0300 | Perth: 08 9488 0100 | Brisbane: 07 3112 2688
SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) .....@jbsg.com.au; (3) .....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	TRH/BTEX	PAHs	8 Heavy Metals	OCPs/PCBs	Asbestos		BTEX												TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES: 569649
B10 0.0-0.1	SOIL	22/10/17		JAR + ICE																						
B10 0.5-0.6																										
B10 1.0-1.1						/	/	/	/																	
B10 2.0-2.1																										
B10 3.0-3.1						/	/																			
B10 0-1				BAG						/																
B10 1-2				JAR + ICE																						
B10 2-3																										
QC01						/	/	/	/																	
QC02				BAG						/																
B11 0.2-0.3				JAR + ICE		/	/																			
B11 1.0-1.1						/	/	/	/																	
B12 0.2-0.3						/	/																			
B12 1.0-1.1						/	/																			
QC03						/	/																			
B11 0-1				BAG																						
B12 0-1										/																
Trip Spike / Blank	Vials			Vials								/														

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: C. BIELBY DATE: 20/10/17 OF: JBS&G	CONSIGNMENT NOTE NO. TRANSPORT CO.	NAME: DATE: 20/10/17 17:20 OF: EFINGT	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C
NAME: DATE: OF:	CONSIGNMENT NOTE NO. TRANSPORT CO	NAME: DATE: OF:	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

IMSO Forms013 – Chain of Custody - Generic

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www.envirolab.com.au

CERTIFICATE OF ANALYSIS 178629

Client Details

Client	JBS & G (NSW & WA) Pty Ltd
Attention	Chris Bielby
Address	Level 1, 50 Margaret St, Sydney, NSW, 2000

Sample Details

Your Reference	**54005, Chullora**
Number of Samples	3 Soil
Date samples received	27/10/2017
Date completed instructions received	27/10/2017

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	03/11/2017
Date of Issue	03/11/2017

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Asbestos Approved By
Analysed by Asbestos Approved Identifier: Matt Tang
Authorised by Asbestos Approved Signatory: Paul Ching

Results Approved By
Dragana Tomas, Senior Chemist
Long Pham, Team Leader, Metals
Paul Ching, Senior Analyst
Steven Luong, Senior Chemist

Authorised By

David Springer, General Manager

vTRH(C6-C10)/BTEXN in Soil			
Our Reference		178629-1	178629-3
Your Reference	UNITS	QC01A	QC03A
Date Sampled		22/10/2017	22/10/2017
Type of sample		Soil	Soil
Date extracted	-	30/10/2017	30/10/2017
Date analysed	-	31/10/2017	31/10/2017
TRH C_6 - C_9	mg/kg	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25
Benzene	mg/kg	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1
m+p-xylene	mg/kg	<2	<2
o-Xylene	mg/kg	<1	<1
Total +ve Xylenes	mg/kg	<1	<1
naphthalene	mg/kg	<1	<1
Surrogate aaa-Trifluorotoluene	%	101	117

svTRH (C10-C40) in Soil			
Our Reference		178629-1	178629-3
Your Reference	UNITS	QC01A	QC03A
Date Sampled		22/10/2017	22/10/2017
Type of sample		Soil	Soil
Date extracted	-	30/10/2017	30/10/2017
Date analysed	-	31/10/2017	31/10/2017
TRH C_{10} - C_{14}	mg/kg	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50
Surrogate o-Terphenyl	%	95	94

PAHs in Soil			
Our Reference		178629-1	178629-3
Your Reference	UNITS	QC01A	QC03A
Date Sampled		22/10/2017	22/10/2017
Type of sample		Soil	Soil
Date extracted	-	30/10/2017	30/10/2017
Date analysed	-	30/10/2017	30/10/2017
Naphthalene	mg/kg	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	0.2	0.2
Anthracene	mg/kg	<0.1	<0.1
Fluoranthene	mg/kg	0.2	0.9
Pyrene	mg/kg	0.2	0.8
Benzo(a)anthracene	mg/kg	<0.1	0.4
Chrysene	mg/kg	<0.1	0.2
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.5
Benzo(a)pyrene	mg/kg	0.05	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.4
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	0.4
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5
Total +ve PAH's	mg/kg	0.63	4.1
Surrogate p-Terphenyl-d14	%	129	120

Organochlorine Pesticides in soil		
Our Reference		178629-1
Your Reference	UNITS	QC01A
Date Sampled		22/10/2017
Type of sample		Soil
Date extracted	-	30/10/2017
Date analysed	-	30/10/2017
HCB	mg/kg	<0.1
alpha-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Surrogate TCMX	%	84

PCBs in Soil		
Our Reference		178629-1
Your Reference	UNITS	QC01A
Date Sampled		22/10/2017
Type of sample		Soil
Date extracted	-	30/10/2017
Date analysed	-	30/10/2017
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate TCLMX	%	84

Acid Extractable metals in soil		
Our Reference		178629-1
Your Reference	UNITS	QC01A
Date Sampled		22/10/2017
Type of sample		Soil
Date prepared	-	02/11/2017
Date analysed	-	02/11/2017
Arsenic	mg/kg	75
Cadmium	mg/kg	3
Chromium	mg/kg	51
Copper	mg/kg	150
Lead	mg/kg	120
Mercury	mg/kg	<0.1
Nickel	mg/kg	31
Zinc	mg/kg	900

Moisture			
Our Reference		178629-1	178629-3
Your Reference	UNITS	QC01A	QC03A
Date Sampled		22/10/2017	22/10/2017
Type of sample		Soil	Soil
Date prepared	-	30/10/2017	30/10/2017
Date analysed	-	31/10/2017	31/10/2017
Moisture	%	17	9.7

Asbestos ID - soils NEPM - ASB-001		
Our Reference		178629-2
Your Reference	UNITS	QC02A
Date Sampled		22/10/2017
Type of sample		Soil
Date analysed	-	3/11/2017
Sample mass tested	g	613.88
Sample Description	-	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected
Total Asbestos#1	g/kg	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected
ACM >7mm Estimation*	g	–
FA and AF Estimation*	g	–
ACM >7mm Estimation*	%(w/w)	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.

Method ID	Methodology Summary
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-012	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. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			30/10/2017	[NT]	[NT]	[NT]	[NT]	30/10/2017	[NT]
Date analysed	-			31/10/2017	[NT]	[NT]	[NT]	[NT]	31/10/2017	[NT]
TRH C_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	108	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	108	[NT]
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	[NT]	[NT]	110	[NT]
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	[NT]	[NT]	111	[NT]
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	107	[NT]
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	101	[NT]	[NT]	[NT]	[NT]	105	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			30/10/2017	[NT]	[NT]	[NT]	[NT]	30/10/2017	[NT]
Date analysed	-			30/10/2017	[NT]	[NT]	[NT]	[NT]	30/10/2017	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	121	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	114	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	106	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	121	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	114	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	106	[NT]
Surrogate o-Terphenyl	%		Org-003	100	[NT]	[NT]	[NT]	[NT]	110	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			30/10/2017	[NT]	[NT]	[NT]	[NT]	30/10/2017	[NT]
Date analysed	-			30/10/2017	[NT]	[NT]	[NT]	[NT]	30/10/2017	[NT]
Naphthalene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Phenanthrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	87	[NT]
Anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	[NT]	[NT]	[NT]	[NT]	70	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	104	[NT]	[NT]	[NT]	[NT]	116	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			30/10/2017	[NT]	[NT]	[NT]	[NT]	30/10/2017	[NT]
Date analysed	-			30/10/2017	[NT]	[NT]	[NT]	[NT]	30/10/2017	[NT]
HCB	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	93	[NT]
gamma-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	78	[NT]
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
delta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	87	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
pp-DDD	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Endosulfan II	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-005	105	[NT]	[NT]	[NT]	[NT]	109	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			30/10/2017	[NT]	[NT]	[NT]	[NT]	30/10/2017	[NT]
Date analysed	-			30/10/2017	[NT]	[NT]	[NT]	[NT]	30/10/2017	[NT]
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCLMX	%		Org-006	105	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			02/11/2017	1	02/11/2017	02/11/2017		02/11/2017	[NT]
Date analysed	-			02/11/2017	1	02/11/2017	02/11/2017		02/11/2017	[NT]
Arsenic	mg/kg	4	Metals-020	<4	1	75	53	34	113	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	3	2	40	104	[NT]
Chromium	mg/kg	1	Metals-020	<1	1	51	41	22	110	[NT]
Copper	mg/kg	1	Metals-020	<1	1	150	130	14	108	[NT]
Lead	mg/kg	1	Metals-020	<1	1	120	110	9	108	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	104	[NT]
Nickel	mg/kg	1	Metals-020	<1	1	31	29	7	105	[NT]
Zinc	mg/kg	1	Metals-020	<1	1	900	870	3	107	[NT]

Result Definitions

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

Quality Control Definitions

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Report Comments

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013.
This is reported outside our scope of NATA accreditation.

08955

Envirolab

CHAIN OF CUSTODY

JBS&G

PROJECT NO.: 54005	LABORATORY BATCH NO.:
PROJECT NAME: CHULLORA	SAMPLERS: CB
DATE NEEDED BY: Standard	QC LEVEL: NEPM (2013)

PHONE: Sydney: 02 8245 0300 | Perth: 08 9488 0100 | Brisbane: 07 3112 2688

SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) .....@jbsg.com.au; (3) .....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

	SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	TRH/BTEX	PAHs	OCP/PCBs	8 heavy metals	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
1	QC01A	SOIL	22/10/17		JAR + ICE		/	/	/	/			
2	QC02A	↓	↓		BAG							/	
3	QC03A	↓	↓		JAR + ICE		/	/					

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

Job No: 178629
Date Received: 26 27/10
Time Received: 12.10
Received by: DW
Temp: Cool/Ambient 16.2
Cooling: Ice/Icepack
Security: Intact/Broken/None

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: CB DATE: 26/10/17 OF: JBS&G	CONSIGNMENT NOTE NO. TRANSPORT CO.	NAME: DATE: 26/10/17 17:20 OF: EnvirLab	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C
NAME: DATE: OF:	CONSIGNMENT NOTE NO. TRANSPORT CO	NAME: DATE: OF:	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

IMSO FormsO13 – Chain of Custody - Generic

27/10

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30 years Testing For Life 1987–2017
Celebrating 30 years Testing and Protecting Human Health

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

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Attention: **Chris Bielby**

Report **571253-W**
Project name CHULLORA
Project ID 54005
Received Date Nov 07, 2017

Client Sample ID			**MW2**	**MW3**	**MW4**	**MW5**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**S17-No06608**	**S17-No06609**	**S17-No06610**	**S17-No06611**
Date Sampled			**Nov 03, 2017**	**Nov 03, 2017**	**Nov 03, 2017**	**Nov 03, 2017**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	0.05	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	75	71	91	65
Volatile Organics						
1.1-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.1-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.2-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dibromoethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2.3-Trichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.2.4-Trimethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.3-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.3-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.3.5-Trimethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
1.4-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
2-Butanone (MEK)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
2-Propanone (Acetone)	0.001	mg/L	0.014	0.010	< 0.001	< 0.001
4-Chlorotoluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
4-Methyl-2-pentanone (MIBK)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Allyl chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID			MW2	MW3	MW4	MW5
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			S17-No06608	S17-No06609	S17-No06610	S17-No06611
Date Sampled			Nov 03, 2017	Nov 03, 2017	Nov 03, 2017	Nov 03, 2017
Test/Reference	LOR	Unit				
Volatile Organics						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromochloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromodichloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromoform	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Bromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Carbon disulfide	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Carbon Tetrachloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chlorobenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chloroethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chloroform	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Chloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
cis-1.2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibromochloromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibromomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dichlorodifluoromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Iodomethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Isopropyl benzene (Cumene)	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
Methylene Chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Styrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Tetrachloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
trans-1.2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Trichloroethene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Trichlorofluoromethane	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Vinyl chloride	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
Total MAH*	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
Vic EPA IWRG 621 CHC (Total)*	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
Vic EPA IWRG 621 Other CHC (Total)*	0.005	mg/L	< 0.005	< 0.005	< 0.005	< 0.005
4-Bromofluorobenzene (surr.)	1	%	75	71	91	65
Toluene-d8 (surr.)	1	%	93	92	110	84
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05	< 0.05	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	0.1	< 0.1	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1

Client Sample ID			MW2	MW3	MW4	MW5
Sample Matrix			Water	Water	Water	Water
Eurofins | mgt Sample No.			S17-No06608	S17-No06609	S17-No06610	S17-No06611
Date Sampled			Nov 03, 2017	Nov 03, 2017	Nov 03, 2017	Nov 03, 2017
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.001	mg/L	< 0.001	< 0.001	0.003	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chrysene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001	0.001	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Naphthalene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Phenanthrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Total PAH*	0.001	mg/L	< 0.001	< 0.001	0.0043	< 0.001
2-Fluorobiphenyl (surr.)	1	%	87	56	67	51
p-Terphenyl-d14 (surr.)	1	%	100	70	85	89
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	0.001	< 0.001	0.002	0.001
Cadmium (filtered)	0.0002	mg/L	< 0.0002	0.0002	< 0.0002	0.0006
Chromium (filtered)	0.001	mg/L	0.002	< 0.001	0.002	0.002
Copper (filtered)	0.001	mg/L	0.014	< 0.001	0.002	0.021
Lead (filtered)	0.001	mg/L	0.004	< 0.001	0.002	0.002
Mercury (filtered)	0.0001	mg/L	0.0001	< 0.0001	0.0001	0.0001
Nickel (filtered)	0.001	mg/L	0.014	0.024	0.005	0.014
Zinc (filtered)	0.005	mg/L	0.044	46	41	0.082

Client Sample ID			QW01	[R20]TRIP SPIKE	TRIP BLANK
Sample Matrix			Water	Water	Water
Eurofins | mgt Sample No.			S17-No06612	S17-No06613	S17-No06614
Date Sampled			Nov 03, 2017	Nov 03, 2017	Nov 03, 2017
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	0.02	mg/L	< 0.02	-	-
TRH C10-C14	0.05	mg/L	< 0.05	-	-
TRH C15-C28	0.1	mg/L	< 0.1	-	-
TRH C29-C36	0.1	mg/L	< 0.1	-	-
TRH C10-36 (Total)	0.1	mg/L	< 0.1	-	-
BTEX					
Benzene	0.001	mg/L	< 0.001	86	< 0.001
Toluene	0.001	mg/L	< 0.001	79	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	81	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	83	< 0.002
o-Xylene	0.001	mg/L	< 0.001	87	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	84	< 0.003
4-Bromofluorobenzene (surr.)	1	%	77	71	84

Client Sample ID			QW01	R20TRIP SPIKE	TRIP BLANK
Sample Matrix			Water	Water	Water
Eurofins | mgt Sample No.			S17-No06612	S17-No06613	S17-No06614
Date Sampled			Nov 03, 2017	Nov 03, 2017	Nov 03, 2017
Test/Reference	LOR	Unit			
Volatile Organics					
1.1-Dichloroethane	0.001	mg/L	< 0.001	-	-
1.1-Dichloroethene	0.001	mg/L	< 0.001	-	-
1.1.1-Trichloroethane	0.001	mg/L	< 0.001	-	-
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001	-	-
1.1.2-Trichloroethane	0.001	mg/L	< 0.001	-	-
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001	-	-
1.2-Dibromoethane	0.001	mg/L	< 0.001	-	-
1.2-Dichlorobenzene	0.001	mg/L	< 0.001	-	-
1.2-Dichloroethane	0.001	mg/L	< 0.001	-	-
1.2-Dichloropropane	0.001	mg/L	< 0.001	-	-
1.2.3-Trichloropropane	0.001	mg/L	< 0.001	-	-
1.2.4-Trimethylbenzene	0.001	mg/L	< 0.001	-	-
1.3-Dichlorobenzene	0.001	mg/L	< 0.001	-	-
1.3-Dichloropropane	0.001	mg/L	< 0.001	-	-
1.3.5-Trimethylbenzene	0.001	mg/L	< 0.001	-	-
1.4-Dichlorobenzene	0.001	mg/L	< 0.001	-	-
2-Butanone (MEK)	0.001	mg/L	< 0.001	-	-
2-Propanone (Acetone)	0.001	mg/L	< 0.001	-	-
4-Chlorotoluene	0.001	mg/L	< 0.001	-	-
4-Methyl-2-pentanone (MIBK)	0.001	mg/L	< 0.001	-	-
Allyl chloride	0.001	mg/L	< 0.001	-	-
Benzene	0.001	mg/L	< 0.001	-	-
Bromobenzene	0.001	mg/L	< 0.001	-	-
Bromochloromethane	0.001	mg/L	< 0.001	-	-
Bromodichloromethane	0.001	mg/L	< 0.001	-	-
Bromoform	0.001	mg/L	< 0.001	-	-
Bromomethane	0.001	mg/L	< 0.001	-	-
Carbon disulfide	0.001	mg/L	< 0.001	-	-
Carbon Tetrachloride	0.001	mg/L	< 0.001	-	-
Chlorobenzene	0.001	mg/L	< 0.001	-	-
Chloroethane	0.001	mg/L	< 0.001	-	-
Chloroform	0.005	mg/L	< 0.005	-	-
Chloromethane	0.001	mg/L	< 0.001	-	-
cis-1.2-Dichloroethene	0.001	mg/L	< 0.001	-	-
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001	-	-
Dibromochloromethane	0.001	mg/L	< 0.001	-	-
Dibromomethane	0.001	mg/L	< 0.001	-	-
Dichlorodifluoromethane	0.001	mg/L	< 0.001	-	-
Ethylbenzene	0.001	mg/L	< 0.001	-	-
Iodomethane	0.001	mg/L	< 0.001	-	-
Isopropyl benzene (Cumene)	0.001	mg/L	< 0.001	-	-
m&p-Xylenes	0.002	mg/L	< 0.002	-	-
Methylene Chloride	0.001	mg/L	< 0.001	-	-
o-Xylene	0.001	mg/L	< 0.001	-	-
Styrene	0.001	mg/L	< 0.001	-	-
Tetrachloroethene	0.001	mg/L	< 0.001	-	-
Toluene	0.001	mg/L	< 0.001	-	-
trans-1.2-Dichloroethene	0.001	mg/L	< 0.001	-	-
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001	-	-

Client Sample ID			QW01	R20TRIP SPIKE	TRIP BLANK
Sample Matrix			Water	Water	Water
Eurofins | mgt Sample No.			S17-No06612	S17-No06613	S17-No06614
Date Sampled			Nov 03, 2017	Nov 03, 2017	Nov 03, 2017
Test/Reference	LOR	Unit			
Volatile Organics					
Trichloroethene	0.001	mg/L	< 0.001	-	-
Trichlorofluoromethane	0.001	mg/L	< 0.001	-	-
Vinyl chloride	0.001	mg/L	< 0.001	-	-
Xylenes - Total	0.003	mg/L	< 0.003	-	-
Total MAH*	0.003	mg/L	< 0.003	-	-
Vic EPA IWRG 621 CHC (Total)*	0.005	mg/L	< 0.005	-	-
Vic EPA IWRG 621 Other CHC (Total)*	0.005	mg/L	< 0.005	-	-
4-Bromofluorobenzene (surr.)	1	%	77	-	-
Toluene-d8 (surr.)	1	%	95	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene[N02]	0.01	mg/L	< 0.01	-	-
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	-	-
TRH C6-C10	0.02	mg/L	< 0.02	-	-
TRH >C10-C16	0.05	mg/L	< 0.05	-	-
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05	-	-
TRH >C16-C34	0.1	mg/L	< 0.1	-	-
TRH >C34-C40	0.1	mg/L	< 0.1	-	-
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	0.001	mg/L	0.004	-	-
Acenaphthylene	0.001	mg/L	< 0.001	-	-
Anthracene	0.001	mg/L	< 0.001	-	-
Benz(a)anthracene	0.001	mg/L	< 0.001	-	-
Benzo(a)pyrene	0.001	mg/L	< 0.001	-	-
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001	-	-
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	-	-
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	-	-
Chrysene	0.001	mg/L	< 0.001	-	-
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	-	-
Fluoranthene	0.001	mg/L	< 0.001	-	-
Fluorene	0.001	mg/L	0.001	-	-
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	-	-
Naphthalene	0.001	mg/L	< 0.001	-	-
Phenanthrene	0.001	mg/L	< 0.001	-	-
Pyrene	0.001	mg/L	< 0.001	-	-
Total PAH*	0.001	mg/L	0.0049	-	-
2-Fluorobiphenyl (surr.)	1	%	66	-	-
p-Terphenyl-d14 (surr.)	1	%	101	-	-
Heavy Metals					
Arsenic (filtered)	0.001	mg/L	0.002	-	-
Cadmium (filtered)	0.0002	mg/L	< 0.0002	-	-
Chromium (filtered)	0.001	mg/L	< 0.001	-	-
Copper (filtered)	0.001	mg/L	0.001	-	-
Lead (filtered)	0.001	mg/L	0.001	-	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	-	-
Nickel (filtered)	0.001	mg/L	0.004	-	-
Zinc (filtered)	0.005	mg/L	44	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Nov 07, 2017	7 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Nov 07, 2017	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Nov 07, 2017	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
BTEX	Sydney	Nov 07, 2017	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Volatile Organics	Sydney	Nov 07, 2017	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Polycyclic Aromatic Hydrocarbons	Sydney	Nov 07, 2017	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Water by GCMS			
Metals M8 filtered	Sydney	Nov 08, 2017	28 Day
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			

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Project ID: 54005

Order No.:
Report #: 571253
Phone: 02 8245 0300
Fax:

Received: Nov 7, 2017 5:29 PM
Due: Nov 10, 2017
Priority: 3 Day
Contact Name: Chris Bielby

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Polycyclic Aromatic Hydrocarbons	Metals M8	BTEX	Volatile Organics	Total Recoverable Hydrocarbons
Melbourne Laboratory - NATA Site # 1254 & 14271										
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794										
Perth Laboratory - NATA Site # 23736										
External Laboratory										
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**					
1	MW2	Nov 03, 2017		Water	S17-No06608	X	X	X	X	X
2	MW3	Nov 03, 2017		Water	S17-No06609	X	X	X	X	X
3	MW4	Nov 03, 2017		Water	S17-No06610	X	X	X	X	X
4	MW5	Nov 03, 2017		Water	S17-No06611	X	X	X	X	X
5	QW01	Nov 03, 2017		Water	S17-No06612	X	X	X	X	X
6	TRIP SPIKE	Nov 03, 2017		Water	S17-No06613			X		
7	TRIP BLANK	Nov 03, 2017		Water	S17-No06614			X		
Test Counts						5	5	7	5	5

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

ug/L: micrograms per litre

ppb: Parts per billion

org/100mL: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/L: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.1-Dichloroethene	mg/L	< 0.001			0.001	Pass	
1.1.1-Trichloroethane	mg/L	< 0.001			0.001	Pass	
1.1.1.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.1.2-Trichloroethane	mg/L	< 0.001			0.001	Pass	
1.1.2.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dibromoethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.2-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichloropropane	mg/L	< 0.001			0.001	Pass	
1.2.3-Trichloropropane	mg/L	< 0.001			0.001	Pass	
1.2.4-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichloropropane	mg/L	< 0.001			0.001	Pass	
1.3.5-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.4-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
2-Butanone (MEK)	mg/L	< 0.001			0.001	Pass	
2-Propanone (Acetone)	mg/L	< 0.001			0.001	Pass	
4-Chlorotoluene	mg/L	< 0.001			0.001	Pass	
4-Methyl-2-pentanone (MIBK)	mg/L	< 0.001			0.001	Pass	
Allyl chloride	mg/L	< 0.001			0.001	Pass	
Bromobenzene	mg/L	< 0.001			0.001	Pass	
Bromochloromethane	mg/L	< 0.001			0.001	Pass	
Bromodichloromethane	mg/L	< 0.001			0.001	Pass	
Bromoform	mg/L	< 0.001			0.001	Pass	
Bromomethane	mg/L	< 0.001			0.001	Pass	
Carbon disulfide	mg/L	< 0.001			0.001	Pass	
Carbon Tetrachloride	mg/L	< 0.001			0.001	Pass	
Chlorobenzene	mg/L	< 0.001			0.001	Pass	
Chloroethane	mg/L	< 0.001			0.001	Pass	
Chloroform	mg/L	< 0.005			0.005	Pass	
Chloromethane	mg/L	< 0.001			0.001	Pass	
cis-1.2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
cis-1.3-Dichloropropene	mg/L	< 0.001			0.001	Pass	
Dibromochloromethane	mg/L	< 0.001			0.001	Pass	
Dibromomethane	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Dichlorodifluoromethane	mg/L	< 0.001			0.001	Pass	
Iodomethane	mg/L	< 0.001			0.001	Pass	
Isopropyl benzene (Cumene)	mg/L	< 0.001			0.001	Pass	
Methylene Chloride	mg/L	< 0.001			0.001	Pass	
Styrene	mg/L	< 0.001			0.001	Pass	
Tetrachloroethene	mg/L	< 0.001			0.001	Pass	
trans-1.2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
trans-1.3-Dichloropropene	mg/L	< 0.001			0.001	Pass	
Trichloroethene	mg/L	< 0.001			0.001	Pass	
Trichlorofluoromethane	mg/L	< 0.001			0.001	Pass	
Vinyl chloride	mg/L	< 0.001			0.001	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Heavy Metals							
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	95			70-130	Pass	
TRH C10-C14	%	99			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	106			70-130	Pass	
Toluene	%	111			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Ethylbenzene			%	109			70-130	Pass	
m&p-Xylenes			%	110			70-130	Pass	
o-Xylene			%	107			70-130	Pass	
Xylenes - Total			%	109			70-130	Pass	
LCS - % Recovery									
Volatile Organics									
1.1-Dichloroethene			%	117			70-130	Pass	
1.1.1-Trichloroethane			%	101			70-130	Pass	
1.2-Dichlorobenzene			%	103			70-130	Pass	
1.2-Dichloroethane			%	119			70-130	Pass	
Trichloroethene			%	125			70-130	Pass	
LCS - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions									
Naphthalene			%	86			70-130	Pass	
TRH C6-C10			%	99			70-130	Pass	
TRH >C10-C16			%	102			70-130	Pass	
LCS - % Recovery									
Polycyclic Aromatic Hydrocarbons									
Acenaphthene			%	91			70-130	Pass	
Acenaphthylene			%	87			70-130	Pass	
Anthracene			%	105			70-130	Pass	
Benz(a)anthracene			%	105			70-130	Pass	
Benzo(a)pyrene			%	110			70-130	Pass	
Benzo(b&j)fluoranthene			%	106			70-130	Pass	
Benzo(g.h.i)perylene			%	92			70-130	Pass	
Benzo(k)fluoranthene			%	102			70-130	Pass	
Chrysene			%	102			70-130	Pass	
Dibenz(a.h)anthracene			%	106			70-130	Pass	
Fluoranthene			%	105			70-130	Pass	
Fluorene			%	92			70-130	Pass	
Indeno(1.2.3-cd)pyrene			%	96			70-130	Pass	
Naphthalene			%	79			70-130	Pass	
Phenanthrene			%	102			70-130	Pass	
Pyrene			%	104			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S17-No09604	NCP	%	73			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S17-No09604	NCP	%	79			70-130	Pass	
Toluene	S17-No09604	NCP	%	74			70-130	Pass	
Ethylbenzene	S17-No09604	NCP	%	81			70-130	Pass	
m&p-Xylenes	S17-No09604	NCP	%	83			70-130	Pass	
o-Xylene	S17-No09604	NCP	%	84			70-130	Pass	
Xylenes - Total	S17-No09604	NCP	%	83			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S17-No09604	NCP	%	71			70-130	Pass	
TRH C6-C10	S17-No09604	NCP	%	75			70-130	Pass	

Comments

Sample Integrity

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

Comments

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
R20	This sample is a Trip Spike and therefore all results are reported as a percentage

Authorised By

Nibha Vaidya Analytical Services Manager

Glenn Jackson

National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.

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Sample Receipt Advice

Company name: **JBS & G Australia (NSW) P/L**

Contact name: Chris Bielby
Project name: CHULLORA
Project ID: 54005
COC number: Not provided
Turn around time: 3 Day
Date/Time received: Nov 7, 2017 5:29 PM
Eurofins | mgt reference: **571253**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 7.4 degrees Celsius.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☑ Sample containers for volatile analysis received with zero headspace.
- ☒ Split sample sent to requested external lab.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

QW01A FORWARDED TO ENVIROLAB

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8400 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Chris Bielby - cbielby@jbsg.com.au.

08956

CHAIN OF CUSTODY

JBS&G

PROJECT NO.: 54005	LABORATORY BATCH NO.:
PROJECT NAME: CHULLORA	SAMPLERS: CB
DATE NEEDED BY: 3 DAY	QC LEVEL: NEPM (2013)

PHONE: Sydney: 02 8245 0300 | Perth: 08 9488 0100 | Brisbane: 07 3112 2688

SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) .....@jbsg.com.au; (3) .....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	TRH/BTEX	PAHs	Heavy metals	VOCs	BTEX	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES: 571253
MW2	Water	3/11/17		Plastic, Amber, vials + ice		✓	✓	✓	✓				
BHW3	↓	↓		↓		✓	✓	✓	✓				
MW4						✓	✓	✓	✓				
MW5						✓	✓	✓	✓				
QW01						✓	✓	✓	✓				
Trip Spike/Trip Blank										✓			

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: C Bloom DATE: 7/11/17 OF: JBS&G	CONSIGNMENT NOTE NO. TRANSPORT CO.	NAME: Moses DATE: 7/11/17 OF: Eurofins 17:29	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C 7-40°C
NAME: DATE: OF:	CONSIGNMENT NOTE NO. TRANSPORT CO	NAME: DATE: OF:	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

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CERTIFICATE OF ANALYSIS 179419

Client Details

Client	JBS & G (NSW & WA) Pty Ltd
Attention	Chris Bielby
Address	Level 1, 50 Margaret St, Sydney, NSW, 2000

Sample Details

Your Reference	**54005, Chullora**
Number of Samples	1 Water
Date samples received	08/11/2017
Date completed instructions received	08/11/2017

Analysis Details

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

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

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

Report Details

Date results requested by	13/11/2017
Date of Issue	13/11/2017

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

Results Approved By
Dragana Tomas, Senior Chemist
Jaimie Loa-Kum-Cheung, Senior Chemist
Steven Luong, Senior Chemist

Authorised By

David Springer, General Manager

VOCs in water		
Our Reference		179419-1
Your Reference	UNITS	QW01A
Date Sampled		03/11/2017
Type of sample		Water
Date extracted	-	09/11/2017
Date analysed	-	10/11/2017
Dichlorodifluoromethane	µg/L	<10
Chloromethane	µg/L	<10
Vinyl Chloride	µg/L	<10
Bromomethane	µg/L	<10
Chloroethane	µg/L	<10
Trichlorofluoromethane	µg/L	<10
1,1-Dichloroethene	µg/L	<1
Trans-1,2-dichloroethene	µg/L	<1
1,1-dichloroethane	µg/L	<1
Cis-1,2-dichloroethene	µg/L	<1
Bromochloromethane	µg/L	<1
Chloroform	µg/L	<1
2,2-dichloropropane	µg/L	<1
1,2-dichloroethane	µg/L	<1
1,1,1-trichloroethane	µg/L	<1
1,1-dichloropropene	µg/L	<1
Cyclohexane	µg/L	<1
Carbon tetrachloride	µg/L	<1
Benzene	µg/L	<1
Dibromomethane	µg/L	<1
1,2-dichloropropane	µg/L	<1
Trichloroethene	µg/L	<1
Bromodichloromethane	µg/L	<1
trans-1,3-dichloropropene	µg/L	<1
cis-1,3-dichloropropene	µg/L	<1
1,1,2-trichloroethane	µg/L	<1
Toluene	µg/L	<1
1,3-dichloropropane	µg/L	<1
Dibromochloromethane	µg/L	<1
1,2-dibromoethane	µg/L	<1
Tetrachloroethene	µg/L	<1
1,1,1,2-tetrachloroethane	µg/L	<1
Chlorobenzene	µg/L	<1
Ethylbenzene	µg/L	<1
Bromoform	µg/L	<1

VOCs in water		
Our Reference		179419-1
Your Reference	UNITS	QW01A
Date Sampled		03/11/2017
Type of sample		Water
m+p-xylene	µg/L	<2
Styrene	µg/L	<1
1,1,2,2-tetrachloroethane	µg/L	<1
o-xylene	µg/L	<1
1,2,3-trichloropropane	µg/L	<1
Isopropylbenzene	µg/L	<1
Bromobenzene	µg/L	<1
n-propyl benzene	µg/L	<1
2-chlorotoluene	µg/L	<1
4-chlorotoluene	µg/L	<1
1,3,5-trimethyl benzene	µg/L	<1
Tert-butyl benzene	µg/L	<1
1,2,4-trimethyl benzene	µg/L	<1
1,3-dichlorobenzene	µg/L	<1
Sec-butyl benzene	µg/L	<1
1,4-dichlorobenzene	µg/L	<1
4-isopropyl toluene	µg/L	<1
1,2-dichlorobenzene	µg/L	<1
n-butyl benzene	µg/L	<1
1,2-dibromo-3-chloropropane	µg/L	<1
1,2,4-trichlorobenzene	µg/L	<1
Hexachlorobutadiene	µg/L	<1
1,2,3-trichlorobenzene	µg/L	<1
Surrogate Dibromofluoromethane	%	94
Surrogate toluene-d8	%	99
Surrogate 4-BFB	%	89

vTRH(C6-C10)/BTEXN in Water		
Our Reference		179419-1
Your Reference	UNITS	QW01A
Date Sampled		03/11/2017
Type of sample		Water
Date extracted	-	09/11/2017
Date analysed	-	10/11/2017
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	94
Surrogate toluene-d8	%	99
Surrogate 4-BFB	%	89

svTRH (C10-C40) in Water		
Our Reference		179419-1
Your Reference	UNITS	QW01A
Date Sampled		03/11/2017
Type of sample		Water
Date extracted	-	09/11/2017
Date analysed	-	09/11/2017
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
TRH >C_{10} - C_{16}	µg/L	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Surrogate o-Terphenyl	%	70

PAHs in Water		
Our Reference		179419-1
Your Reference	UNITS	QW01A
Date Sampled		03/11/2017
Type of sample		Water
Date extracted	-	09/11/2017
Date analysed	-	09/11/2017
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	4
Fluorene	µg/L	1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b,j+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	4.8
Surrogate p-Terphenyl-d14	%	85

HM in water - dissolved		
Our Reference		179419-1
Your Reference	UNITS	QW01A
Date Sampled		03/11/2017
Type of sample		Water
Date prepared	-	09/11/2017
Date analysed	-	09/11/2017
Arsenic-Dissolved	µg/L	<1
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	<1
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	3
Zinc-Dissolved	µg/L	52,000

Method ID	Methodology Summary
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-012	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.
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			09/11/2017	[NT]	[NT]	[NT]	[NT]	09/11/2017	[NT]
Date analysed	-			10/11/2017	[NT]	[NT]	[NT]	[NT]	10/11/2017	[NT]
Dichlorodifluoromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-013	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromomethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-013	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroform	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
2,2-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
1,1,1-trichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
1,1-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Cyclohexane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromomethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Bromodichloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Toluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
1,2-dibromoethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromoform	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
m+p-xylene	µg/L	2	Org-013	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Styrene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
o-xylene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
1,2,3-trichloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-013	108	[NT]	[NT]	[NT]	[NT]	97	[NT]
Surrogate toluene-d8	%		Org-013	97	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate 4-BFB	%		Org-013	83	[NT]	[NT]	[NT]	[NT]	107	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			09/11/2017	[NT]	[NT]	[NT]	[NT]	09/11/2017	[NT]
Date analysed	-			10/11/2017	[NT]	[NT]	[NT]	[NT]	10/11/2017	[NT]
TRH C_6 - C_9	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	104	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	104	[NT]
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	99	[NT]
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	105	[NT]
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-016	108	[NT]	[NT]	[NT]	[NT]	97	[NT]
Surrogate toluene-d8	%		Org-016	97	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate 4-BFB	%		Org-016	83	[NT]	[NT]	[NT]	[NT]	107	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			09/11/2017	[NT]	[NT]	[NT]	[NT]	09/11/2017	[NT]
Date analysed	-			09/11/2017	[NT]	[NT]	[NT]	[NT]	09/11/2017	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	117	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	115	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	117	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	115	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
Surrogate o-Terphenyl	%		Org-003	91	[NT]	[NT]	[NT]	[NT]	89	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			09/11/2017	[NT]	[NT]	[NT]	[NT]	09/11/2017	[NT]
Date analysed	-			09/11/2017	[NT]	[NT]	[NT]	[NT]	09/11/2017	[NT]
Naphthalene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Acenaphthylene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Phenanthrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Benzo(a)anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-012	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	117	[NT]	[NT]	[NT]	[NT]	110	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			09/11/2017	1	09/11/2017	09/11/2017		09/11/2017	[NT]
Date analysed	-			09/11/2017	1	09/11/2017	09/11/2017		09/11/2017	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	101	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	101	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	97	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	93	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	102	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	[NT]		100	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	3	3	0	100	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	52000	52000	0	97	[NT]

Result Definitions

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

Quality Control Definitions

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Envirolab

08957

CHAIN OF CUSTODY

JBS&G

PROJECT NO.: 54605	LABORATORY BATCH NO.:
PROJECT NAME: CHULLORA	SAMPLERS: CB
DATE NEEDED BY: 3 DAY	QC LEVEL: NEPM (2013)

PHONE: Sydney: 02 8245 0300 | Perth: 08 9488 0100 | Brisbane: 07 3112 2688

SEND REPORT & INVOICE TO: (1) adminnsw@jbsg.com.au; (2) .....@jbsg.com.au; (3) .....@jbsg.com.au

COMMENTS / SPECIAL HANDLING / STORAGE OR DISPOSAL:

	SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	pH	TEH/BTEX	PAHs	Heavy metals	VOCs	TYPE OF ASBESTOS ANALYSIS: IDENTIFICATION	TYPE OF ASBESTOS ANALYSIS: NEPM/WA	NOTES:
1-	QW01A	WATER	8/11/17		Plastic, Amber, vial s/ve		/	/	/	/			

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

Job No: 179419
Date Received: 8/11
Time Received: 1100
Received by: PH
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Broken/None

RELINQUISHED BY:	METHOD OF SHIPMENT:	RECEIVED BY:	FOR RECEIVING LAB USE ONLY:
NAME: CBIRBY DATE: 7/11/17 OF: JBS&G	CONSIGNMENT NOTE NO. TRANSPORT CO.	NAME: PH DATE: 8/11 1100 OF: ELS	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C
NAME: DATE: OF:	CONSIGNMENT NOTE NO. TRANSPORT CO	NAME: DATE: OF:	COOLER SEAL – Yes..... No ..... Intact ..... Broken ..... COOLER TEMP ..... deg C

Container & Preservative Codes: P = Plastic; J = Soil Jar; B = Glass Bottle; N = Nitric Acid Prsvd.; C = Sodium Hydroxide Prsvd; VC = Hydrochloric Acid Prsvd Vial; VS = Sulfuric Acid Prsvd Vial; S = Sulfuric Acid Prsvd; Z = Zinc Prsvd; E = EDTA Prsvd; ST = Sterile Bottle; O = Other

Appendix I Quality Assurance/Quality Control

ESDAT QA Checker
Project:54005
Filter: ALL

Overview Summary
- Count of Samples
- Summary By Compound
- Count of Results

Holding Times
- Holding Time Errors (1203)

Blanks
- Field Blanks
- Detects in Lab Blanks (0)
- SDG's without Storage Blanks (4)
- SDG's without Method Blanks (0)

Duplicates
- Field and Interlab Duplicates
- Lab Duplicates with high RPDs (1)
- Duplicate Samples with incorrect or missing Parent Samples (0)
- Samples at the same Location/Depth/Time not specified as duplicates (3)

Surrogates
- Surrogate Variation > 30% or outside lab LCL or UCL (35)

Lab Control Samples
- SDG's without a Laboratory Control Sample (0)
- Laboratory Control Samples, Error > 30% (0)

Certified and Standard Reference Materials
- Certified Reference Materials - Error > 10% (0)

Matrix Spikes
- SDG's without a Matrix Spike (0)
- Trip Spikes with invalid Control Sample (0)
- Less than 1 matrix spike in 20 samples (1)
- Matrix Spike Recoveries less than 70% or greater than 130% or outside lab LCL or UCL (0)
- Trip Spike Recoveries (70% - 130% is acceptable) (0)

Inorganic
- Na + CL > TDS (0)
- BOD > COD (0)
- BOD > COD (0)

Other
- Unit Conversion Problems (0)
- OriginalChemNames Requiring Validation (2)
- Samples with no Results (0)
- Samples associated with Wells which are not specified in the Well Table (48)
- Aborted Analysis (0)

INSERT TABLE NAME
Project Number: [Project_Number]
Project Name: [Project_Name]

Field Duplicates (SOIL)
Filter: ALL

			SDG	569649	569649		569649	178629		569649	569649		569649	178629	
			Field ID	B10 1.0-1.1	QC01	**RPD**	B10 1.0-1.1	QC01A	**RPD**	B10 0-1	QC02	**RPD**	B10 0-1	QC02A	**RPD**
			Sampled Date/Time	22/10/2017	22/10/2017		22/10/2017	22/10/2017		22/10/2017	22/10/2017		22/10/2017	22/10/2017	
Chem_Grou	**ChemName**	**Units**	**EQL**												
EPA VIC IWR	Organochlorine Pesticides EPAVic	mg/kg	0.1	<0.1	<0.1	0	<0.1								
	Other Organochlorine Pesticides EPAVic	mg/kg	0.1	<0.1	<0.1	0	<0.1								
	Metals & Metalloids														
	Arsenic (Total)	mg/kg	2 (Primary): 4 (Interlab)	**21.0**	**97.0**	**129**	**21.0**	**75.0**	**113**						
	Cadmium	mg/kg	0.4	0.4	<0.4	0	**0.4**	**3.0**	**153**						
	Chromium (Total)	mg/kg	5 (Primary): 1 (Interlab)	**40.0**	**26.0**	**42**	40.0	51.0	24						
	Copper	mg/kg	5 (Primary): 1 (Interlab)	56.0	42.0	29	**56.0**	**150.0**	**91**						
	Lead	mg/kg	5 (Primary): 1 (Interlab)	52.0	54.0	4	**52.0**	**120.0**	**79**						
	Mercury (Inorganic)	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0						
	Nickel	mg/kg	5 (Primary): 1 (Interlab)	**43.0**	**14.0**	**102**	**43.0**	**31.0**	**32**						
	Zinc	mg/kg	5 (Primary): 1 (Interlab)	180.0	210.0	15	**180.0**	**900.0**	**133**						
	TPHs (NEPC 1999)														
	C6-C9 Fraction	mg/kg	20 (Primary): 25 (Interlab)	<20.0	<20.0	0	<20.0	<25.0	0						
	C10-C14 Fraction	mg/kg	20 (Primary): 50 (Interlab)	<20.0	<20.0	0	<20.0	<50.0	0						
	C15-C28 Fraction	mg/kg	50 (Primary): 100 (Interlab)	<50.0	<50.0	0	<50.0	<100.0	0						
	C29-C36 Fraction	mg/kg	50 (Primary): 100 (Interlab)	<50.0	<50.0	0	<50.0	<100.0	0						
	C10-C36 Fraction (Total)	mg/kg	50	<50.0	<50.0	0	<50.0								
	TRHs (NEPC 2013)														
	>C10-C16 Fraction	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0						
	>C16-C34 Fraction	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0						
	>C34-C40 Fraction	mg/kg	100	<100.0	<100.0	0	<100.0	<100.0	0						
	>C10-C16 less Naphthalene (F2)	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0						
	C6-C10 Fraction	mg/kg	20 (Primary): 25 (Interlab)	<20.0	<20.0	0	<20.0	<25.0	0						
	C6-C10 less BTEX (F1)	mg/kg	20 (Primary): 25 (Interlab)	<20.0	<20.0	0	<20.0	<25.0	0						
	BTEX														
	Benzene	mg/kg	0.1 (Primary): 0.2 (Interlab)	<0.1	<0.1	0	<0.1	<0.2	0						
	Ethylbenzene	mg/kg	0.1 (Primary): 1 (Interlab)	<0.1	<0.1	0	<0.1	<1.0	0						
	Toluene	mg/kg	0.1 (Primary): 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.5	0						
	Xylene (o)	mg/kg	0.1 (Primary): 1 (Interlab)	<0.1	<0.1	0	<0.1	<1.0	0						
	Xylene (m & p)	mg/kg	0.2 (Primary): 2 (Interlab)	<0.2	<0.2	0	<0.2	<2.0	0						
	Xylene (Total)	mg/kg	0.3 (Primary): 1 (Interlab)	<0.3	<0.3	0	<0.3	<1.0	0						
	Polycyclic Aromatic Hydrocarbons														
	Acenaphthene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0						
	Acenaphthylene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0						
	Anthracene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0						
	Benz(a)anthracene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0						
	Benzo(a)pyrene	mg/kg	0.5 (Primary): 0.05 (Interlab)	<0.5	<0.5	0	<0.5	0.05	0						
	Benzo(a)pyrene TEQ (lower bound)*	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0						
	Benzo(a)pyrene TEQ (medium bound)*	mg/kg	0.5	0.6	0.6	0	0.6	<0.5	18						
	Benzo(a)pyrene TEQ (upper bound)*	mg/kg	0.5	1.2	1.2	0	**1.2**	**<0.5**	**82**						
	Benzo(b,j)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5								
	Benzo(g,h,i)perylene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0						
	Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5								
	Chrysene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0						
	Dibenz(a,h)anthracene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0						
	Fluoranthene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	0.2	0						
	Fluorene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0						
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0						
	Naphthalene	mg/kg	0.5 (Primary): 1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0						
	Naphthalene	mg/kg	0.5 (Primary): 1 (Interlab)	<0.5	<0.5	0	<0.5	<0.1	0						
	Phenanthrene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	0.2	0						
	Pyrene	mg/kg	0.5 (Primary): 0.1 (Interlab)	<0.5	<0.5	0	<0.5	0.2	0						
	PAHs (Total)	mg/kg	0.5	<0.5	<0.5	0	<0.5								
	Chlorinated Benzenes														
	Hexachlorobenzene	mg/kg	0.05 (Primary): 0.1 (Interlab)	<0.05	<0.05	0	<0.05	<0.1	0						
	Polychlorinated Biphenyls														
	Aroclor 1016	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0						
	Aroclor 1221	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0						
	Aroclor 1232	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0						
	Aroclor 1242	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0						
	Aroclor 1248	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0						
	Aroclor 1254	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0						
	Aroclor 1260	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0						
	PCBs (Total)	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0						
	Organochlorine Pesticides														
	4,4-DDE	mg/kg	0.05 (Primary): 0.1 (Interlab)	<0.05	<0.05	0	<0.05	<0.1	0						
	Aldrin	mg/kg	0.05 (Primary): 0.1 (Interlab)	<0.05	<0.05	0	<0.05	<0.1	0						
	Aldrin + Dieldrin (Sum of Total)	mg/kg	0.05	<0.05	<0.05	0	<0.05								
	alpha-BHC	mg/kg	0.05 (Primary): 0.1 (Interlab)	<0.05	<0.05	0	<0.05	<0.1	0						
	beta-BHC	mg/kg	0.05 (Primary): 0.1 (Interlab)	<0.05	<0.05	0	<0.05	<0.1	0						
	Dieldrin	mg/kg	0.05 (Primary): 0.1 (Interlab)	<0.05	<0.05	0	<0.05	<0.1	0						
	DDD	mg/kg	0.05 (Primary): 0.1 (Interlab)	<0.05	<0.05	0	<0.05	<0.1	0						
	DDT	mg/kg	0.05 (Primary): 0.1 (Interlab)	<0.05	<0.05	0	<0.05	<0.1	0						
	DDT+DDE+DDD (Sum of Total)	mg/kg	0.05 (Primary): 0.1 (Interlab)	<0.05	<0.05	0	<0.05	<0.1	0						
	Chlordane	mg/kg	0.1	<0.1	<0.1	0	<0.1								
	delta-BHC	mg/kg	0.05 (Primary): 0.1 (Interlab)	<0.05	<0.05	0	<0.05	<0.1	0						
	Endosulfan alpha	mg/kg	0.05 (Primary): 0.1 (Interlab)	<0.05	<0.05	0	<0.05	<0.1	0						
	Endosulfan beta	mg/kg	0.05 (Primary): 0.1 (Interlab)	<0.05	<0.05	0	<0.05	<0.1	0						
	Endosulfan sulphate	mg/kg	0.05 (Primary): 0.1 (Interlab)	<0.05	<0.05	0	<0.05	<0.1	0						
	Endrin	mg/kg	0.05 (Primary): 0.1 (Interlab)	<0.05	<0.05	0	<0.05	<0.1	0						
	Endrin aldehyde	mg/kg	0.05 (Primary): 0.1 (Interlab)	<0.05	<0.05	0	<0.05	<0.1	0						
	Endrin ketone	mg/kg	0.05	<0.05	<0.05	0	<0.05								
	Heptachlor	mg/kg	0.05 (Primary): 0.1 (Interlab)	<0.05	<0.05	0	<0.05	<0.1	0						
	Heptachlor Epoxide	mg/kg	0.05 (Primary): 0.1 (Interlab)	<0.05	<0.05	0	<0.05	<0.1	0						
	Lindane	mg/kg	0.05 (Primary): 0.1 (Interlab)	<0.05	<0.05	0	<0.05	<0.1	0						
	Methoxychlor	mg/kg	0.05 (Primary): 0.1 (Interlab)	<0.05	<0.05	0	<0.05	<0.1	0						
	Toxaphene	mg/kg	1	<1.0	<1.0	0	<1.0								
	Asbestos														
	Approx. Sample Mass	G								503.0	743.0	39	503.0	613.88	
	Asbestos from ACM in Soil	%w/w								0.0	0.0	0	0.0	0.0	0
	Asbestos from FA & AF in Soil	%w/w								0.0	0.0	0	0.0	0.0	0
	Mass ACM	G								0.0	0.0	0	0.0	0.0	0
	Mass Asbestos in ACM	G								0.0	0.0	0	0.0	0.0	0
	Mass FA	G								0.0	0.0	0	0.0	0.0	0
	Mass Asbestos in FA	G								0.0	0.0	0	0.0	0.0	0
	Mass AF	G								0.0	0.0	0	0.0	0.0	0
	Mass Asbestos in FA & AF	G								0.0	0.0	0	0.0	0.0	0

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

INSERT TABLE NAME
Project Number: [Project_Number]
Project Name: [Project_Name]

Field Blanks (WATER)
Filter: ALL

			SDG	571253	569649
			Field ID	TRIP BLANK	TRIP BLANK
			Sampled_Date/Time	3/11/2017	22/10/2017
			Sample Type	Trip_B	Trip_B
Chem_Group	**ChemName**	**Units**	**EQL**		
BTEX	Benzene	mg/l	0.001	<0.001	<0.001
	Ethylbenzene	mg/l	0.001	<0.001	<0.001
	Toluene	mg/l	0.001	<0.001	<0.001
	Xylene (o)	mg/l	0.001	<0.001	<0.001
	Xylene (m & p)	mg/l	0.002	<0.002	<0.002
	Xylene (Total)	mg/l	0.003	<0.003	<0.003
Chlorinated Alkanes	1,1,1,2-tetrachloroethane	mg/l	0.001		
	1,1,1-trichloroethane	mg/l	0.001		
	1,1,2,2-tetrachloroethane	mg/l	0.001		
	1,1,2-trichloroethane	mg/l	0.001		
	1,1-dichloroethane	mg/l	0.001		
	1,2,3-trichloropropane	mg/l	0.001		
	1,2-dibromo-3-chloropropane	mg/l	0.001		
	1,2-dichloroethane	mg/l	0.001		
	1,2-dichloropropane	mg/l	0.001		
	1,3-dichloropropane	mg/l	0.001		
	2,2-dichloropropane	mg/l	0.001		
	Bromochloromethane	mg/l	0.001		
	Carbon tetrachloride	mg/l	0.001		
	Chloroethane	mg/l	0.001		
	Chloromethane	mg/l	0.001		
	Dichlorodifluoromethane	mg/l	0.001		
	Dichloromethane	mg/l	0.001		
	Trichlorofluoromethane	mg/l	0.001		
Chlorinated Alkenes	1,1-dichloroethene	mg/l	0.001		
	1,1-dichloropropene	mg/l	0.001		
	2-chlorotoluene	mg/l	0.001		
	3-chloropropene	mg/l	0.001		
	4-chlorotoluene	mg/l	0.001		
	cis-1,2-dichloroethene	mg/l	0.001		
	cis-1,3-dichloropropene	mg/l	0.001		
	Tetrachloroethene	mg/l	0.001		
	trans-1,2-dichloroethene	mg/l	0.001		
	trans-1,3-dichloropropene	mg/l	0.001		
	Trichloroethene	mg/l	0.001		
	Vinyl Chloride	mg/l	0.001		
Chlorinated Benzenes	1,2,3-trichlorobenzene	mg/l	0.001		
	1,2,4-trichlorobenzene	mg/l	0.001		
	1,2-Dichlorobenzene	mg/l	0.001		
	1,3-dichlorobenzene	mg/l	0.001		
	1,4-dichlorobenzene	mg/l	0.001		
	Chlorobenzene	mg/l	0.001		
EPA VIC IWRG621 (Lab)	Chlorinated Hydrocarbons EPAVic	µg/l	5		
	Other Chlorinated Hydrocarbons EPAVic	µg/l	5		
Metals & Metalloids	Arsenic (Total) (Filtered)	mg/l	0.001		
	Cadmium (Filtered)	mg/l	0.0001		
	Chromium (Total) (Filtered)	mg/l	0.001		
	Copper (Filtered)	mg/l	0.001		
	Lead (Filtered)	mg/l	0.001		
	Mercury (Inorganic) (Filtered)	mg/l	0.00005		
	Nickel (Filtered)	mg/l	0.001		
	Zinc (Filtered)	mg/l	0.001		
Miscellaneous Hydrocarbons	1,2-dibromoethane	mg/l	0.001		
	2-Butanone (MEK)	mg/l	0.001		
	4-Methyl-2-pentanone (MIBK)	mg/l	0.001		
	Bromomethane	mg/l	0.001		
	Cyclohexane	mg/l	0.001		
	Dibromomethane	mg/l	0.001		
	Iodomethane	mg/l	0.001		
Miscellaneous Industrial Chemicals	Hexachlorobutadiene	mg/l	0.001		
Monocyclic Aromatic Hydrocarbons	1,2,4-trimethyl benzene	mg/l	0.001		
	1,3,5-trimethyl benzene	mg/l	0.001		
	4-isopropyl toluene	mg/l	0.001		
	Bromobenzene	mg/l	0.001		
	Isopropylbenzene	mg/l	0.001		
	n-butyl benzene	mg/l	0.001		
	n-propyl benzene	mg/l	0.001		
	sec-butyl benzene	mg/l	0.001		
	Styrene	mg/l	0.001		
	Tert-butyl benzene	mg/l	0.001		
Organic Sulfur Compounds	Carbon disulfide	mg/l	0.001		
Polycyclic Aromatic Hydrocarbons	Acenaphthene	mg/l	0.001		
	Acenaphthylene	mg/l	0.001		
	Anthracene	mg/l	0.001		
	Benz(a)anthracene	mg/l	0.001		
	Benzo(a)pyrene	mg/l	0.001		
	Benzo(a)pyrene TEQ (WHO)	mg/l	0.005		
	Benzo(b,j)fluoranthene	mg/l	0.001		
	Benzo(g,h,i)perylene	mg/l	0.001		
	Benzo(k)fluoranthene	mg/l	0.001		
	Chrysene	mg/l	0.001		
	Dibenz(a,h)anthracene	mg/l	0.001		
	Fluoranthene	mg/l	0.001		
	Fluorene	mg/l	0.001		
	Indeno(1,2,3-c,d)pyrene	mg/l	0.001		
	Naphthalene	mg/l	0.001		
	Phenanthrene	mg/l	0.001		
	Pyrene	mg/l	0.001		
	PAHs (Total)	mg/l	0.001		
	Total Positive PAHs	mg/l	0.001		
Solvents	2-Propanone (Acetone)	µg/l	1		
TPHs (NEPC 1999)	C6-C9 Fraction	mg/l	0.01		
	C10-C14 Fraction	mg/l	0.05		
	C15-C28 Fraction	mg/l	0.1		
	C29-C36 Fraction	mg/l	0.1		
	C10-C36 Fraction (Total)	mg/l	0.1		
TRHs (NEPC 2013)	>C10-C16 Fraction	mg/l	0.05		
	>C16-C34 Fraction	mg/l	0.1		
	>C34-C40 Fraction	mg/l	0.1		
	>C10-C16 less Naphthalene (F2)	mg/l	0.05		
	C6-C10 Fraction	mg/l	0.01		
	C6-C10 less BTEX (F1)	mg/l	0.01		

Group/Range	Compound	Range	Best GA (Neuman)	Best Results Compound(s)	Grouping Group	Sampling Sampling %	Sampling Accepted	Recovery %	Blue Reported	Accepted	Method and Group Notes Range	Blue Reported	Recovery %	Blue Reported	Accepted	Method Duplicate With RPD > EQL	Blue Reported	Accepted
Acetals																		
Acetals	Acetals (1,3-Dioxolane)	0.5-2%	0	Other	12	11	Y			Y					Y			Y
	Acetals (1,3 & 1,4-Dioxane)	0.5-2%	0	Other	12	11	Y			Y					Y			Y
Acetals																		
	Acetals (1,3-Dioxolane)	0.5-2%	0	Other	12	11	Y			Y					Y			Y
	Acetals (1,3 & 1,4-Dioxane)	0.5-2%	0	Other	12	11	Y			Y					Y			Y
Alcohols																		
	Meo-4-MO	0.5-2%	4	Other	4	11	Y			Y					Y			Y
	Meo-Ethoxy-1-Pr	0.5-2%	4	Other	4	11	Y			Y					Y			Y
	Meo-Ethoxy-1-Et	0.5-2%	4	Other	4	11	Y			Y					Y			Y
	Meo-1-Pr	0.5-2%	4	Other	4	11	Y			Y					Y			Y
	Meo-1-Et	0.5-2%	4	Other	4	11	Y			Y					Y			Y
Alkanes – Trace Analysis																		
	4,4'-Carmoisine	0.5-2%	4	Other	4	11	Y			Y					Y			Y
	Ba, Carmoisine	0.5-2%	4	Other	4	11	Y			Y					Y			Y
	Ba, Carmoisine, Carmoisine	0.5-2%	4	Other	4	11	Y			Y					Y			Y
	Sunset Yellow - Carmoisine	0.5-2%	4	Other	4	11	Y			Y					Y			Y
BTEX																		
	Benzene	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	79.5-110		Y	90		79.5-110		Y			Y
	Toluene	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	87.5-106		Y	90		87.5-106		Y			Y
	Ethylbenzene	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	89.2-111		Y	90		89.2-111		Y			Y
	Xylene (-p)	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	90.1-108		Y	90		90.1-108		Y			Y
	Xylene (m)	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	90.3-109		Y	90		90.3-109		Y			Y
	Xylene (o)	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	90-110		Y	90		90-110		Y			Y
Chlorinated Benzenes																		
	Monochlorobenzene	0.5-2%(7d)	3	VOC	0.5-3	3+(1)	Y	77.6-7		Y	90							
EPA VOC 8260/624 (Lab)																		
	Dichlorodifluoromethane (Freon 12)	0.5-2%(7d)	3	VOC	4	11	Y			Y					Y			Y
Ketones & Aldehydes																		
	Acetone (Ketone)	1-2%(7d)	5	Other	0.5-3	3+(1)	Y	81.5-113		Y	90		81.5-113		Y	19		Y
	Crotonaldehyde	0.5-2%(7d)	5	Other	0.5-3	3+(1)	Y	87.5-105		Y	90		87.5-105		Y	42		Y
	Formaldehyde	0.5-2%(7d)	5	Other	0.5-3	3+(1)	Y	81-119		Y	90		81-119		Y	21		Y
	Propanal (propanal)	1-2%(7d)	5	Other	0.5-3	3+(1)	Y	87.5-105		Y	90		87.5-105		Y	7		Y
	Propanal	1-2%(7d)	5	Other	0.5-3	3+(1)	Y	81-119		Y	90		81-119		Y	7		Y
Organochlorine Pesticides																		
	4,4-DDE	0.05-2%(7d)	6	VOC	0.5-3	3+(1)	Y	87.5-105		Y	90							
	Alpha-Chlordane (Sum of Total)	0.05-2%(7d)	6	VOC	0.5-3	3+(1)	Y	79-117		Y	90							
	Alpha-Chlordane	0.05-2%(7d)	6	VOC	0.5-3	3+(1)	Y			Y	90							
	Dieldrin	0.1-2%(7d)	6	VOC	0.5-3	3+(1)	Y	81-119		Y	90							
	Endrin	0.1-2%(7d)	6	VOC	0.5-3	3+(1)	Y	79.5-120		Y	90							
	Gamma-Chlordane (Sum of Total)	0.05-2%(7d)	6	VOC	0.5-3	3+(1)	Y	89-118		Y	90							
	Heptachlor	0.05-2%(7d)	6	VOC	0.5-3	3+(1)	Y			Y	90							
	Heptachlor Epoxide	0.05-2%(7d)	6	VOC	0.5-3	3+(1)	Y	81-119		Y	90							
	Methoxychlor	0.05-2%(7d)	6	VOC	0.5-3	3+(1)	Y	81-119		Y	90							
	Mirex	0.05-2%(7d)	6	VOC	0.5-3	3+(1)	Y	81-119		Y	90							
	Oxychlordane	0.05-2%(7d)	6	VOC	0.5-3	3+(1)	Y	81.5-118		Y	90							
	Trans-Nonachlor	0.05-2%(7d)	6	VOC	0.5-3	3+(1)	Y	81-119		Y	90							
Other																		
	Methanol (VOC)	1-2%	4	Other	4	11	Y			Y	90							
Organochlorinated Aliphatics																		
	Acetone (GC)	0.1-2%(7d)	3	VOC	0.5-3	3+(1)	Y			Y	90							
	Acetone (LC)	0.1-2%(7d)	3	VOC	0.5-3	3+(1)	Y			Y	90							
	Acetone (LC/MS)	0.1-2%(7d)	3	VOC	0.5-3	3+(1)	Y			Y	90							
	Acetone (MS)	0.1-2%(7d)	3	VOC	0.5-3	3+(1)	Y	80-119		Y	90							
	Acetone (UV)	0.1-2%(7d)	3	VOC	0.5-3	3+(1)	Y	84-116		Y	90							
Polycyclic Aromatic Hydrocarbons																		
	Acenaphthene	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y			Y	90							
	Acenaphthylene	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	137-119		Y	90							
	Anthracene	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	133-113		Y	90							
	Benzo(a)pyrene	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	81-119		Y	90							
	Benzo(a)pyrene (TCI Deuterated)	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	81-119		Y	90							
	Benzo(a)pyrene (TCI Deuterated)	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y			Y	90							
	Benzo(b)fluoranthene	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	133-113		Y	90							
	Benzo(g,h,i)perylene	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	137-113		Y	90							
	Benzo(k)fluoranthene	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	137-113		Y	90							
	Chrysene	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	81-119		Y	90							
	Dibenzo(a,h)anthracene	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	81-119		Y	90							
	Fluoranthene	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	81-119		Y	90							
	Fluorene	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	81-119		Y	90							
	Indeno(1,2,3-cd)pyrene	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	81-119		Y	90							
	Naphthalene	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	81-119		Y	90							
	Pyrene	0.1-2%(7d)	24	VOC	0.5-3	3+(1)	Y	81-119		Y	90							
Surrogate																		
	4-Bromofluorobenzene (Surr)	0.05-2%(7d)	6	VOC	0.5-3	3+(1)	Y	79.5-120		Y	90		79.5-120		Y	0		Y
	Surrogate 1 Low Additional	0.05-2%(7d)	6	VOC	0.5-3	3+(1)	Y	79.5-120		Y	90		79.5-120		Y	0		Y
	Surrogate 1 Low Recovery	0.05-2%(7d)	6	VOC	0.5-3	3+(1)	Y	79.5-120		Y	90		79.5-120		Y	0		Y
	Surrogate 2 Dibromofluoromethane	0.05-2%(7d)	6	VOC	0.5-3	3+(1)	Y	79.5-120		Y	90		79.5-120		Y	0		Y
	Surrogate 3 Toluene-d8	0.05-2%(7d)	6	VOC	0.5-3	3+(1)	Y	79.5-120		Y	90		79.5-120		Y	0		Y
Vinyl Chloride (VC)																		
	2,3-Dichloropropene	0.05-2%(7d)	24	VOC	0.5-3	3+(1)	Y	79.5-134		Y	90		79.5-134		Y	21		Y
	2,3-Dichloropropene (Total)	0.05-2%(7d)	24	VOC	0.5-3	3+(1)	Y	79.5-134		Y	90		79.5-134		Y	21		Y
	2,3-Dichloropropene	0.05-2%(7d)	24	VOC	0.5-3	3+(1)	Y	79.5-134		Y	90		79.5-134		Y	21		Y
	2,3-Dichloropropene	0.05-2%(7d)	24	VOC	0.5-3	3+(1)	Y	79.5-134		Y	90		79.5-134		Y	21		Y
	2,3-Dichloropropene	0.05-2%(7d)	24	VOC	0.5-3	3+(1)	Y	79.5-134		Y	90		79.5-134		Y	21		Y
Vinyl Chloride (VC)																		
	1,2-DCE (cis-1,2-Dichloroethene) (FI)	0.05-2%(7d)	24	VOC	0.5-3	3+(1)	Y	79.5-134		Y	90		79.5-134		Y	21		Y
	1,2-DCE (cis-1,2-Dichloroethene) (FI)	0.05-2%(7d)	24	VOC	0.5-3	3+(1)	Y	79.5-134		Y	90		79.5-134		Y	21		Y
	1,2-DCE (cis-1,2-Dichloroethene

INSERT TABLE NAME
Project Number: [Project_Number]
Project Name: [Project_Name]

Contents

Count of Samples

Matrix Type	SOIL	WATER
First Sample Date	22/10/2017	22/10/2017
Last Sample Date	22/10/2017	3/11/2017
Sampling Period (days)	1	13
Number of Samples Submitted	39	8
Number of Non QA Samples Submitted	33	4
Number of Field Blanks	0	0
Number of Trip Blanks	0	2
Number of Rinsates	0	0
Number of Field Duplicates	3	1
Number of Trip Spikes	0	2
Number of Lab Duplicates	3	2
Number of LCSs	8	6
Number of CRMs	0	0
Number of Method Blanks	7	7
Number of Storage Blanks	0	0
Number of Matrix Spikes	7	1
Number of Matrix Spike Dupes	0	0

Appendix J Borehole Logs

B1/MW1

Project Number: 54005
Client: Pacific National
Project Name: Chullora Prov Facility Assessment
Site Address: 20 Dasea Street, Chullora, NSW

Date: 10/22/2017
Logged By: Chris.B
Contractor:
Total Hole Depth (mbgs): 2.5
Bore Diameter (mm): 50

Eastings (GDA 94):
Northings (GDA 94):
Zone/Area/Permit#: N/A
Reference Level: Ground Surface
Elevation (m):

Water Level Initial (mbgs):
Surface Finish: Standpipe
Casing / Screen Type: Class 18 PVC - 50mm
Casing Bottom Depth (mbgs): 0.4
Screen Bottom Depth (mbgs): 2.5

Method	Water (mbgs)	Well Details	Depth (mbgs)	Contact (mbgs)	Graphic Log	Lithological Class	Lithological Description	Samples Tests Remarks	Additional Observations
Push Tube						Fill	Fill - Gravelly SAND, dark brown, heterogeneous, damp, stiff, with inclusions of ash/slag	B1 0.0-0.1	Asbestos, hydrocarbon odour, no staining
				0.50		Fill	Fill - Gravelly SAND, dark brown, heterogeneous, wet, stiff, with inclusions of ash/slag	B1 0.5-0.6	No ACM, hydrocarbon odour, no staining
			1	0.80		CH-MH	Silty CLAY, brown with grey mottles, damp, stiff, high plasticity	B1 1.0-1.1	No ACM, no odour, no staining
			2					B1 2.0-2.1	No ACM, no odour, no staining
				2.50			Borehole B1/MW1 terminated at 2.5m		
			3						
			4						
			5						
			6						
			7						
			8						

B2

Project Number: 54005
Client: Pacific National
Project Name: Chullora Prov Facility Assessment
Site Address: 20 Dasea Street, Chullora, NSW

Date: 10/22/2017
Logged By: Chris.B
Contractor:
Total Hole Depth (mbgs): 2.2
Bore Diameter (mm): 50

Eastings (GDA 94):
Northings (GDA 94):
Zone/Area/Permit#: N/A
Reference Level: Ground Surface
Elevation (m):

Water Level Initial (mbgs):
Surface Finish:
Casing / Screen Type:
Casing Bottom Depth (mbgs):
Screen Bottom Depth (mbgs):

Method	Water (mbgs) Depth (mbgs)	Contact (mbgs)	Graphic Log	Lithological Class	Lithological Description	Samples Tests Remarks	Additional Observations
Push Tube				Fill	Fill - Gravelly SAND, dark brown, loose, with inclusions of ash/slag	B2 0.0-0.1	Asbestos, slight hydrocarbon odour, no staining
		0.50		Fill	Fill - Gravelly SAND, dark brown, wet, loose with inclusions of ash/slag	B2 0.5-0.6	No ACM, slight hydrocarbon odour, no staining
		0.60		CH-MH	Silty CLAY, brown with grey mottles, damp, stiff, high plasticity		
	1					B2 1.0-1.1	No ACM, no odour, no staining
	2					B2 2.0-2.1	No ACM, no odour, no staining
		2.20			Borehole B2 terminated at 2.2m		
	3						
	4						
	5						
	6						
	7						
	8						

B3

Project Number: 54005
Client: Pacific National
Project Name: Chullora Prov Facility Assessment
Site Address: 20 Dasea Street, Chullora, NSW

Date: 10/22/2017
Logged By: Chris.B
Contractor:
Total Hole Depth (mbgs): 2.2
Bore Diameter (mm): 50

Eastings (GDA 94):
Northings (GDA 94):
Zone/Area/Permit#: N/A
Reference Level: Ground Surface
Elevation (m):

Water Level Initial (mbgs):
Surface Finish:
Casing / Screen Type:
Casing Bottom Depth (mbgs):
Screen Bottom Depth (mbgs):

Method	Water (mbgs) Depth (mbgs)	Contact (mbgs)	Graphic Log	Lithological Class	Lithological Description	Samples Tests Remarks	Additional Observations
Push Tube				Fill	Fill - Gravelly SAND, brown, heterogeneous, wet, with inclusions of ash/slag and igneous gravels	B3 0.0-0.1	No ACM, slight hydrocarbon odour, no staining
						B3 0.5-0.6	No ACM, slight hydrocarbon odour, no staining
		0.60		CH-MH	Silty CLAY, brown, damp, stiff, high plasticity		
	1					B3 1.0-1.1	No ACM, no odour, no staining
	2					B3 2.0-2.1	No ACM, no odour, no staining
		2.20			Borehole B3 terminated at 2.2m		
	3						
	4						
	5						
	6						
	7						
	8						

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B4/MW2

Project Number: 54005
Client: Pacific National
Project Name: Chullora Prov Facility Assessment
Site Address: 20 Dasea Street, Chullora, NSW

Date: 10/22/2017
Logged By: Chris.B
Contractor:
Total Hole Depth (mbgs): 7.6
Bore Diameter (mm): 50

Eastings (GDA 94):
Northings (GDA 94):
Zone/Area/Permit#: N/A
Reference Level: Ground Surface
Elevation (m):

Water Level Initial (mbgs):
Surface Finish: Standpipe
Casing / Screen Type: Class 18 PVC - 50mm
Casing Bottom Depth (mbgs): 2.1
Screen Bottom Depth (mbgs): 7.6

Method	Water (mbgs)	Well Details	Depth (mbgs)	Contact (mbgs)	Graphic Log	Lithological Class	Lithological Description	Samples Tests Remarks	Additional Observations
Push Tube						Fill	Fill - CONCRETE		
				0.40		Fill	Fill - Gravelly CLAY, brown, heterogeneous, damp, stiff, medium plasticity, with inclusions of ash/slag	B4 0.4-0.5	No ACM, slight hydrocarbon odour, no staining
			1	0.80		Fill	Fill - Gravelly CLAY, black, heterogeneous, damp, stiff, medium plasticity, with considerable inclusions of ash/slag	B4 1.0-1.1	No ACM, slight hydrocarbon odour, no staining
				1.40		Fill	Fill - Gravelly CLAY, black, heterogeneous, wet, stiff, medium plasticity, with considerable inclusions of ash/slag	B4 1.5-1.6	No ACM, hydrocarbon odour, no staining
				1.50		CH-MH	Silty CLAY, brown, moist, stiff, high plasticity		
			2	2.00		CH-MH	Silty CLAY, brown, damp, stiff, high plasticity	B4 2.0-2.1	No ACM, no odour, no staining
			3						
			4						
			5						
			6						
			7						
				7.60			Borehole B4/MW2 terminated at 7.6m		
			8						

B5/MW3

Project Number: 54005
Client: Pacific National
Project Name: Chullora Prov Facility Assessment
Site Address: 20 Dasea Street, Chullora, NSW

Date: 10/22/2017
Logged By: Chris.B
Contractor:
Total Hole Depth (mbgs): 6.5
Bore Diameter (mm): 50

Eastings (GDA 94):
Northings (GDA 94):
Zone/Area/Permit#: N/A
Reference Level: Ground Surface
Elevation (m):

Water Level Initial (mbgs):
Surface Finish: Standpipe
Casing / Screen Type: Class 18 PVC - 50mm
Casing Bottom Depth (mbgs): 4
Screen Bottom Depth (mbgs): 6.5

Method	Water (mbgs)	Well Details	Depth (mbgs)	Contact (mbgs)	Graphic Log	Lithological Class	Lithological Description	Samples Tests Remarks	Additional Observations
Push Tube			1			Fill	Fill - Gravelly CLAY, brown, heterogeneous, damp, stiff, with inclusions of ash/slag	B5 0.0-0.1	No ACM, no odour, no staining
								B5 0.5-0.6	No ACM, no odour, no staining
								B5 1.0-1.1	No ACM, no odour, no staining
			2	1.50		Fill	Fill - Gravelly CLAY, brown, heterogeneous, moist, stiff, with considerable inclusions of ash/slag	B5 2.0-2.1	No ACM, no odour, no staining
			3	2.50		CH-MH	Silty CLAY, grey with red mottles, wet, stiff, high plasticity	B5 3.0-3.1	No ACM, no odour, no staining
			4						
			5						
			6						
			7	6.50			Borehole B5/MW3 terminated at 6.5m		
			8						

B6

Project Number: 54005
Client: Pacific National
Project Name: Chullora Prov Facility Assessment
Site Address: 20 Dasea Street, Chullora, NSW

Date: 10/22/2017
Logged By: Chris.B
Contractor:
Total Hole Depth (mbgs): 6.5
Bore Diameter (mm): 50

Eastings (GDA 94):
Northings (GDA 94):
Zone/Area/Permit#: N/A
Reference Level: Ground Surface
Elevation (m):

Water Level Initial (mbgs):
Surface Finish:
Casing / Screen Type:
Casing Bottom Depth (mbgs):
Screen Bottom Depth (mbgs):

Method	Water (mbgs)	Depth (mbgs)	Contact (mbgs)	Graphic Log	Lithological Class	Lithological Description	Samples Tests Remarks	Additional Observations
Push Tube					Fill	Fill - Gravelly CLAY, brown, heterogeneous, damp, stiff, with inclusions of ash/slag	B6 0.0-0.1	No ACM, no odour, no staining
							B6 0.5-0.6	No ACM, no odour, no staining
		1					B6 1.0-1.1	No ACM, no odour, no staining
			1.50		Fill	Fill - Gravelly CLAY, brown, heterogeneous, moist, stiff, with considerable inclusions of ash/slag		
		2					B6 2.0-2.1	No ACM, no odour, no staining
			2.50		CH-MH	Silty CLAY, grey with red mottles, wet, stiff, high plasticity		
		3					B6 3.0-3.1	No ACM, no odour, no staining
		4						
		5						
		6						
			6.50			Borehole B6 terminated at 6.5m		
		7						
		8						

B7

Project Number: 54005
Client: Pacific National
Project Name: Chullora Prov Facility Assessment
Site Address: 20 Dasea Street, Chullora, NSW

Date: 10/22/2017
Logged By: Chris.B
Contractor:
Total Hole Depth (mbgs): 3.9
Bore Diameter (mm): 50

Eastings (GDA 94):
Northings (GDA 94):
Zone/Area/Permit#: N/A
Reference Level: Ground Surface
Elevation (m):

Water Level Initial (mbgs):
Surface Finish:
Casing / Screen Type:
Casing Bottom Depth (mbgs):
Screen Bottom Depth (mbgs):

Method	Water (mbgs) Depth (mbgs)	Contact (mbgs)	Graphic Log	Lithological Class	Lithological Description	Samples Tests Remarks	Additional Observations
Push Tube				Fill	Fill - Gravelly CLAY, brown, heterogeneous, damp, with inclusions of ash/slag	B7 0.0-0.1	No ACM, no odour, no staining
						B7 0.5-0.6	No ACM, no odour, no staining
	1					B7 1.0-1.1	No ACM, no odour, no staining
		1.80		Fill	Fill - Gravelly CLAY, black, heterogeneous, wet, with considerable inclusions of ash/slag		
	2					B7 2.0-2.1	No ACM, no odour, no staining
		2.20		CH-MH	Silty CLAY, brown with grey mottles, damp, stiff, high plasticity		
	3					B7 3.0-3.1	No ACM, no odour, no staining
	4	3.90			Borehole B7 terminated at 3.9m		
	5						
	6						
	7						
	8						

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B8

Project Number: 54005
Client: Pacific National
Project Name: Chullora Prov Facility Assessment
Site Address: 20 Dasea Street, Chullora, NSW

Date: 10/22/2017
Logged By: Chris.B
Contractor:
Total Hole Depth (mbgs): 2.2
Bore Diameter (mm): 50

Eastings (GDA 94):
Northings (GDA 94):
Zone/Area/Permit#: N/A
Reference Level: Ground Surface
Elevation (m):

Water Level Initial (mbgs):
Surface Finish:
Casing / Screen Type:
Casing Bottom Depth (mbgs):
Screen Bottom Depth (mbgs):

Method	Water (mbgs) Depth (mbgs)	Contact (mbgs)	Graphic Log	Lithological Class	Lithological Description	Samples Tests Remarks	Additional Observations
Push Tube				Fill	Fill - Gravelly CLAY, dark brown, heterogeneous, damp, with inclusions of ash/slag	B8 0.0-0.1	Asbestos, no odour, no staining
						B8 0.5-0.6	No ACM, no odour, no staining
	1	1.00		Fill	Fill - Gravelly CLAY, dark brown, heterogeneous, wet, with inclusions of ash/slag	B8 1.0-1.1	No ACM, no odour, no staining
		1.20		CH-MH	Silty CLAY, brown with grey mottles, damp, stiff		
	2					B8 2.0-2.1	No ACM, no odour, no staining
		2.20			Borehole B8 terminated at 2.2m		
	3						
	4						
	5						
	6						
	7						
	8						

B9

Project Number: 54005
Client: Pacific National
Project Name: Chullora Prov Facility Assessment
Site Address: 20 Dasea Street, Chullora, NSW

Date: 10/22/2017
Logged By: Chris.B
Contractor:
Total Hole Depth (mbgs): 4.2
Bore Diameter (mm): 50

Eastings (GDA 94):
Northings (GDA 94):
Zone/Area/Permit#: N/A
Reference Level: Ground Surface
Elevation (m):

Water Level Initial (mbgs):
Surface Finish:
Casing / Screen Type:
Casing Bottom Depth (mbgs):
Screen Bottom Depth (mbgs):

Method	Water (mbgs) Depth (mbgs)	Contact (mbgs)	Graphic Log	Lithological Class	Lithological Description	Samples Tests Remarks	Additional Observations
Push Tube				Fill	Fill - Gravelly CLAY, brown, heterogeneous, damp, with inclusions of ash/slag	B9 0.0-0.1	No ACM, no odour, no staining
						B9 0.5-0.6	No ACM, no odour, no staining
	1					B9 1.0-1.1	No ACM, no odour, no staining
	2					B9 2.0-2.1	No ACM, no odour, no staining
	3					B9 3.0-3.1	No ACM, no odour, no staining
		3.20		CH-MH	Silty CLAY, brown with grey mottles		
	4						
		4.20			Borehole B9 terminated at 4.2m		
	5						
	6						
	7						
	8						

B10

Project Number: 54005
Client: Pacific National
Project Name: Chullora Prov Facility Assessment
Site Address: 20 Dasea Street, Chullora, NSW

Date: 10/22/2017
Logged By: Chris.B
Contractor:
Total Hole Depth (mbgs): 4.2
Bore Diameter (mm): 50

Eastings (GDA 94):
Northings (GDA 94):
Zone/Area/Permit#: N/A
Reference Level: Ground Surface
Elevation (m):

Water Level Initial (mbgs):
Surface Finish:
Casing / Screen Type:
Casing Bottom Depth (mbgs):
Screen Bottom Depth (mbgs):

Method	Water (mbgs) Depth (mbgs)	Contact (mbgs)	Graphic Log	Lithological Class	Lithological Description	Samples Tests Remarks	Additional Observations
Push Tube				Fill	Fill - Gravelly CLAY, with inclusions of ash/slag, igneous gravels and sandstone	B10 0.0-0.1	Asbestos, no odour, no staining
						B10 0.5-0.6	No ACM, no odour, no staining
	1					B10 1.0-1.1	No ACM, no odour, no staining
	2					B10 2.0-2.1	No ACM, no odour, no staining
		2.50		Fill	Fill - Gravelly CLAY, black, wet, with inclusions of ash/slag, igneous gravels and sandstone		
		2.70		CH	CLAY, brown, damp, high plasticity		
	3					B10 3.0-3.1	No ACM, no odour, no staining
	4						
		4.20			Borehole B10 terminated at 4.2m		
	5						
	6						
	7						
	8						

B11/MW5

Project Number: 54005
Client: Pacific National
Project Name: Chullora Prov Facility Assessment
Site Address: 20 Dasea Street, Chullora, NSW

Date: 11/22/2017
Logged By: Chris B
Contractor:
Total Hole Depth (mbgs): 7.6
Bore Diameter (mm): 50

Eastings (GDA 94):
Northings (GDA 94):
Zone/Area/Permit#: N/A
Reference Level: Ground Surface
Elevation (m):

Water Level Initial (mbgs): 2.5
Surface Finish: Standpipe
Casing / Screen Type: Class 18 PVC - 50mm
Casing Bottom Depth (mbgs): 2.1
Screen Bottom Depth (mbgs): 7.6

Method	Water (mbgs)	Well Details	Depth (mbgs)	Contact (mbgs)	Graphic Log	Lithological Class	Lithological Description	Samples Tests Remarks	Additional Observations
Push Tube						Fill	Fill - Gravelly CLAY, brown, heterogeneous, damp, stiff, medium plasticity, with inclusions of ash/slag	B11 0.2-0.3	No ACM, no odour, no staining
			1					B11 1.0-1.1	No ACM, no odour, no staining
				1.20		CH-MH	Silty CLAY - brown with grey mottles, damp		
			2						
			3						
			4						
			5						
			6						
			7						
				7.60			Borehole B11/MW5 terminated at 7.6m		
			8						

Appendix K Field Notes and Calibration Certificates

Groundwater Sampling Form
FIELD RECORD SHEETS

JBS&G

Project name:	**Location:**	**Well ID:** MW2
Project number:		
Person sampling:	**Sampling Date:**	**Weather:**

Casing Diameter (mm):		**Depth to NAPL (mBTOC):**	—
Well Completion:	Flush Mount / Monument	**Depth to SWL (mBTOC):**	4.749
Well Cap Type:	Locking Cap / PVC / Other	**NAPL Thickness (m):**	—
Well Condition:	Good / Compromised (see notes)	**Depth to EoH (mbtoc):**	7.500
Calculated Well Volume (L):		**Water Column Depth (m):**	
Sampling Method:	Purge Volume: 4 Casings Vol. (L):	**NAPL Visually Verified?**	—
	Low Flow: Pump Submersion depth (mBTOC):		

Time	Volume Purged	Dissolved Oxygen	Temp.	pH	EC	ORP	Comments
	L	% ☐ mgL/ppm ☒	°C	pH units	~~S/cm~~ TDS ppk	mV	include SWL for low flow (mBTOC)
	2	1.43	21.9	6.11	3.40	144	
	3	1.43	21.9	6.10	3.88	140	
	4	1.43	21.9	6.09	3.37	144	
	5	1.41	21.9	6.11	3.35	144	
Acceptable Variation*		+/-10%	+/- 0.2 °C	+/-0.1 pH	+/-5%	+/-10mV	**Results Acceptable: YES / NO**

LOW FLOW: Typical flow rate = 0.2- 0.4 L/min - Max. drawdown = 0.1 m - Well stable when 3 consecutive readings (either 3min apart or 1L apart)

PURGE: Min. sampling volume is 4 casing volumes or dry twice - 1 casing volume (50mm wells) = 2 L/m - 1 casing volume (100mm wells) = 8 L/m

Clarity:	Mod. turbidity	**Sheen:**	YES / NO
Colour:	Light brown	**Odour:**	YES / NO

			No.	Container / Preservative
Primary sample ID:				
Duplicate sample:	YES / NO	ID:		
Triplicate sample:	YES / NO	ID:		
Rinsate sample:	YES / NO	ID:		
Sample on ice:	YES / NO			
Field Filter Method:	0.45µm Filter / Not Filtered			
Water Quality Meter:				
Guaging Equipment:				
Pump Type:				

Notes:

Calculated Well Volume (L) = Water Column Depth (m) * Conversion Factor (from table)

Casing Diameter	25mm	50mm	100mm	150mm	300mm
Conversion Factor	0.98	1.96	7.85	49.1	196.3

Volume of water in well (L) = π * radius of gravel pack $(m)^2$ * height of water column (m)

*SA EPA Guidelines (June 2007) as referenced in NEPM

Groundwater Sampling Form
FIELD RECORD SHEETS

JBS&G

Project name:	**Location:**	**Well ID:** MW3
Project number:		
Person sampling:	**Sampling Date:**	**Weather:**

Casing Diameter (mm):		**Depth to NAPL (mBTOC):**	
Well Completion:	Flush Mount / Monument	**Depth to SWL (mBTOC):**	4.575
Well Cap Type:	Locking Cap / PVC / Other	**NAPL Thickness (m):**	
Well Condition:	Good / Compromised (see notes)	**Depth to EoH (mbtoc):**	6.450.
Calculated Well Volume (L):		**Water Column Depth (m):**	
Sampling Method:	Purge Volume: 4 Casings Vol. (L):	**NAPL Visually Verified?**	
	Low Flow: Pump Submersion depth (mBTOC):		

Time	Volume Purged	Dissolved Oxygen	Temp.	pH	~~EC~~ TDS	ORP	Comments
	L	% ☐ mgL/ppm ☑	°C	pH units	ppb ~~S/cm~~	mV	include SWL for low flow (mBTOC)
09:00	2	2.59	28.0	6.09	7.09	155	Purged dry 2L
Acceptable Variation*		+/-10%	+/- 0.2 °C	+/-0.1 pH	+/-5%	+/-10mV	**Results Acceptable: YES / NO**

LOW FLOW: Typical flow rate = 0.2- 0.4 L/min - Max. drawdown = 0.1 m - Well stable when 3 consecutive readings (either 3min apart or 1L apart)

PURGE: Min. sampling volume is 4 casing volumes or dry twice - 1 casing volume (50mm wells) = 2 L/m - 1 casing volume (100mm wells) = 8 L/m

Clarity:	Turbid	**Sheen:**	YES / NO
Colour:	dark brown	**Odour:**	YES / NO

			No.	**Container / Preservative**
Primary sample ID:				
Duplicate sample:	YES / NO	ID:		
Triplicate sample:	YES / NO	ID:		
Rinsate sample:	YES / NO	ID:		
Sample on ice:	YES / NO			
Field Filter Method:	0.45µm Filter / Not Filtered			
Water Quality Meter:				
Guaging Equipment:				
Pump Type:				

Notes:

Calculated Well Volume (L) = Water Column Depth (m) * Conversion Factor (from table)

Casing Diameter	25mm	50mm	100mm	150mm	300mm
Conversion Factor	0.98	1.96	7.85	49.1	196.3

Volume of water in well (L) = π * radius of gravel pack $(m)^2$ * height of water column (m)

*SA EPA Guidelines (June 2007) as referenced in NEPM

Groundwater Sampling Form
FIELD RECORD SHEETS

JBS&G

Project name:	**Location:**	**Well ID:** MW5
Project number:		
Person sampling:	**Sampling Date:**	**Weather:**

Casing Diameter (mm):		**Depth to NAPL (mBTOC):** —	
Well Completion:	Flush Mount / Monument	**Depth to SWL (mBTOC):** 4.145	
Well Cap Type:	Locking Cap / PVC / Other	**NAPL Thickness (m):** —	
Well Condition:	Good / Compromised (see notes)	**Depth to EoH (mbtoc):** 7.6	
Calculated Well Volume (L):		**Water Column Depth (m):**	
Sampling Method:	Purge Volume: 4 Casings Vol. (L):	**NAPL Visually Verified?**	
	Low Flow: Pump Submersion depth (mBTOC):		

Time	Volume Purged	Dissolved Oxygen	Temp.	pH	EC	ORP	Comments
	L	% ☐ mgL/ppm ☑	°C	pH units	~~µS/cm~~ TDS ppt	mV	include SWL for low flow (mBTOC)
4.690	1	3.200	21.2	6.35	11.72	168	
4.712	2	3.19	21.2	6.35	11.72	165	
4.735	3	3.19	21.2	6.35	11.7	163	
4.756	4	3.20	21.2	6.33	11.7	167	
Acceptable Variation*		+/-10%	+/- 0.2 °C	+/-0.1 pH	+/-5%	+/-10mV	**Results Acceptable: YES / NO**

LOW FLOW: Typical flow rate = 0.2- 0.4 L/min - Max. drawdown = 0.1 m - Well stable when 3 consecutive readings (either 3min apart or 1L apart)

PURGE: Min. sampling volume is 4 casing volumes or dry twice - 1 casing volume (50mm wells) = 2 L/m - 1 casing volume (100mm wells) = 8 L/m

Clarity:	Mod turbidity	**Sheen:**	YES / (NO)
Colour:	Brown	**Odour:**	YES / (NO)

			No.	Container / Preservative
Primary sample ID:				
Duplicate sample:	YES / NO	ID:		
Triplicate sample:	YES / NO	ID:		
Rinsate sample:	YES / NO	ID:		
Sample on ice:	YES / NO			
Field Filter Method:	0.45µm Filter / Not Filtered			
Water Quality Meter:				
Guaging Equipment:				
Pump Type:				

Notes:

Calculated Well Volume (L) = Water Column Depth (m) * Conversion Factor (from table)

Casing Diameter	25mm	50mm	100mm	150mm	300mm
Conversion Factor	0.98	1.96	7.85	49.1	196.3

Volume of water in well (L) = Π * radius of gravel pack $(m)^2$ * height of water column (m)

*SA EPA Guidelines (June 2007) as referenced in NEPM

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RENTALS

Equipment Report – Micropurge Flow Cell

This unit has been performance checked as follows:

Operations Check		
☑ Clean / decon		

Date: 02/11/2017 Checked by: Dave O'Neill

Signed: [signature]

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum $20 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Received	Returned	Item
			Sample Pro Pump
☑	☐	☐	Flow Cell
☑	☐	☐	3-way valve
☑	☐	☐	Connecting tubes (3)
☒	☐	☐	Optional – cable
☐	☐	☐	
☐	☐	☐	

Processors Signature/ Initials [signature]

Quote Reference	CS007779	Condition on return
Customer Ref		
Equipment ID	EFC500-9	
Equipment serial no.		
Return Date	/ /	
Return Time		

20+200

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RENTALS

Equipment Certification Report – TPS 90FLMV Water Quality Meter

This Water Quality Meter has been performance checked and calibrated as follows:

Sensor	Concentration	Span 1	Span 2	Traceability Lot #	Pass?
pH	pH 7.00 / pH 4.00	7.00 pH	4.00 pH	305409/309016	☑
Conductivity	12.88mS/cm	0.00 mS/cm	12.88 mS/cm	309852	☑
TDS	36 ppk	0 ppk	36 ppk	306264	☑
Dissolved Oxygen	Sodium Sulphite / Air	0 ppm in Sodium Sulphite	9.13 ppm Saturation in Air	4005(SS) 300125 (DI)	☑

Check only

Redox (ORP) *	Electrode operability test	240mV +/- 10%	248 mV	A 306678 B 306359	☑

* This meter uses an Ag/AgCl ORP electrode. To convert readings to SHE (Standard Hydrogen Electrode), add 199mV to the mV reading.

☑ Battery Status 7.8 (min 7.2V)
☑ Electrical Safety Tag attached (AS/NZS 3760)

Tag No: 000610

Valid to: 02/01/2018

☑ Temperature 20.4 °C
☑ Electrodes Cleaned and checked

Date: 02/11/2017

Signed:

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum $30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
☑	☐	90FLMV Unit. Ops check/Battery status: 8.0
☑	☐	pH sensor with wetting cap, 5m
☑	☐	Conductivity/TDS/Temperature K=10 sensor, 5m
☑	☐	Dissolved oxygen YSI5739 sensor with wetting cap, 5m
☑	☐	Redox (ORP) sensor with wetting cap, 5m
☑	☐	Power supply 240V to 12V DC 200mA
☑	☐	Instruction Manual
☑	☐	Quick Guide
☑	☐	Syringe with storage solution for pH and ORP sensors
☑	☐	Carry Case
☑	☐	Check to confirm electrical safety (tag must be valid)

Date: 02/11/2017

Signed:

TFS Reference	CS007779	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	90FLMVB3	Condition on return:	
Equipment Serial No.	T1941		

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