Rhodes Planned Precinct

Additional Contamination Investigation Report

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Contents

Executive Summary ..... **vi**
1. Introduction **1**
1.1 Objectives 2
1.2 Scope of Works 3
1.2.1 Soil, groundwater and sediment sampling 3
1.2.1.1 Sampling analysis and quality plan 3
1.2.1.2 Field work 3
1.2.1.3 Laboratory analysis 3
1.2.1.4 Applicable guidelines and standards 4
1.2.2 Preliminary investigation at Station Gateway East 4
2. Additional soil and groundwater investigation at Leeds Street **6**
2.1 Data Quality Objectives 6
2.2 Quality assurance/quality control assessment 9
2.3 Field Investigation Methodology 9
2.3.1 Soil sampling 9
2.3.1.1 Sample collection 10
2.3.1.2 Decontamination procedures 10
2.3.1.3 Borehole reinstatement 10
2.3.1.4 Sample containers, storage and handling 10
2.3.1.5 Sample logging and documentation 11
2.3.2 Groundwater sampling 11
2.3.2.1 Well development 11
2.3.2.2 Groundwater gauging, purging and sample collection 12
2.3.2.3 Decontamination procedures 12
2.3.2.4 Sample containers 12
2.3.2.5 Sample logging and documentation 12
2.4 Laboratory analysis 13
2.4.1 Soil analysis 13
2.4.2 Groundwater analysis 13
2.4.3 Rinsate sample analysis 14
2.4.4 Trip blank and trip spike analysis 14
2.4.5 Summary of samples submitted for analysis 14
2.5 Site Assessment Criteria 16
2.6 Field observations 17
2.6.1 Soil 17
2.6.2 Groundwater 17
2.6.2.1 Well development 17
2.6.2.2 Groundwater gauging and field parameters 18

2.7 Soil analytical results 21
2.7.1 Heavy metals 21
2.7.2 TRH and BTEXN 21
2.7.3 PAHs 21
2.7.4 Total PCBs 21
2.7.5 Speciated phenols 21
2.7.6 Asbestos 21
2.7.7 Dioxins and furans 21
2.8 Groundwater Analytical Results 22
2.9 Discussion 22
2.9.1 Dioxins in soil 22
2.9.2 Other contaminants in soil 23
2.9.3 Contaminants in Groundwater 23
3. Sediment investigation at the proposed ferry wharf 25
3.1 Data Quality Objectives 25
3.2 Sediment sampling methodology 26
3.2.1 Sample collection 26
3.2.2 Decontamination procedure 27
3.2.3 Sample logging and documentation 27
3.3 Laboratory analysis 28
3.3.1 Rinsate sample analysis 28
3.3.2 Trip blank and trip spike analysis 28
3.3.3 Sample summary 28
3.4 Site Assessment Criteria 29
3.5 Field observations 29
3.6 Sediment Analytical Results 30
3.6.1 Heavy Metals 30
3.6.2 TRH 30
3.6.3 BTEXN 30
3.6.4 PAHs 31
3.6.5 PCBs 31
3.6.6 Speciated phenols 31
3.6.7 Organotins 31
3.6.8 Dioxins and Furans 31
3.6.9 Sediment Particle Size Distribution 31
3.7 Discussion 32
3.7.1 Dioxins in sediment 32
3.7.2 Heavy metals in sediment 32
3.7.3 Semi-volatile organics (TRH and PAH) in sediment 33

3.7.4 Sediment mobilisation risks during construction and operation of the ferry wharf 33
4. Station Gateway East 34
4.1 Lotsearch report 34
4.1.1 Historical aerial photographs 34
4.2 NSW Fire and Rescue Fire Station 35
5. Conclusions 37
5.1 Contamination issues at the Ikea property 37
5.2 PFAS contamination issues within the Leeds Street character area 37
5.3 Sediment quality issues at the proposed ferry wharf location 38
5.4 Preliminary investigation of contamination risks for Station Gateway East 39
6. References 40

Appendix A. Figures
Appendix B. Borelogs
Appendix C. Sediment Photo Log
Appendix D. Quality Assurance/Quality Control (QA/QC)
D.1 Quality Control Plan
D.1.1 Field QA/QC Program
D.1.2 Laboratory QA/QC Program
D.1.3 Data Acceptance Criteria
D.1.4 Data quality evaluation
D.2 Field QA/QC Assessment
D.2.1 Sample Holding Times
D.2.2 Field Duplicates
D.2.3 Rinsate Blanks
D.2.4 Trip Blanks
D.2.5 Trip Spikes
D.3 Laboratory QA/QC Assessment
D.3.1 Analytical Methods
D.3.2 QA/QC Frequency Compliance
D.3.3 Laboratory duplicates
D.3.4 Laboratory control samples
D.3.5 Surrogate variation
D.3.6 Matrix spikes
D.3.7 Laboratory method blanks
D.4 Data quality Indicators (DQI)
D.4.1 Precision
D.4.2 Accuracy

D.4.3 Representativeness
D.4.4 Completeness
D.4.5 Comparability
D.5 Assessment
Appendix E. Summary of the adopted site acceptance criteria for the soil and groundwater investigation
E.1 General
E.2 Ecological investigation levels
E.3 PFAS in Groundwater
E.3.1 Health based investigation levels
E.3.2 Ecological Investigation Levels
Appendix F. Derivation of the site specific investigation level for dioxins in soil
F.1 Introduction
F.2 Future land uses
F.3 Exposure pathways
F.4 Acceptable intake
F.5 Background exposure
F.6 Derivation of site-specific Health Investigation Levels
F.6.1 Final HILs
F.7 References
Appendix G. Analytical Data Tables
Appendix H. Laboratory Certificates
Appendix I. Field Data Forms
Appendix J. Lotsearch report

Executive Summary

Background

Jacobs completed a Contamination and Acid Sulphate Soils Report for the Rhodes East Priority Investigation Area in 2016. The report was to support the preparation of a precinct plan for the Department of Planning, Industry and Environment (DPIE). The investigation focussed on the land around Leeds Street in Rhodes which is currently zoned General Industrial (IN1) and is now referred to in the Revised Draft Rhodes Precinct Plan as the Leeds Street Character Area. This area is proposed to be rezoned for High Density Residential (R4) and Mixed Use (B4) with areas of public open space.

The objective of the investigation was to identify contamination issues that might have a material impact on the rezoning investigation and planning proposal. Material impacts were considered to be contamination issues that could preclude certain uses of the land, significantly extend the timeframe for development or potentially compromise the economic viability of the proposed land use. The purpose of the 2016 investigation was not to identify all contamination that might be present across the Rhodes East Investigation Area noting that additional investigations and risk assessment will be required as part of future development applications, in accordance with State Environmental Planning Policy 55 and the City of Canada Bay Council's Contaminated Land Policy.

The Jacobs (2016) investigation identified concentrations of Dioxins, Heavy Metals, Total Recoverable Hydrocarbons and Benzo(a)pyrene in fill samples which exceeded the adopted criteria at locations located in the northern portion of Lot 319 DP700683 and Lot 32 DP550392 (Ikea warehouse at 1 – 3 Leeds St), an area historically reclaimed. Based on the results of the investigation, Jacobs concluded that further investigation, risk assessment and potentially remediation may be required as part of future development approval processes. However, it was considered likely that the area currently zoned IN1 can be made suitable for residential and public open space use.

A Draft Precinct Plan was exhibited in 2017. A number of changes have been made based on consultation on this plan. A Revised Draft Precinct Plan was prepared in 2020 and the precinct now includes land on each side of the Rhodes Railway Station referred to as the Station Gateway East and Station Gateway West Character Areas. No change in land use zoning is proposed for Station Gateway West. However, the zoning for Station Gateway East will change. While the northern part of this area will change from Medium Density Residential (R3) to High Density Residential (R4), the southern part will change from Neighbourhood Centre (B1) to Mixed Use (B4), potentially allowing for more sensitive use of the land.

The NSW Environment Protection Authority (EPA) reviewed the Jacobs (2016) report and the changes to the Precinct Plan and has requested an Additional Contamination Investigation. Jacobs was engaged by DPIE to undertake the investigation.

Based on discussions with DPIE and EPA, the objectives of the investigation were:

a) To collect additional soil and groundwater quality data from the Ikea property to confirm the findings of the Jacobs (2016) investigation – i.e. that the land is suitable or can be made suitable for the proposed land uses.

b) Based on the additional data collected and the data from the 2016 investigation, to assess whether controls to stage development of the Leeds Street area are necessary to manage potential land use conflicts during remediation.

c) To collect sediment quality data from the area of the proposed ferry wharf in the Parramatta River and to comment on potential impacts of sediment disturbance due to the construction and operation of the wharf.

d) To provide a preliminary investigation of potential contamination issues in Station Gateway East.

In February 2021, Jacobs issued the final Additional Contamination Investigation report to DPIE. However, DPIE requested additional investigation that focussed on assessing the presence of Per- and polyfluoroalkyl

substances (PFAS) in groundwater in order to assess if the land is suitable or can be made suitable for the proposed use.

This report presents the scope of works, methodology, findings and conclusions of the Additional Contamination Investigation including the additional PFAS groundwater investigations undertaken in the investigation area in May 2021.

Scope of work

The scope of work for the additional investigation, undertaken in July to August 2020, included the collection of soil samples at the Ikea Warehouse property at 1-3 Leeds Street, Rhodes, groundwater samples from existing wells located between the Ikea Warehouse and the Parramatta River, and sediment samples within the area of Parramatta River where the ferry wharf is proposed. In May 2021, Jacobs undertook a supplementary PFAS groundwater sampling event within the Leeds Street character area. Seven of nine groundwater monitoring wells, installed as part of Jacobs 2016 investigations, were sampled as part of the May 2021 sampling event

For the July to August 2020 investigations, a total of 11 primary soil samples, 3 primary groundwater samples and 8 primary sediment samples were submitted to Australian Laboratory Services (ALS), a NATA accredited laboratory for analysis, whilst 7 primary groundwater samples were submitted as part of the May 2021 PFAS groundwater sampling event.

Laboratory analysis results were screened against site assessment criteria developed from the National Environment Protection (Assessment of Site Contamination) Measure (NEPM) generic guideline values. The NEPM does not include generic guideline values for dioxins in soil or for PFAS in groundwater. Jacobs derived screening guidelines for dioxins in soil based on the guidance provided in Schedule B7 of the NEPM. Soil screening guideline values were derived for residential land use with garden / accessible soil (HIL A) and for public open space land (HIL C). Screening guideline values for PFAS in groundwater, were adopted from the PFAS National Environmental Management Plan (PFAS NEMP) (HEPA, 2020) which includes guidance values for the sum of PFOS and PFHxS and for PFOA in drinking water and recreational water for the protection of human health. PFAS groundwater guideline values for ecological protection have not been established, therefore the surface water guideline values for ecological protection were adopted for groundwater with respect to the May 2021 PFAS groundwater sampling event. The PFAS NEMP includes guideline values for PFOS and PFOA in surface water for the protection of aquatic ecosystems.

A preliminary investigation for Station Gateway East was completed. This was limited to the properties that are proposed for rezoning from Neighbourhood Centre (B1) to Mixed Use (B4). The investigation involved the procurement and review of a Lotsearch report as well as review of current public maps and aerial imagery to identify potential historic and current activities that may have led to contamination risks. The scope did not include a Preliminary Site Investigation as defined in the NSW EPA Guidelines for Consultants Reporting on Contaminated Land.

Contamination issues at the Ikea property

Concentrations of contaminants in soil were generally consistent with the Jacobs (2016) findings. While there were some exceedances of the Site Assessment Criteria (SAC), these were limited to minor exceedances of ecological investigation or screening levels. In relation to dioxins, concentrations in 4 of the 19 soil samples collected from the Ikea property during both investigations (2016 and 2020) exceeded the derived guideline value for residential land with garden or accessible soil (HIL A). Only one sample had dioxin concentrations exceeding the derived guideline value for public open space (HIL C). Asbestos was also identified in two soil samples and it is likely that asbestos is present in other locations based on the nature of the fill material.

It is likely that significant earthworks, including basement construction, will be undertaken during the future development of the area. This will provide opportunities for removal or selective placement or containment of contaminated soils.

Further investigation and risk assessment and/or remediation will be required during the later stages of the development approval process. However, Jacobs considers the land can be made be suitable for the proposed use and the rezoning can proceed. Furthermore, the results of this investigation and the previous Jacobs (2016) investigation do not indicate a need for staging controls as part of the rezoning.

The existing State Environmental Planning Policy 55 (SEPP 55) and Council Contaminated Land Policy requirements should adequately ensure that appropriate investigation, risk assessment and remediation of the land is carried out as part of the development assessment process. Conditions of development consent would normally require the preparation and implementation of a construction environmental management plan to ensure impacts associated with earthworks and remediation are appropriately controlled.

PFAS contamination issues within the Leeds Street character area

Groundwater samples for the purposes of PFAS analysis were collected from seven of the nine wells as part groundwater sampling undertaken in May 2021. Concentrations of PFAS were below the laboratory limits of reporting (LOR) in six of the samples submitted for analysis. Minor concentrations of PFOS and PFOA were recorded in the sample collected from groundwater monitoring well MW14; however, the concentrations were below the PFAS human health guidelines for both drinking water and recreational water that were adopted for this investigation. The concentrations reported for PFOS and PFOA in MW14 were also below the respective ecological investigation levels for 95% species protection in “slightly to moderately disturbed ecosystems”.

While the presence of PFAS in soil remains unquantified and soil testing for PFAS (e.g. waste classification sampling) will be required as part of subsequent investigations to support development at the site, the general absence of PFAS concentrations above the LOR in groundwater data and a general lack of known PFAS sources indicates that leaching from extensive PFAS impacts in soil is unlikely Sediment quality issues at the proposed ferry wharf location

The sediment investigation identified elevated concentrations of heavy metals and dioxins in shallow bed sediments across the proposed ferry wharf area. The concentrations are consistent with sediment quality for this area of the Parramatta River.

Based on the sediment grain size as observed and measured at sampled locations, it is expected that some limited, localised resuspension of contaminated sediment could occur if sediment is disturbed during construction of the new wharf.

Jacobs considers that the fraction of contaminants in sediment that is available for uptake by aquatic biota is likely to be a small component of total contaminant load, with the majority of contaminants in sediment likely to remain bound to particulates rather than released to (bioavailable) dissolved phase(s) if sediment is remobilised.

The development of the proposed ferry wharf at Rhodes will require an environmental assessment by Transport for NSW under Part 5 of the Environmental Planning and Assessment Act 1979. Based on the sediment quality identified in this investigation, measures to mitigate sediment suspension and transport during the construction of the wharf will likely be required.

The potential for mobilisation of impacted sediments during construction will be of a short-term nature and the potential risks to human health and the environment from disturbing sediments will therefore be low. The localised disturbance of impacted sediments and the relatively minor construction aspects of the wharf can be effectively managed using traditional controls, including:

- the use of silt curtains around the piles being driven and the broader piling vessel;
- real-time turbidity monitoring using appropriate instruments and visual observations;
- placement of clean gravel on top of bed sediments to provide a cover layer and reduce the potential for disturbance;
- Photographic evidence and documentation;

- Undertaking piling activities during appropriate tidal conditions.

The above list of proposed mitigation measures (among others) will assist in reducing the duration and the distance that resuspended sediments may move from the construction footprint, and limit impacts on the receiving aquatic environment.

In relation to the operation of the wharf, an assessment of contaminated sediment suspension and transport due to the operation of vessels in Homebush Bay and Parramatta River was undertaken as part of the Sydney Harbour Estuary Processes Study. The study noted that vessel generated waves have only minor, localised impacts on the transport and ultimate fate of contaminated sediments in the Parramatta River. NSW EPA has noted that this study did not appear to address potential impacts from sediment disturbance due to ferry movements at a wharf in shallow water and has advised that further assessment will be required by Transport for NSW.

Preliminary investigation of contamination risks for Station Gateway East

The area proposed for rezoning from Neighbourhood Centre (B1) to Mixed Use (B4) in Station Gateway East appears to have historically been used for open space and low density residential. The current commercial buildings on three of the properties appear to have been constructed in approximately the 1990s and 2000s.

Information from the Lotsearch report has not identified any activities that may have caused contamination with the exception of a dry cleaner which may have been located in or close to the southern portion of the study area during the 1970s.

There is a risk for PFAS contamination associated with the Fire Station immediately north of the study area. It is also noted that demolition of residential buildings has occurred historically, and this may have led to asbestos contamination.

While further investigation, risk assessment and potentially remediation will be required for future development of the study area, there is no current indications of gross contamination and Jacobs considers that the land can likely be made suitable for the proposed land uses.

As per the conclusions for the Leeds Street area, SEPP 55 and Council Contaminated Land Policy requirements should adequately ensure that appropriate investigation, risk assessment and remediation of the land is carried out as part of the development assessment process.

Important note about your report

The sole purpose of this report is to present the findings of the Additional Contamination Investigation completed by Jacobs for the Department of Planning, Industry and Environment (DPIE) in connection with the Rhodes Planned Precinct (the site).

This report was produced in accordance with and is limited to the scope of services set out in the contract between Jacobs and DPIE. The scope of services described in this report was developed in consultation with DPIE.

All reports and conclusions that deal with sub-surface conditions are based on interpretation and judgement and as a result are uncertain. This report may contain interpretations and conclusions which are uncertain due to the nature of the investigations. No study can investigate every risk, and even a rigorous assessment and/or sampling program may not detect all problem areas within a site.

The passage of time, the possibility of migration, the manifestation of latent conditions or impacts from future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations and conclusions expressed in this report.

In preparing this report, Jacobs has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by DPIE and from other sources. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

Jacobs has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law. Opinions and judgements expressed in the report are based on Jacobs' understanding and interpretation of current regulatory standards and should not be construed as legal opinions.

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1. Introduction

The Department of Planning, Industry and Environment (DPIE) has been collaborating with Canada Bay Council (Council) and other State agencies on a master plan to develop a comprehensive place based strategy for the Rhodes peninsula since 2015. The area covered by the strategy was initially referred to as the Rhodes East Priority Investigation Area and is now referred to as the Rhodes Planned Precinct.

The extent of the Rhodes Planned Precinct and the character areas defined for the precinct are presented in **Figure 1** in **Appendix A**. The current and proposed land use zones for the precinct are presented in **Figure 2** and **Figure 3** respectively.

In 2016, a Contamination and Acid Sulphate Soils Investigation was undertaken by Jacobs to support the assessment of potential rezoning options (Jacobs, 2016). This included a soil and groundwater investigation in the area around Leeds Street, Rhodes. This area is currently zoned for General Industrial use (IN1) and is proposed to be rezoned for High Density Residential (R4) and Mixed Use (B4) with areas of public open space.

The Jacobs (2016) investigation identified concentrations of Dioxins, Heavy Metals, Total Recoverable Hydrocarbons (TRH) and Benzo(a)pyrene in fill samples which exceeded the adopted criteria at locations located in the northern portion of Lot 319 DP700683 and Lot 32 DP550392 (Ikea, 1 – 3 Leeds St), an area historically reclaimed.

Based on the results of the investigation, Jacobs concluded that further investigation, risk assessment and potentially remediation may be required as part of future development approval processes. However, it was considered likely that the area currently zoned IN1 can be made suitable for the proposed land use zones including residential and public open space.

Since the Jacobs (2016) investigation, the strategy for the Rhodes Planned Precinct has evolved to include the proposed development of a ferry wharf on the Parramatta River near the Leeds Street area. Land to the east and west of the Rhodes railway station has also now been included in the Rhodes Planned Precinct. These areas are referred to as the Station Gateway East and Station Gateway West character areas.

While land use zoning for Station Gateway West will not change, the zoning for the southern part of Station Gateway East will change from Neighbourhood Centre (B1) to Mixed Use (B4), potentially allowing for more sensitive use of the land.

Following a review of the Jacobs (2016) report, the subsequent proposed ferry wharf development and the inclusion of the Station Gateway East and West areas in the precinct, the NSW Environment Protection Authority (EPA) requested a further investigation of contamination issues. To respond to the EPA comments, DPIE engaged Jacobs Group (Australia) Pty Ltd (Jacobs) to undertake additional contamination investigations. In February 2021, Jacobs issued their Additional Contamination Investigation report to the DPIE (final dated 1 February 2021).

PFAS analysis was not part of Jacobs previous investigation scopes undertaken in 2016 or 2020, but has been raised during feasibility assessment as potentially being present and requiring management during development of the Leeds Street character area, therefore presenting a data gap in understanding of contamination. Although, PFAS is considered unlikely to affect the suitability of the site for the proposed use, the presence of PFAS may influence the feasibility of the development for items such as waste classification of material required to be excavated for basement construction, and potential de-watering management requirements. Considering the PFAS data gap and potential impacts to waste classification and construction requirements, Jacobs, with approval from DPIE, has undertaken supplementary investigations into the presence of PFAS within the Leeds Street character area. The findings from the PFAS groundwater sampling event will support DPIE's understanding of potential remediation requirements for redevelopment.

This report presents the scope of work, methodology, results and conclusions for the Additional Contamination Investigation that was undertaken in 2020 and the supplementary PFAS investigation undertaken in May 2021.

1.1 Objectives

Based on discussions with DPIE and EPA, Jacobs identified a number of objectives for the initial Additional Contamination Investigation. With the identification of the PFAS data gap, these objectives have been amended. Jacobs revised objectives were as follows:

a) To collect additional soil and groundwater quality data from the Ikea property to confirm the findings of the Jacobs (2016) investigation – i.e. that the land is suitable or can be made suitable for the proposed land uses.

b) Based on the additional data collected and the data from the 2016 investigation, to assess whether controls to stage development of the Leeds Street area are necessary to manage potential land use conflicts during remediation.

c) To collect sediment quality data from the area of the proposed ferry wharf in the Parramatta River and to comment on potential impacts of sediment disturbance due to the construction and operation of the wharf.

d) To undertake a preliminary investigation of potential contamination risks associated with the rezoning of land from Neighbourhood Centre (B1) to Mixed Use (B4) in Station Gateway East.

    i. To collect additional PFAS groundwater quality data from the Leeds Street character area and assess the likelihood of PFAS impacts in soil as well as whether this may affect suitability of the land for the proposed use.

It is noted that Ministerial Direction (No 2.6) under Section 9.1 of the Environmental Planning and Assessment Act requires a preliminary investigation of land in accordance with the Contaminated Land Planning Guidelines (DUAP and EPA, 2008) when changing the use of land that has been used for activities that may cause contamination.

In relation to the land in the Leeds Street and Station Gateway East character areas, the Contaminated Land Planning Guidelines note that:

"Rezonings that cover a large area, for example, more than one property, usually describe proposed land uses very generally both in type and location. This makes it difficult for a planning authority to be satisfied that every part of the land is suitable for the proposed use(s) in terms of contamination at the rezoning stage. In these cases, the rezoning should be allowed to proceed, provided measures are in place to ensure that the potential for contamination and the suitability of the land for any proposed use are assessed once detailed proposals are made."

Therefore, the objective of the Additional Contamination Investigation in the Leeds Street and Station Gateway East areas was to identify contamination issues that might have a material impact on the rezoning investigation and planning proposal. Material impacts were considered to be contamination issues that could preclude certain uses of the land, significantly extend the timeframe for development, potentially compromise the economic viability of the proposed land use or indicate a need for staging of development to reduce land use conflicts during remediation. The purpose of the investigations was not to identify all contamination that might be present across the proposed rezoning areas noting that additional investigations and risk assessment will be required as part of future development applications, in accordance with State Environmental Planning Policy 55 and Council's Contaminated Land Policy.

Similarly, the development of the proposed ferry wharf at Rhodes will require an environmental assessment by Transport for NSW under Part 5 of the Environmental Planning and Assessment Act 1979. Therefore, the objective of the sediment investigation undertaken by Jacobs was not to enable a comprehensive environmental assessment of the development but rather, to provide a preliminary indication of potential sediment quality issues and likely wharf construction requirements to minimise the impact of sediment disturbance.

1.2 Scope of Works

1.2.1 Soil, groundwater and sediment sampling

1.2.1.1 Sampling analysis and quality plan

A Sampling, Analysis and Quality Plan (SAQP) (Jacobs, 2020) was prepared to guide the investigation works at the Ikea property and sediment investigation for the proposed ferry wharf. The Data Quality Objectives (DQO) process was used to reflect on all previous data and to develop a plan to gather the necessary information to support risk assessment and decisions for the rezoning process.

The inclusion of PFAS as a contaminant of potential concern (CoPC) was identified following the preparation of the SAQP. The Jacobs (2020) SAQP has not been updated to address the PFAS data gap, however the DQO's identified in section 2 have been revised where appropriate.

1.2.1.2 Field work

Field works were undertaken between July and August 2020, which included sediment sampling of the proposed ferry wharf and soil and groundwater sampling associated with the Ikea the warehouse. Additional PFAS groundwater sampling of the Leeds Street character area was undertaken in May 2021.

All field works were undertaken by experienced Jacobs environmental scientists in general accordance with the SAQP and documented Jacobs procedures.

The field work activities included the following:

- Underground services clearance of soil sampling locations within the Ikea property using Dial Before You Dig plans, information supplied by Ikea and a qualified service locator. Undertaken in August 2020.
- Advancement of 6 soil bores within the Ikea warehouse, to a maximum depth of 6 meters below ground surface, or refusal, whichever was shallower. A track mounted drilling rig, suitable for tight site access, was used to advance boreholes and assist with the collection of soil samples from each borehole. Undertaken in August 2020.
- Groundwater sampling of three existing groundwater monitoring wells (MW04, MW07 and MW09) located within or in close proximity of the Ikea warehouse property. Undertaken in August 2020.
- PFAS groundwater sampling of seven of nine of the existing groundwater monitoring wells (MW03, MW04, MW07, MW09, MW12, MW13 and MW14) located within the Leeds Street character area. Undertaken in May 2021.
- A customised sediment sampling vessel was used to collect 8 sediment cores from within the proposed ferry wharf and walkway footprint, to a depth of approximately 0.8 meters into bed sediments. Undertaken in July 2020.

At the time the PFAS groundwater sampling was undertaken in May 2021, access to MW01 and MW15 had not been approved by the property owners. As such these monitoring wells were excluded from groundwater sampling.

The sampling locations are detailed in **Figure 4** (soil and groundwater) and **Figure 6** (sediment) presented in **Appendix A**.

1.2.1.3 Laboratory analysis

A total of 10 primary and 2 quality assurance/quality control (QA/QC) soil samples were analysed for heavy metals (Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Mercury (Hg), Nickel (Ni), Lead (Pb), Zinc (Zn)), Total Recoverable Hydrocarbons (TRH), Monocyclic Aromatic Hydrocarbons (BTEXN), Polycyclic Aromatic Hydrocarbons (PAH), Polychlorinated Biphenyls (PCBs), Speciated Phenols, Asbestos (presence/absence), and

Dioxins and Furans.

A total of three primary and two QA/QC groundwater samples were analysed for dissolved heavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn), TRH, BTEXN, Speciated Phenols and Volatile Organic Compounds (VOC) as part of groundwater sampling undertaken in August 2020. Groundwater sampling undertaken in May 2021, consisted of seven primary and two QA/QC groundwater samples analysed for PFAS.

A total of eight primary and two QA/QC sediment samples were analysed for heavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn), TRH, BTEXN, PAH, Total Organic Carbon (TOC), PCBs, Speciated Phenols, Dioxins and Furans and Tributyl Tin (TBT) as part of fieldworks undertaken in July to August 2020. Grain size distribution was also undertaken on 6 shallow samples.

In addition to the collection of the primary soil, groundwater and sediment samples during the July to August 2020 fieldworks, four rinsate blank samples were collected as a quality control check on the decontamination procedures applied for the investigation. This equated to 1 rinsate per day and per sampled media (1 rinsate blank sample for sediment, 2 rinsate blank samples for soils and 1 rinsate blank sample for groundwater). Analysis for each rinsate sample was as per the primary analysis undertaken for each matrix. An additional three rinsate blank samples were collected during the May 2021 PFAS groundwater sampling. Each of the three rinsate blank samples were analysed for PFAS only. Rinsate sampling for the May 2021 PFAS groundwater sampling equated to 1 rinsate per day of sampling.

Three trip blank and three trip spike samples were also submitted for analysis in conjunction with the primary, QA/QC samples and rinsate blank samples as part of the fieldworks undertaken in July to August 2020. One trip blank and one trip spike sample was submitted with each batch of soil, sediment and groundwater samples. The trip blank and trip spike samples were analysed for BTEX only. For the May 2021 PFAS groundwater sampling, one trip blank sample was submitted for analysis in conjunction with the primary, QAQC and rinsate blank samples. The trip blank sample was analysed for PFAS only.

1.2.1.4 Applicable guidelines and standards

This report has been prepared to meet the requirements of the following guidelines and standards (where applicable):

- National Environment Protection (Assessment of Site Contamination) Measure 1999, as revised 2013 (NEPC, 2013);
- Australian Standard (AS 4482.1-2005) Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds.
- Australian Standard (AS4482.2 1999), Guide to the sampling and investigation of potentially contaminated soil. Part 2: volatile substances.
- NSW EPA 2020, Consultants reporting on contaminated land: Contaminated Land Guidelines, April 2020, updated May 2020 (NSW EPA, 2020)
- NSW EPA Sampling Design Guidelines (NSW EPA, 1995).
- NSW Waste Classification Guidelines – Part 1: Classifying Waste, November 2014 (NSW EPA, 2014).
- Heads of EPAs Australia and New Zealand (HEPA), 2020, PFAS National Environmental Management Plan Version 2.0 (PFAS NEMP).

1.2.2 Preliminary investigation at Station Gateway East

The preliminary investigation of potential contamination risks in the Station Gateway East area focussed on the land that is proposed for rezoning to include more sensitive land use; the properties between Mary Street East, Blaxland Road, Concord Road and the northern boundary of property SP71065 (25 Blaxland Road).

The scope of work for the preliminary investigation was limited procuring and reviewing a Lotsearch report for the area as well as conducting a review of current public mapping information. The objective of these reviews was to identify historical or current activities that may present a material risk for land contamination. The scope did not include a Preliminary Site Investigation as defined in the NSW EPA Guidelines for Consultants Reporting on Contaminated Land (NSW EPA, 2020).

The Lotsearch report is provided in **Appendix J** and includes data for the area from datasets such as (but not limited to):

- List of contaminated sites notified to the EPA
- EPA Contaminated Land Records of Notice
- Licensed activities under the Protection of the Environment Operations Act
- Historical UBD Business Directories
- Registered groundwater bores
- Historical aerial photographs

2. Additional soil and groundwater investigation at Leeds Street

This section presents the methodology, results and findings of the additional soil and groundwater investigation for the Ikea property at Leeds Street and the PFAS groundwater sampling event in the Leeds Street Character area.

2.1 Data Quality Objectives

The National Environmental Protection (Assessment of Site Contamination) Measure (NEPM), Schedule B2 Guideline on Site Characterisation (NEPC, 2013) specifies that the nature and quality of the data produced in an investigation will be determined by the Data Quality Objectives (DQOs).

The DQOs comprise a seven-step process developed by the United States Environmental Protection Agency (US EPA) to standardise environmental sampling, based on American National Standards Institute (ANSI) and International Organization for Standardization (ISO) standards (US EPA, 2006). The US EPA defines the process as 'a strategic planning approach based on the Scientific Method that is used to prepare for a data collection activity. It provides a systematic procedure for defining the criteria that a data collection design should satisfy, including when to collect samples, where to collect samples, the tolerable level of decision errors for the study, and how many samples to collect'.

The seven steps outlined in US EPA (2006) which govern the process for establishing the DQOs are summarised in **Table 2-1.**

Table 2-1 Seven steps to defining DQOs

Step	Data Quality Objective Step
1	**State the problem** – define the problem to be addressed.
2	**Identify the decisions/goal of the study** – Identify the principal study questions or decisions that need to be made about the contamination problem.
3	**Identify the information inputs** – present parameters and inputs for decisions, including information sources, basis for trigger/guideline levels, sampling and analysis methodology, etc.
4	**Define the boundaries of the study** – present spatial and temporal limits for the study, sample characteristics and decision making units.
5	**Develop the analytical approach** – define a statistical parameter, specify trigger/guideline levels and develop argument for action.
6	**Specify performance or acceptance criteria** – set acceptable limits for decision errors relative to potential consequences such as health, budget, social or environmental impacts.
7	**Develop the plan for obtaining data** – develop an effective sampling and analysis plan that meets resource and performance criteria.

Step 1 – State the problem

DPIE is proposing to rezone land in the Leeds Street area from General Industrial (IN1) to High Density Residential (R4) and Mixed Use (B4) with areas of public open space. The proposed re-zoning could permit more sensitive uses of the land.

A contamination investigation by Jacobs in 2016 identified concentrations of Dioxins, Heavy Metals, Total Recoverable Hydrocarbons (TRH) and Benzo(a)pyrene in fill samples which exceeded the adopted criteria at locations located in the northern portion of Lot 319 DP700683 and Lot 32 DP550392 (Ikea, 1 – 3 Leeds St), an area historically reclaimed. While Jacobs concluded that the land could be made suitable for the proposed land uses, additional soil and groundwater investigation has been requested to confirm this conclusion.

The contamination investigation undertaken by Jacobs in 2016 and the additional contamination investigations undertaken in 2020 (Jacobs report dated 1 February 2021) did not include PFAS in the analytical schedule. A lack of PFAS data has been identified as a data gap and with a potential that PFAS may be present in the Leeds Street character area, additional PFAS investigation were seen as required to establish the likelihood of PFAS in groundwater and soil, and if present or likely to be present, how it may affect waste classification of the material that will be excavated for basement construction in the area and concentrations which may need to be managed during excavation dewatering.

Step 2 – Identify the decisions / goals of the study

The primary questions that the investigation attempted to resolve were:

- What is the extent of contamination in soil and groundwater at the Ikea property?
- What is the extent of PFAS contamination in groundwater within the Leeds Street character area?
- What is the risk of PFAS being present in groundwater and potential presence in soil?
- Is the site suitable for the proposed land uses or can it be made suitable through remediation?
- Does the contamination indicate a need for staging of development of the area to manage potential land use conflicts during remediation?

Step 3 – Identify inputs to the decision

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

- Information on the environmental site setting including proposed land uses and potential source – receptor pathways;
- Field information and observations;
- Laboratory analysis results for soil and groundwater samples collected during the additional contamination investigations in 2020, groundwater samples collected during PFAS groundwater sampling in 2021, as well as the previous Jacobs (2016) investigation; and,
- Risk screening values as detailed in the NEPM (2013) and derived by Jacobs for dioxins.

Step 4 – Define the boundaries of the study

The spatial boundaries of the study were as follows:

- The lateral boundaries were limited to the Ikea property and existing groundwater wells in the wider Leeds Street character area; and,
- The vertical boundary will be limited to the depth to rock (or drilling refusal).

Temporal variation in soil contamination is not expected to be significant. One set of groundwater samples collected from three monitoring wells in 2020 and one set of groundwater samples, analysed for PFAS only, were collected from seven monitoring wells in 2021. The potential for variability in groundwater contamination concentrations has been assessed as part of the results review.

The following potential constraints were identified within the site:

- Access constraints due to existing aboveground or underground infrastructure;
- Access and temporal constraints due to operational factors and/or site users; and,
- Existing groundwater monitoring wells not serviceable or accessible.

Step 5 – Develop the analytical approach

The purpose of this step was to define the parameters of interest, specify action levels and combine the outputs of the previous DQO steps to develop a series of options if certain trigger events occur.

The key decision rules for the investigation were:

1) Have the analytical data collected as part of the investigation met the Data Quality Indicators (DQI) (see below)? If yes then the data can be used to answer the decision rule below and the decision statements developed in Step 2. If no then an assessment of the need to collect additional data will be required.

1) Do contaminant concentrations exceed the investigation criteria defined in **Section 2.5**? If no then the contamination does not pose an unacceptable risk. Where results exceed the adopted investigation criteria, this may not necessarily indicate an unacceptable level of risk. Further risk assessment, and potentially additional investigations, will be required to determine the potential for unacceptable impacts.

In order to assess the useability of the data for making decisions, the data has been assessed against a set of DQI, developed based on the following parameters:

- **Precision**: A measure of the repeatability of results by the laboratory. This is assessed through the analysis of duplicates, both internal laboratory duplicates and blind duplicates collected in the field, and is calculated by using relative percentage differences (RPDs).
- **Accuracy**: A measure of the closeness of the results to the actual results. Accuracy is assessed through the comparison of results produced by the primary and secondary laboratories, Australian Laboratory Services (ALS) and Eurofins Scientific (Eurofins) respectively, for the same sample and by measuring the extent to which an analytical result reflects the known concentration, as measured by the recovery obtained from internal laboratory spikes.
- **Representativeness**: A measure of how representative sample results are of conditions in the field. Representativeness is assessed through the comparison of results produced by the results for method blank samples compared to primary sample results.
- **Completeness**: The percentage of acceptable data obtained compared to the amount of data needed to achieve a particular level of confidence in the results. Acceptable data are obtained when samples are collected and analysed in accordance with the QC procedures and the data quality indicators (DQIs).
- **Comparability:** The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event.

The quality assurance and quality control measures applied to assess data quality in relation to the DQI as well as the acceptance criteria set for the project are outlined in **Appendix D**.

Step 6 – Specify performance or acceptance criteria

This step involves specifying acceptable limits on decision errors. Decision errors are incorrect decisions caused by using data that are not representative of site conditions due to sampling or analytical error (DEC, 2006).

There are two key types of decision errors that can occur for the Project:

a) Deciding that the risks posed by contamination are acceptable when these risks actually are not acceptable. The consequence of this error may be unacceptable impacts to human health or the receiving environment; or

b) Deciding that the risks posed by contamination are unacceptable when the risks actually are acceptable. The consequence of this error is that management actions undertaken to reduce the risks are not necessary.

The more severe consequences are with decision error (a) since the risk of jeopardising human health and/or the environment outweighs the consequences of undertaking management actions that are not necessary.

Developing and assessing acceptance criteria for decisions based on confidence levels would require collection of a statistically significant set of samples for each human or ecological exposure scenario. This is not feasible given the large number of potential scenarios and the intended use of targeted sampling. Therefore, a conservative approach has been adopted to minimise the likelihood that decision error (a) occurs. This involved

the collection of samples in areas considered likely to have the highest concentrations of contaminants based on site history and site setting information. The maximum concentration of the contaminant of concern has also been compared to the investigation criteria to determine the potential for risk and if further sampling is required.

Step 7 – Develop the plan for obtaining data

The purpose of this step is to identify a resource-effective data collection design for generating data that are expected to satisfy the DQO. To ensure the design satisfies the DQO a comprehensive Quality Assurance and Quality Control Plan will be implemented as described in section **Appendix D**.

In addition, Jacobs worked closely with the analytical laboratories, sub-contractors and sampling equipment suppliers to ensure that appropriate procedures and processes were developed and implemented prior to and during the fieldwork, to ensure that sample handling, and transport to and processing by the analytical laboratories was undertaken appropriately, in accordance with this DQO.

2.2 Quality assurance/quality control assessment

The field and laboratory quality assurance/quality control (QA/QC) procedures/plan adopted for the additional contamination investigation was designed to achieve the DQOs. A summary of the procedures, data acceptance criteria and results of the QA/QC program are provided in **Appendix D**.

The assessment of QA/QC results found that the data collected meets the data quality objectives and are suitable for use.

2.3 Field Investigation Methodology

2.3.1 Soil sampling

Soil sampling was undertaken at six boreholes (BH17 to BH22) during the July to August 2020 investigations. As noted in **Section 2.1**, the objective of the investigation was to collect additional soil data at the Ikea warehouse property in order to confirm the findings of the Jacobs (2016) investigation.

The Ikea warehouse extends across two properties, Lot 319 DP700683 and Lot 32 DP550392. Discussions with Ikea personnel and inspections at the warehouse identified that the northern part of the warehouse on Lot 319 DP700683 is underlain by a basement and access to the basement area with a drill rig was not possible. The part of the warehouse on Lot 32 DP550392 has been constructed with a dual concrete slab with a void in between the slabs. It was not possible to advance boreholes in this area. Furthermore, sampling locations were also limited due to sub-surface utilities or warehouse fittings.

The six borehole locations (BH17 to BH22) were therefore located within the southern portion of the warehouse on Lot 319 DP700683 (see **Figure 4, Appendix A**).

Soil sampling was completed using a hand auger and direct push tube drill rig. A hand auger was used as a non-destructive drilling (NDD) method to clear boreholes beyond known and potential services to a maximum depth of 1.5m or refusal. Once the 1.5m clearance depth was reached or refusal encountered, the push tube drilling method was utilised. Where push tube refusal was encountered, a solid flight auger was used to advance boreholes to the limit of investigation or to confirm refusal. Boreholes were terminated 2m into natural material, the limit of investigation (6m), once bedrock was encountered or at drill method refusal, whichever was shallower. The maximum depth of drilling during the investigation was 6 metres below ground level (m bgl).

Soil sampling commenced following the completion of concrete coring/breaking. The depth of concrete encountered at each of the boreholes was 0.15m. A wet vacuum was be used to remove water seepage generated from the coring/breaking process. At the completion of the concrete coring/breaking for each borehole, the concrete cuttings were put aside for the purpose of reuse in borehole reinstatement.

Prior to the commencement of ground penetration, new geo fabric matting was laid on the ground to prevent the spreading of excess drill cuttings across concrete flooring and reduce the risk of cross contamination. Sampling directly from the hand auger and push tube sleeves was undertaken on new construction plastic sheeting at each borehole location.

2.3.1.1 Sample collection

Soil samples were collected at depths of 0.2m (surface soils underlying concrete), approximately 0.5m from the collection of the 1st sample and approximately every 1m thereafter or following notable lithology changes. Samples were collected direct from hand auger or the non-reusable plastic push tube sleeve to minimise potential loss of volatile contaminants and to target representative soils. No sampling was undertaken from the solid flight augers. Soil profiles for each location were logged in the field, taking note of lithology changes and descriptions, depths of changes, sample depths, evidence of staining, odours or other evidence of potential contamination.

The information collected is presented as Borelogs in **Appendix B**.

2.3.1.2 Decontamination procedures

A new pair of disposable nitrile gloves were used for each sample location in order to minimise the potential for cross-contamination.

All non-disposable drilling equipment was washed between sampling locations with a 1% Liquinox® (laboratory grade, phosphate free) and deionised water solution, rinsed with laboratory supplied deionised water to remove the solution, then triple rinsed with laboratory supplied deionised water to complete the decontamination process. Water used for decontamination of sampling equipment was laboratory supplied de-ionised water.

To facilitate decontamination of the push casings, hand augers and augers a 205L steel drum was used to contain the excess water. The steel drum and waste water was placed in an accessible on-site location where it was picked up and disposed of by a suitably licenced waste contractor.

2.3.1.3 Borehole reinstatement

Where possible, boreholes were backfilled with the excess drill cuttings generated during drilling up to a depth 0.15m. If drill cuttings were insufficient, packing sand, generally for the purpose of well installation, was used to supplement the drill cuttings and bring the borehole up to 0.15m. Fresh concrete was hand mixed on-site and place in the borehole to the same depth of the existing surrounding concrete surface to complete the re-instatement process.

Boreholes were reinstated level with existing surface and as close as possible to their pre excavation state.

During drilling, excess cuttings were stored on new geofabric in the order of excavation prior to being used to reinstate the boreholes. No excess cutting were present at the completion of borehole reinstatement.

2.3.1.4 Sample containers, storage and handling

Laboratory supplied specific sample containers were used to contain the soil samples. All sample containers were labelled with the sample number, project number, date obtained, sampler and site name. This information was repeated on the Chain of Custody (CoC) form.

Once filled, the container lids were checked to ensure that they were secure and then placed within an esky / cool box in which a cooling medium had been added to keep the samples below a temperature of approximately 4 degrees Celsius. Custody seals were placed on the esky / cool box for delivery to the laboratory.

2.3.1.5 Sample logging and documentation

The following information was recorded on sampling field data sheets (as a minimum):

- Date of sample collection
- Weather (where necessary)
- Unique sample identification number
- Sample location and depth
- Consistency or density
- Plasticity/grain size and grading
- Colour
- Moisture content
- Presence of absence of odour (nature and intensity)

All samples, including two QA/QC samples (QC101_200818 and QC201_200818), were transported to the analytical laboratories under CoC procedures and maintained in an ice filled cooler. The CoC detailed the following information:

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

2.3.2 Groundwater sampling

A total of three existing groundwater monitoring wells (MW04, MW07 and MW09) were sampled as part of the July to August 2020 sampling event. An additional four existing groundwater monitoring wells (MW03, MW12, MW13 and MW14), along with the three sampled in August 2020, were sampled as part of the May 2021 PFAS sampling event.

All monitoring wells were installed as part of Jacobs investigation undertaken in 2016.

Groundwater water monitoring wells sampled for the August 2020 groundwater sampling event and the May 2021 PFAS groundwater sampling events are presented on **Figure 4** in **Appendix A**

2.3.2.1 Well development

The sampled groundwater wells were re-developed prior to commencement of groundwater sampling in order to ensure that samples collected were representative of the surrounding groundwater conditions and quality. This was carried out using a submersible pump to remove at least three well volumes of groundwater or until the monitoring well ran dry.

Water generated during well development was collected into 25L waste water containers before being discharged into the dedicated onsite waste storage drums (205L steel drum).

At the completion of well development, monitoring wells were left for a minimum of 48hrs to allow for of the recharge of standing water levels and stabilisation of groundwater quality.

2.3.2.2 Groundwater gauging, purging and sample collection

Each monitoring well was gauged with a calibrated interface meter to determine depth to water and depth to bottom of the well in order to assist in the calculation of the water column and the well volume and monitor drawdown during purging and sampling of each monitoring well.

Groundwater wells were purged and sampled using a low flow peristaltic pump and flow cell. The pump used flow control to minimise drawdown and allow general field quality parameters to stabilise. New dedicated, disposable low density polyethylene (LDPE) and silicon tubing was used for the sample collection for each of the wells sampled in August 2020. For PFAS groundwater sampling undertaken in May 2021, high density polyethylene (HDPE) tubing was used in place of LDPE tubing.

During purging field parameters were monitored using a calibrated water quality meter (WQM). The electrodes of the WQM were used to measure pH, redox potential (milliVolts (mV)), electrical conductivity, dissolved oxygen and temperature in water purged from the wells. Purging continued until stabilisation of these water quality parameters (generally ± 10%). Samples were collected immediately following stabilization of the water quality parameters.

All water generated during monitoring of groundwater wells was collected into 25L waste water containers before being discharged into the dedicated onsite waste storage drums (205L steel drum).

2.3.2.3 Decontamination procedures

New dedicated sample tubing was used to purge and sample all wells. All groundwater samples were collected using new disposable nitrile gloves, changed between sample locations.

All non-disposable equipment placed within the groundwater wells (i.e. interface meter) was decontaminated between sampling locations with a 1% Liquinox® (laboratory grade, phosphate free) and deionised water solution, rinsed with laboratory supplied deionised water to remove the solution, then triple rinsed with laboratory supplied deionised water to complete the decontamination process. Water used for decontamination (rinsing) of sampling equipment was laboratory supplied deionised water.

2.3.2.4 Sample containers

All samples were collected in laboratory supplied containers. For the collection of PFAS samples Teflon free laboratory supplied containers were used. The containers were labelled with the sample number, project number, date obtained and site name. This information was repeated on the Chain of Custody (CoC) form.

Sample containers were filled in order of the most volatile substances (i.e. containers to be tested for the most volatile compounds were filled first). Care was taken to minimise disturbance of the sample to avoid aeration by minimising the distance between the outlet tubing and the container and tilting the container so that discharge flowed gently down the inner walls.

Samples for dissolved metals analysis were field filtered with a single use 0.45 micron filter.

Once filled, the caps were checked to ensure that they were secure (and that there were no air bubbles/head space within the glass vials and bottles) then placed within an esky / cool box Method of sample collection, storage and handling.

2.3.2.5 Sample logging and documentation

The following information was recorded on sampling field data sheets (as a minimum):

- Date and time of sample collection
- Unique sample identification number

- Approximate sample depth
- Static Water Level (SWL) and depth to bottom
- Water quality screening results (DO, Temperature, Redox potential, pH and conductivity)
- Presence or absence of odour (nature and intensity)
- Colour of the water
- Well condition and purging volumes.

All samples, including QA/QC samples were transported to the analytical laboratories under CoC procedures and maintained in an ice filled cooler. The CoC detailed the following information:

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

2.4 Laboratory analysis

All samples were analysed by National Association of Testing Authorities (NATA) accredited laboratories for the analyses to be undertaken. The laboratories utilised for the investigation were ALS (primary) and Eurofins (secondary). The analytical methods applied by the laboratories are detailed in the laboratory reports presented in **Appendix H**.

2.4.1 Soil analysis

Eleven primary and two QA/QC (blind and split duplicate) soil samples were analysed for the following contaminants of potential concern (CoPCs):

- Total heavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn)
- TRH
- BTEXN
- PAH
- Total PCBs
- Speciated Phenols
- Asbestos (presence/absence)
- Dioxins and Furans (primary samples only)

Note: The split duplicate sample was forwarded to Eurofins (secondary) laboratory for analysis.

Samples selected for analysis were chosen to ensure a suitable spatial distribution and considering soil type as well as any indications of contamination.

2.4.2 Groundwater analysis

Three primary and two QA/QC (blind and split duplicate) groundwater samples, collected as part of the August 2020 groundwater sampling event, were analysed for the following CoPCs:

- Dissolved heavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn)
- TRH

- BTEXN
- PAHs
- Speciated Phenols
- VOCs

Seven primary and two QA/QC (bling and split duplicate) groundwater samples, collected as part of the May 2021 PFAS groundwater sampling event were analysed for PFAS only.

2.4.3 Rinsate sample analysis

A total of three rinsate blank samples were collected and submitted for analysis as part of the soil and groundwater investigations undertaken in August 2020. This equated to two rinsate blank samples for soils and one rinsate blank sample for groundwater. Analysis for each was as per the primary analysis undertaken for each matrix.

A total of three rinsate blank samples were collected and submitted for analysis as part of the groundwater sampling undertaken in May 2021. Each sample was analysed for PFAS only.

2.4.4 Trip blank and trip spike analysis

Two trip blank and two trip spike samples provided by the primary laboratory were carried throughout the groundwater and soil sampling program undertaken in August 2020 (one set for the soil and one set for groundwater). The Trip blank and trip spike sample were analysed as regular samples in conjunction with the environmental samples. The samples were analysed for BTEX only.

One trip blank sample provided by the primary laboratory was carried throughout the groundwater sampling event undertaken in May 2021. The trip blank sample was analysed as a regular sample in conjunction with the environmental samples. The sample was analysed for PFAS only.

2.4.5 Summary of samples submitted for analysis

A summary table detailing the samples submitted for laboratory analysis as part of this investigation is presented in **Table 2-2**.

Table 2-2 Sample Summary Table (2020 to 2021)

Date	Sample ID	Sample type	Description	Depth below ground level (m)
Soil (August 2020)				
17/08/2020	BH17_0.2	Primary	Soil	0.2
17/08/2020	BH17_0.55	Primary	Soil	0.55
17/08/2020	BH17_1.5	Primary	Soil	1.5
17/08/2020	BH17_4.5	Primary	Soil	4.5
17/08/2020	BH17_5.7	Primary	Soil	5.7
17/08/2020	BH18_0.2	Primary	Soil	0.2
17/08/2020	BH18_0.5	Primary	Soil	0.5
17/08/2020	BH18_2.2	Primary	Soil	2.2
18/08/2020	BH19_0.2	Primary	Soil	0.2

Date	Sample ID	Sample type	Description	Depth below ground level (m)
18/08/2020	BH20_0.2	Primary	Soil	0.2
18/08/2020	BH20_1.0	Primary	Soil	1
18/08/2020	BH20_2.4	Primary	Soil	2.4
18/08/2020	BH20_3.4	Primary	Soil	3.4
18/08/2020	BH21_0.2	Primary	Soil	0.2
18/08/2020	BH21_0.6	Primary	Soil	0.6
18/08/2020	BH21_1.3	Primary	Soil	1.3
18/08/2020	BH21_4.3	Primary	Soil	4.3
18/08/2020	BH21_4.8	Primary	Soil	4.8
18/08/2020	BH22_0.2	Primary	Soil	0.2
18/08/2020	BH22_0.8_	Primary	Soil	0.8
18/08/2020	BH22_1.4	Primary	Soil	1.4
18/08/2020	BH22_2.35-2.45	Primary	Soil	2.35-2.45
18/08/2020	QC101_200818[#2]	Blind duplicate	Soil	1.3
18/08/2020	QC201_200818[#2]	Split duplicate	Soil	1.3
18/08/2020	QC301_200818	Rinsate blank	Rinsate water	-
19/08/2020	QC301_200818	Rinsate blank	Rinsate water	-
17/08/2020	QC501_200818	Trip Blank	Laboratory supplied clean sand	-
17/08/2020	QC601_200818	Trip Spike	Laboratory supplied spike sand	-
Groundwater (August 2020)				
25/08/2020	MW04	Primary	Groundwater	2.815 (SWL)
25/08/2020	MW07	Primary	Groundwater	1.480 (SWL)
25/08/2020	MW09	Primary	Groundwater	3.205 (SWL)
25/08/2020	QC101_200825[#3]	Blind duplicate	Groundwater	3.205 (SWL)
25/08/2020	QC201_200825[#3]	Split duplicate	Groundwater	3.205 (SWL)
25/08/2020	QC301_200825	Rinsate blank	Rinsate water	-
25/08/2020	QC501_200825	Trip Blank	Laboratory supplied purge water	-
25/08/2020	QC601_200825	Trip Spike	Laboratory supplied spiked water	-
Groundwater (May 2021)				
21/05/2021	MW03	Primary	Groundwater	2.04 (SWL)
20/05/2021	MW04	Primary	Groundwater	3.33 (SWL)
20/05/2021	MW07	Primary	Groundwater	2.38 (SWL)

Date	Sample ID	Sample type	Description	Depth below ground level (m)
17/05/2021	MW09	Primary	Groundwater	3.02 (SWL)
20/05/2021	MW12	Primary	Groundwater	3.26 (SWL)
20/05/2021	MW13	Primary	Groundwater	2.02 (SWL)
21/05/2021	MW14	Primary	Groundwater	2.54 (SWL)
20/05/2021	QC101_210520[#4]	Blind duplicate	Groundwater	2.02 (SWL)
20/05/2021	QC201_210520[#4]	Split duplicate	Groundwater	2.02 (SWL)
17/05/2021	QC301_210517	Rinsate blank	Rinsate water	-
20/05/2021	QC302_210520	Rinsate blank	Rinsate water	-
21/05/2021	QC303_210521	Rinsate blank	Rinsate water	-
21/05/2021	QC501_210521	Trip blank	Laboratory supplied purge water	-

Notes:

#1 – Sample collected but not analysed

#2 – Primary soil sample = BH21_1.3

#3 – Primary groundwater sample = MW09

#4 – Primary groundwater sample = MW13

2.5 Site Assessment Criteria

Jacobs compared the analytical results against a set of soil and groundwater human health and ecological risk screening levels, referred to in this report as Site Assessment Criteria (SAC). The SAC have been set at levels that provide confidence that contaminant concentrations below the SAC will not adversely affect human health or terrestrial/aquatic ecosystems. It is noted that exceedance of the SAC does not necessarily indicate a need for remediation. The SAC indicate concentrations of contaminants above which further assessment and investigation may be required.

The SAC developed for the initial additional contamination investigation were adopted from the National Environment Protection (Assessment of Site Contamination) Measure 1999 (as revised 2013) - *Schedule B1 Guideline on Investigation levels for Soil and Groundwater* (NEPC, 2013). The specific criteria adopted are described in **Appendix E.**

NEPC (2013) does not include investigation levels for dioxins in soil or PFAS in groundwater.

Jacobs has derived site specific investigation levels for dioxins based on the framework outlined in Schedule B4 of NEPC (2013). The derivation of the site specific investigation levels for dioxins in soil is presented in **Appendix F**.

PFAS SAC have been adopted from the PFAS National Environmental Management Plan (PFAS NEMP) which includes guidance values for the sum of PFOS and PFHxS and for PFOA in drinking water and recreational water for the protection of human health. The guidance values detailed in the PFAS NEMP for the protection of recreational water users is based on the NHMRC (August, 2019) Guidance of Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water (NHMRC, 2019). The PFAS NEMP includes surface water guideline values for ecological protection. Groundwater guideline values for ecological protection have not been established. For the purposes of assessing contamination with respect to ecological protection, given the proximity of groundwater monitoring wells to the Parramatta River, the ecological guidelines for surface water have been adopted for groundwater. The PFAS NEMP includes guideline values for PFOS and PFOA in surface water for the protection of aquatic ecosystems. These are based on the technical draft default guideline values developed by the Australia

and New Zealand Environment Conservation Council (ANZECC). The specific criteria adopted for the purposes of the assessment of PFAS in groundwater are described in **Appendix E**.

In addition to the SAC adopted for the assessment of human health and ecological risks, Jacobs has also assessed aesthetics factors. Aesthetics relates to the presence of observable odours, discoloration and erroneous wastes materials in soil which could possibly indicate contamination. Such olfactory evidence can point to how receptors can be impacted by vapours on and migrating from the site. Odour thresholds for organic substances can be exceeded in off-site settings (through groundwater transmission of hydrocarbons) and whilst may not represent a direct health risk, could possibly prompt civil action. Aesthetics was continually assessed during the investigation and reported on the borehole logs (where present).

2.6 Field observations

2.6.1 Soil

The soil investigation fieldworks were undertaken between 17 and 18 August 2020. Key observations during the works are summarised as follows:

- Boreholes were advanced using a Geoprobe rig to depths ranging from 0.6m-6.0m below ground level (bgl). Borehole BH17 was terminated at 6 m bgl as this was the limit of investigation and natural material had been encountered. The remaining boreholes were terminated at drilling method refusal between 2.7 m bgl and 5.1 m bgl. The exception was BH19 where drilling method refusal occurred at 0.6 m bgl on suspected concrete
- Fill materials (clays, sands and gravels) were identified in all locations with depths ranging from 1.3m bgl – 3.1m bgl;
- Natural material was encountered (sandstones and sandy clays) in all locations except BH19
- Asbestos containing material (ACM) was observed at 0.55 m bgl in fill material from BH17. A piece of steel wire was also identified at this location and depth
- With the exception of the ACM and steel wire, no odours, waste material or other indications of potential contamination were observed.

2.6.2 Groundwater

Groundwater sampling fieldworks were undertaken initially in August 2020 as part of the July to August 2020 investigation and again in May 2021 as part of the May 2021 PFAS sampling event.

2.6.2.1 Well development

Prior to undertaking groundwater sampling, all sampled groundwater monitoring wells which were installed and originally developed as part of Jacobs 2016 investigations, were re-developed to ensure the samples collected would be representative of the surrounding groundwater conditions and quality.

- MW04, MW07 and MW09 were redeveloped as part of the August 2020 groundwater sampling event.
- MW03, MW12, MW13 and MW14 were redeveloped as part of the May 2021 PFAS groundwater sampling event.

A summary of the field observations noted during the well development for each monitoring well is presented in **Table 2-3**.

Table 2-3: Well development observations

Monitoring well	Top of casing (mAHD)	SWL (mAHD) #1		Volume removed (L)	Comments
		Start	Finish		
MW03	2.3	0.22	0.29	30	>3 well volumes removed. Brown, turbid, no odour
MW04	3.391	0.371	0.291	60	Silted bottom, brown, turbid to slightly cloudy
MW07	2.21	-0.102	-0.566	50	Brown, turbid to slightly cloudy, sulphur like odour
MW09	3.313	0.731	0.685	65	Silted bottom, brown turbid to slightly cloudy
MW12	3.892	0.642	-2.858	18	Purged dry at 15L and at 18L. Light brown, turbid, slight unknown odour
MW13	3.29	1.27	-1.7	15	Purged dry at 7L and 15L. Brown, very turbid to turbid, no odour
MW14	3.486	1.016	0.336	2	Purged dry (low water column, slow recharge). Light brown, turbid, no odour.

Notes:

mAHD – metres Australian Height Datum

SWL – standing water level

L - litres

#1 – SWL in mAHD calculated using top of casing (mAHD) for each monitoring well, from the Contamination and Acid Sulphate Soils Report (Jacobs 2016)

2.6.2.2 Groundwater gauging and field parameters

Groundwater gauging results and water quality field parameters recorded during groundwater sampling undertaken in August 2020 and May 2021 are detailed in Table 2-4.

Table 2-4 Groundwater field observations

Sample Location	Date	SWL		EC (µS/cm)	pH	Temp. (C)	Redox (mV)	Dissolved Oxygen		Comments
		mAHD[#1]	mbTOC					mg/L	% sat	
MW03	21/05/21	0.26	2.04	47,390	7.28	19.3	0.3	3.53	-	Slightly turbid, no odour
MW04	25/08/21	0.424	2.967	40,122	6.97	17.6	82.4	3.53	44.6	Clear, no odour
	21/05/21	0.061	3.33	46,740	7.29	19.2	134.7	3.67	47.1	Clear, no odour
MW07	25/08/21	0.955	1.255	39,173	6.88	18.0	97.3	4.75	59.7	Clear, no odour
	20/05/21	-0.17	2.38	38,930	6.67	20.7	6.4	0.14	1.9	Clear, no odour
MW09	25/08/21	0.058	3.255	41,112	6.52	18.2	69.7	0.24	3.1	Cloudy no odour
	17/05/21	0.293	3.02	51,030	6.49	20.6	-66.4	0.13	-	Slightly turbid, no odour
MW12	20/05/21	0.632	3.26	44,080	6.33	19.9	45.3	2.02	-	Slightly turbid, no odour
MW13	20/05/21	1.27	2.02	473	5.94	21.4	20.7	0.30	-	Turbid, brown, no odour
MW14	21/05/21	0.936	2.55	1,030	7.66	20.6	40.3	5.42	60.8	Slightly turbid, no odour

Notes:

MbTOC – metres below top of casing

µS/cm – microsiemens per centimetre

C – Celsius

mV – millivolts

mg/L – milligrams per litre

% sat – percentage saturation

#1- SWL in mAHD calculated using top of casing (mAHD) for each monitoring well, from the Contamination and Acid Sulphate Soils Report (Jacobs 2016)

The SWL was measured prior to purging and sampling each groundwater well using a Solinst interface metre. SWL measured during the August 2020 groundwater sampling event and the May 2021 PFAS groundwater sampling events indicated the following:

- August 2020: SWL ranged from 0.058 mAHD / 3.255 mbTOC in MW09 to 0.955 mAHD / 1.255 mbTOC in MW07.
- May 2021: SWL ranged from -0.17 mAHD / 2.38 mbTOC in MW07 to 1.27 mAHD / 2.02 mbTOC in MW13.

For the May 2021 PFAS groundwater sampling event, groundwater monitoring wells, MW03, MW04, MW07, which were located on the foreshore of the Paramatta River were gauged and sampled during a falling tide. Comparison between the SWL's measured in monitoring wells sampled in both groundwater sampling events (MW04, MW07 and MW09), indicates groundwater levels were lower for the May 2021 sampling event for each of monitoring well located on foreshore (MW04 and MW07), suggesting groundwater levels in the immediate vicinity of the Parramatta River may be tidally influenced. It is noted that MW04 and MW07 were sampled during a rising tide during the August 2020 sampling event. As noted in Jacobs (2016), groundwater elevations indicate a general hydraulic gradient towards the Paramatta River.

Physical and chemical water quality data was recorded for each monitoring well during purging and prior to sampling. Water quality data from each of the monitoring wells sampled in August 2020 and May 2021 indicated the following:

August 2020

- Slightly acidic pH, ranging from 6.52 in MW09 to 6.97 in MW04.
- High electrical conductivity ranging from 39,173 µS/cm in MW07 to 41,112 µS/cm in MW09. The electrical conductivity recorded in each monitoring well indicates groundwater was saline in nature suggesting interaction between groundwater and water from the Parramatta River is occurring.
- Redox potential was positive and high in all monitoring wells, indicating a typically non reducing environment in groundwater.
- Dissolved oxygen was also typically high, ranging between 3.53 and 4.75 mg/L in MW04 and MW07 respectively. Dissolved oxygen in MW09, with a reading of 0.24 mg/L, was considered low.

May 2021

- Generally, slightly acidic pH, ranging from 5.94 in MW13 to 7.66 in MW14.
- Generally, high electrical conductivity, ranging from 473 µS/cm in MW13 to 51,030 µS/cm in MW09. The electrical conductivity recorded in each monitoring well, with the exception of MW13 (473 µS/cm) and MW14 (1,030 µS/cm), indicates groundwater was saline in nature, suggesting interaction between groundwater and water from the Parramatta River is occurring in the majority of monitoring wells.
    - MW13 and MW14, when compared to the positions of MW03, MW04, MW07, MW09 and MW12 are positioned on more elevated terrain where gradients slope in a predominately north to north east direction towards the Parramatta River. Given the groundwater gradient within the Leeds Street character area is generally towards the Parramatta River and that MW13 and MW14 are positioned on more elevated terrain compared to the other monitoring wells, groundwater in MW13 and MW14, with respect to water quality, is considered less likely to be tidally influenced by the Parramatta River.
- Redox potential was positive and high in all monitoring wells, with the exception of MW09, indicating a typically non reducing environment in groundwater.
- Dissolved oxygen was generally high, ranging between 2.02 mg/L in MW12 to 5.42 mg/L in MW14. Dissolved oxygen in MW07, MW09 and MW13 with readings of 0.14 mg/L, 0.13 mg/L and 0.30 mg/L, respectively, was considered low.

2.7 Soil analytical results

Data tables presenting the soil analytical results in comparison to the adopted SAC are presented in **Table A.1** and **Table A.2** in **Appendix G**. Laboratory certificates are presented in **Appendix H**.

2.7.1 Heavy metals

Concentrations or heavy metals in soil were reported below the SAC in all samples analysed with the following exceptions:

- Reported concentration of copper in sample BH21_1.3 (77mg/kg) exceeded the applied EIL for copper (65mg/kg).
- Reported concentrations of zinc in BH17_0.55 (117mg/kg), BH18_2.2 (216mg/kg) and BH21_1.3 (133mg/kg) exceeded the adopted EIL for zinc (75mg/kg).

2.7.2 TRH and BTEXN

Concentrations of TRH fractions including total petroleum fractions (TPH) and BTEXN in soil were reported below the laboratory limits of reporting (LOR) and below the SAC, in all samples analysed.

2.7.3 PAHs

Concentrations of PAHs in soil were reported below the SAC in all samples analysed.

2.7.4 Total PCBs

Concentrations of total PCBs in soil were reported below the LOR and SAC in all samples analysed.

2.7.5 Speciated phenols

Concentrations of speciated phenols were reported below the LOR and SAC in all samples analysed.

2.7.6 Asbestos

Asbestos was not identified in all samples with the following exceptions:

- Chrysotile (Ch) asbestos in the form a 25x25x5mm ACM fragment was detected and positively identified in BH17_0.55.
- Two asbestos fibre bundles were detected and positively identified in BH18_2.2 at a concentration below the 0.1/kg LOR. No asbestos was detected at or above the LOR of 0.1g/k, by polarised light microscopy including dispersion staining.

2.7.7 Dioxins and furans

Concentrations of dioxins and furans in soil were reported below the SAC (where available) in all samples with the following exceptions:

- The reported concentration of 135.01 pg/g for Total TEQ WHO-TEQ3 (LOR) in BH18_2.2 exceeded the HIL A criteria (110 pg/g).

No exceedances of the derived HIL C criteria (172 pg/g) for dioxins in soil were reported in any soil sample.

2.8 Groundwater Analytical Results

Data tables presenting the groundwater analytical results in comparison to the adopted SAC are presented in **Table B.1** and **Table B.2** in **Appendix G**. Laboratory certificates are presented in **Appendix H**.

The groundwater analytical results for the monitoring wells sampled as part of the August 2020 groundwater sampling event (MW04, MW07 & MW09), all returned concentrations below the limit of recording (LOR) for all CoPCs (including heavy metals, TRH, BTEXN, PAHs, speciated phenols and VOCs) with the following exception:

- TRH >C6-C10 in MW07 reported a concentration equal to the LOR of 20 µg/L.

It is noted the LORs for cadmium, copper, lead and nickel, reported by the primary laboratory (ALS) were higher than the adopted assessment criteria (NEPM 2013 GILs for marine water) for cadmium, copper, lead and nickel. The LOR was increased from standard reporting limits due to matrix interference in analysed samples (high total dissolved solids).

With respect to PFAS concentrations reported in groundwater samples collected from MW03, MW04, MW07, MW09, MW12, MW13 and MW14, as part of the May 2021 PFAS groundwater sampling event, most samples returned concentrations below the LOR, with the following exceptions:

- PFOS in MW14 reported a concentration (0.05 µg/L) above the LOR (0.01 µg/L).
- PFOA in MW14 reported a concentration (0.03 µg/L) above the LOR (0.01 µg/L).
- Sum (PFHxS + PFOS) in MW14 reported a concentration (0.05 µg/L) above the LOR (0.01 µg/L).
- Sum of PFAS in MW14 reported a concentration (0.08 µg/L) above the LOR (0.01 µg/L).

The concentration reported for the Sum (PFHxS + PFOS) in MW14, is noted as being the same concentration reported for PFOS in MW14, whilst the concentration reported for the Sum of PFAS in MW14, is noted as being the sum of the individual PFOS and PFOA concentrations, thus indicating that PFOS and PFOA in MW14 were the only individual PFAS compounds to report concentrations above the LOR.

Concentrations of all CoPC's were below the SAC (where available) in all groundwater samples collected as part of the August 2020 groundwater sampling event and May 2021 PFAS groundwater sampling event.

2.9 Discussion

2.9.1 Dioxins in soil

The concentration of dioxins in soil (expressed as Total TEQ WHO-TEQ3 (LOR)) in this investigation ranged from 8 pg/g to 135 pg/g. In the Jacobs (2016) investigation, concentrations ranged from 6 pg/g to 183 pg/g with the highest concentrations in samples collected from the Ikea property.

Considering the samples collected in 2016 and the samples collected during this investigation, there are a total of four soil samples where dioxin concentrations exceeded the derived HIL A guideline value (Residential land with garden / accessible soil) of 110 pg/g:

- BH06_0.4-0.6 – 143 pg/g
- BH06_3.0-3.2 – 143 pg/g
- BH07_3.6-3.8 – 183 pg/g
- BH18_2.2 – 135 pg/g

Only one of the soil samples (BH07_3.6-3.8) had reported dioxin concentrations exceeding the derive HIL C guideline value (public open space) of 172 pg/g.

As stated in Jacobs (2016), dioxins are persistent contaminants that are widespread in the environment. An investigation of dioxins in soil in Australia was undertaken for the National Dioxins Program (Muller et al, 2004). The study reported that dioxins were identified in most of the 166 soil samples analysed with concentrations ranging from 0.05 pg/g (TEQ) to 23 pg/g (TEQ).

Significant remediation of dioxin contamination was carried out as part of the clean-up of Homebush Bay and development of the former Lednez and Allied Feeds sites on the western side of the Rhodes peninsula where waste material from the Lednez operations was used as fill material. According to the Health Risk Assessment for the former Allied Feeds site (GHD, 2005), the maximum concentration of dioxins in soil was 92.3 µg/kg (92,300 pg/g). The Environmental Impact Statement (EIS) for the Remediation of the Lednez Site and Homebush Bay (PB, 2002) noted that the maximum dioxin concentration in soil at the Lednez site was 0.18 mg/kg (180,000 pg/g) and in Homebush Bay sediments was 360 µg/kg (360,000 pg/g). The EIS also noted that background concentrations of dioxins in the Parramatta River were in the order of 0.17 µg/kg (170 pg/g). All values are expressed in 2,3,7,8-TCDD TEQ.

It is noted that the identified dioxin concentrations are well below the level above which the Chemical Control Order in relation to Dioxin-contaminated waste materials under the Environmentally Hazardous Chemicals Act 1985 would apply. This order prohibits the disposal of dioxin-contaminated waste materials. The order also prohibits the processing, keeping, selling, distributing or conveying of dioxin contaminated waste materials, except in accordance with a licence issued by the Commission (EPA). The order defines dioxin contaminated waste as "waste materials that, when tested using a method approved by the Commission, are found to contain more than 1 part in 100 million by weight (i.e. 10-8 w/w) of dioxin." This is equivalent to 10,000 pg/g.

Therefore, should excavation and off-site disposal of the dioxin impacted soil be required in the future as part of development of the site, this would not trigger the Chemical Control Order requirements based on the current reported concentrations and the classification of the waste material would be classified according to its other chemicals/ or attributes according to the NSW EPA Waste Classification Guidelines (2014).

2.9.2 Other contaminants in soil

It is noted that heavy metal concentrations in soil above the EILs were identified during the Jacobs (2016) investigation and the results of the additional investigation are generally consistent.

As outlined in Appendix D, the EILs and ESL are for the protection of terrestrial ecology and typically apply to the top 2 meters of soil at the finished surface/ground level which corresponds to the root and habitation zone of many species. The exceedances presented in metals of the ESLs and EILs are found within the top 2m and generally found in on-site fill materials. In consideration of the current land use and the lack of existing terrestrial ecological receptors at the Ikea site, the EIL and ESL exceedances reported in soil for copper and zinc are unlikely to represent a significant risk to current ecological receptors or to the rezoning of the site for the purposed of mixed use. Should further assessment during the development approval process determine a remediation requirement then it is likely that this would be limited to excavation and off-site disposal of soil or fill material in the top 2 meters of soil in open space or vegetated areas.

The presence of Asbestos in soil was detected in samples BH17_0.55 and BH18_2.2 which indicates a potential for the asbestos to be spread further in the fill material on site. This will require further investigation and management during later stages of development of the area but is not considered to present a material risk to the proposed rezoning.

2.9.3 Contaminants in Groundwater

No exceedances of the SAC were reported for groundwater as part of groundwater sampling undertaken in August 2020 and PFAS groundwater undertaken in May 2021. With the exception of the TRH >C6 to C10 fraction in the MW07 sample collected during August 2020 sampling and PFOS and PFOA in MW14 collected during May 2021 sampling, concentrations of all CoPCs in all groundwater samples were reported below the laboratories LOR. However, it is noted that increased LORs were required for some CoPCs in samples collected as part of the August 2020 sampling, due to matrix interference during laboratory analysis.

The Jacobs (2016) investigation identified concentrations of Copper, Lead, Nickel and Zinc in groundwater which exceeded the ANZECC water quality guidelines for marine water for slightly to moderately disturbed ecosystems.

3. Sediment investigation at the proposed ferry wharf

3.1 Data Quality Objectives

DQOs for the sediment investigation were developed using the same approach as presented in Section 2.1.

Step 1 – State the problem

DPIE is proposing the development of a ferry wharf on the Parramatta River to the north of the Leeds Street character area in order to improve public transport access. The NSW EPA has raised concerns about sediment quality in the river and the potential impact of sediment disturbance during the construction and operation of the wharf.

Step 2 – Identify the decision statement

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

- What is the quality of sediments in the Parramatta River where the ferry wharf is proposed?
- Are measures to mitigate the disturbance or transport of sediments necessary during the construction and operation of the wharf?

Step 3 – Identify inputs to the decision

The following informational inputs will be required to resolve the decision statements:

- Information on the proposed wharf construction;
- Field information and observations on depth of water and the nature of sediment in the wharf construction area;
- Laboratory analysis results for sediment samples collected during the investigation;
- Risk screening values for sediment quality;
- Information on general sediment quality in the Parramatta River.

Step 4 – Define the boundaries of the study

The spatial boundaries of the study were as follows:

- The lateral boundary will be limited to the proposed extent of construction of the wharf as shown in **Figure 6, Appendix A**;
- The vertical boundary was the upper bed sediments (approximately 1 meter) where the highest concentrations of contaminants were expected and there is the highest potential for disturbance.

Step 5 – Develop the analytical approach

The purpose of this step was to define the parameters of interest, specify action levels and combine the outputs of the previous DQO steps to develop a series of options if certain trigger events occur.

The key decision rules for the investigation were:

2) Have the analytical data collected as part of the investigation met the Data Quality Indicators (DQI) (see below)? If yes then the data can be used to answer the decision rule below and the decision statements developed in Step 2. If no then an assessment of the need to collect additional data will be required.
3) Do contaminant concentrations exceed the investigation criteria defined in **Section 3.4**? If no then the contamination does not pose an unacceptable risk. Where results exceed the adopted investigation criteria,

this may not necessarily indicate an unacceptable level of risk. Further risk assessment, and potentially additional investigations, will be required to determine the potential for unacceptable impacts.

In order to assess the useability of the data for making decisions, the data has been assessed against the set of DQI as presented in **Section 2.1.** The quality assurance and quality control measures applied to assess data quality in relation to the DQI as well as the acceptance criteria set for the project are outlined in **Appendix D**.

Step 6 – Specify performance or acceptance criteria

This step involves specifying acceptable limits on decision errors. Decision errors are incorrect decisions caused by using data that are not representative of site conditions due to sampling or analytical error (DEC, 2006).

There are two key types of decision errors that can occur for the Project:

c) Deciding that the risks posed by contamination are acceptable when these risks actually are not acceptable. The consequence of this error may be unacceptable impacts to human health or the receiving environment; or

d) Deciding that the risks posed by contamination are unacceptable when the risks actually are acceptable. The consequence of this error is that management actions undertaken to reduce the risks are not necessary.

The more severe consequences are with decision error (a) since the risk of jeopardising human health and/or the environment outweighs the consequences of undertaking management actions that are not necessary.

Developing and assessing acceptance criteria for decisions based on confidence levels would require collection of a statistically significant set of samples for each human or ecological exposure scenario. This is not feasible given the large number of potential scenarios and the intended use of targeted sampling. Therefore, a conservative approach has been adopted to minimise the likelihood that decision error (a) occurs. This involved the collection of samples in areas considered likely to have the highest concentrations of contaminants based on site history and site setting information. The maximum concentration of the contaminant of concern has also been compared to the investigation criteria to determine the potential for risk and if further sampling is required.

Step 7 – Develop the plan for obtaining data

The purpose of this step is to identify a resource-effective data collection design for generating data that are expected to satisfy the DQO. To ensure the design satisfies the DQO a comprehensive Quality Assurance and Quality Control Plan will be implemented as described in section **Appendix D**.

In addition, Jacobs will work closely with the analytical laboratories, sub-contractors and sampling equipment suppliers to ensure that appropriate procedures and processes are developed and implemented prior to and during the fieldwork, to ensure that sample handling, and transport to and processing by the analytical laboratories is undertaken appropriately, in accordance with this DQO.

3.2 Sediment sampling methodology

3.2.1 Sample collection

Sediment samples from the Parramatta River were collected as grab samples directly from bed sediments within the proposed alignment of the new wharf. A specialist sub-contractor (Geochemical Assessments) was used to assist in the collection of sediment samples.

Sediment cores were collected using a piston corer deployed from a boat. The stainless-steel piston coring head unit held 100 mm stainless steel core barrels. The piston is constructed from loosely fitting polyethylene discs with rubber 'O" rings and is held together by a 10 mm stainless steel bolt with an attachment point. The piston corer was lowered from the boat and recovered from the bed using foam-filled aluminium rods with quick-fitting connections. As the barrel was pushed into the sediment, the piston (held just above the seabed by low stretch

rope attached to the boat) creates a partial vacuum that reduces core compaction and enables full core recovery. The corer was recovered using a mechanical winch and the core barrel separated from the coring head.

The use of the piston coring method for the collection of sediment samples minimised the physical disturbance of the sediment at the sediment/water interface and loss of sediment core during the extraction process. The core barrels were not split to recover the sediment, but rather sediment was removed from the corer by pushing the piston along the barrel.

A photo log of sediment cores for each sample location is presented in **Appendix C**.

All sediment samples recovered were placed in specific jars (i.e. no Teflon™ lined lids) provided by the analytical laboratory. The jars were completely filled with sediment, labelled with the date, unique sampling point identification and sampler information.

The position of the sediment sample locations were measured with a non-differential GPS. Sediment sample locations are presented in **Figure 4** of **Appendix A**.

The sediment jars, once filled with sample and sealed, were immediately placed in an esky/cool box in which a cooling medium (i.e. ice) had been added to keep the samples below a temperature of approximately 4 degrees Celcius. At the end of the sampling program the samples in the cool box were transported to the analytical laboratory.

3.2.2 Decontamination procedure

New disposable nitrile gloves were used for the collection of each new sample and changed between sample locations. The piston corer was rinsed in the water from the respective sample locations between sample locations to remove excess sediments.

Once sediments had been rinsed off with river water, all reusable sampling implements (core barrels, grabs, core trays and bowls) were decontaminated between sampling locations with a 1% Liquinox® (laboratory grade, phosphate free) and deionised water solution and rinsed with laboratory supplied deionised water to remove the solution. The reusable implements were then rinsed using n-hexane solution before being triple rinsed with laboratory supplied deionised water to complete the decontamination process. Water used for decontamination of sampling equipment was laboratory supplied deionised water. Sampling equipment prior to commencing the decontamination process was rinsed with river water to remove excess sediment. Core barrels, grabs, core trays and bowls were stainless steel. No plastics came into contact with the samples.

3.2.3 Sample logging and documentation

Field logs were completed during the field investigation. The logs recorded (as a minimum) the following data:

- Sample number and depth
- Material classification, colour, consistency or density, moisture content and obvious indications of contamination
- Surrounding area and waterway description including general water quality observations and flow descriptions
- Method of sample collection.

All samples, including two QA/QC samples (SD_QC01 and SD_QC02), were transported to the respective analytical laboratories under Chain of Custody (CoC) procedures and maintained in an ice-filled cool box. The CoC detailed the following information:

- Site identification
- The sampler

- Nature of the sample
- Collection time and date
- Analyses to be performed.

All field data logs are presented below in **Appendix I**.

3.3 Laboratory analysis

All samples were analysed by National Association of Testing Authorities (NATA) accredited laboratories for the analyses to be undertaken. The laboratories utilised for the investigation were ALS (primary) and Eurofins (secondary). The methods applied by the laboratories are presented in the laboratory reports provided in **Appendix H**.

Eight primary and two QA/QC (blind and split duplicate) samples were analysed for the following CoPCs:

- Total heavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb, Zn)
- TRH
- BTEXN
- PAH
- TOC
- Total PCBs
- Speciated Phenols
- Dioxins and Furans (not analysed at secondary laboratory)
- TBT
- Grain size distribution (6 samples only)

Note: The split duplicate sample was forwarded to Eurofins (secondary) laboratory for analysis. The split duplicate sample was not analysed for dioxins and furans due to the limited availability of NATA accredited testing facilities within Australia to act as the secondary laboratory for this method. Grain size distribution analysis was also not undertaken for the blind and split duplicate samples.

3.3.1 Rinsate sample analysis

One rinsate blank sample was collected for the sediment investigation and analysed for the same parameters as sediment (excluding grain size distribution).

3.3.2 Trip blank and trip spike analysis

A trip blank and a trip spike sample provided by the primary laboratory and carried throughout the sampling program were submitted for analysis. Trip blank and trip spike sample were analysed as regular samples in conjunction with the environmental samples and were analysed for BTEX only.

3.3.3 Sample summary

A summary table detailing the samples collected and submitted for analysis as part of this sediment investigation is presented in **Table 3-1**.

Table 3-1 Sediment Sample Summary Table

Date	Sample ID	Sample type	Description	Depth (m)
16/07/2020	SD01	Primary	Sediment	0.80 (core length)
16/07/2020	SD02	Primary	Sediment	0.85 (core length)
16/07/2020	SD03	Primary	Sediment	0.80 (core length)
16/07/2020	SD04	Primary	Sediment	0.70 (core length)
16/07/2020	SD05	Primary	Sediment	0.77 (core length)
16/07/2020	SD06	Primary	Sediment	0.81 (core length)
16/07/2020	SD07	Primary	Sediment	0.78 (core length)
16/07/2020	SD08	Primary	Sediment	0.83 (core length)
16/07/2020	SD_QC01[#1]	Blind duplicate	Sediment	0.80 (core length)
16/07/2020	SD_QC02[#1]	Split duplicate	Sediment	0.80 (core length)
16/07/2020	SD_R01	Rinsate	Rinsate water	-
16/07/2020	SD_TB01	Trip blank	Laboratory supplied clean sand	-
16/07/2020	SD_TS01	Trip spike	Laboratory supplied spike sand	-

Notes:

#1 – Primary sediment sample = SD03

3.4 Site Assessment Criteria

Analytical results for the sediment samples have been compared against the Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Toxicant Default Guidelines for Sediment Quality (ANZG 2019). These guidelines incorporate the ANZECC/ARMCANZ Sediment Quality Guidelines (2000) and the revisions to those guidelines recommended by CSIRO (Simpson et al 2013).

The guidelines contain two concentrations, the Default Guideline Value (or trigger value) (DGV) and the DGV-High concentration. The trigger value is a threshold concentration and below this concentration the frequency of adverse effects is expected to be very low. The SQG-High concentration is intended to represent a concentration above which adverse biological effects are expected to occur more frequently.

The relevant guideline values for this investigation are included with the summary analytical results in the **Appendix G**.

The guidelines do not provide investigation levels for dioxins/furans or chlorinated benzenes, which are important contaminants of concern for the sediments that were sampled within the proposed new wharf footprint. In these situations, the ANZG (2018) suggest use of the reference site approach, where a site-specific guideline value is derived on the basis of natural background (reference) concentration. This is outside the scope of the current investigation. However, Jacobs has undertaken a limited literature review on dioxin concentrations in the Parramatta River to provide some context to the dioxin analysis results for the proposed wharf. This is discussed in

3.5 Field observations

Sediment sampling was conducted on 16 July 2020. The approximate depth of water at the sampling locations varied between 1.8 meters (SD01) and 3.5 meters (SD08).

Sediment was observed to consist of dark grey silt with trace fine grained sands. Small fragments of shell and organic matter were observed in most samples. A minor hydrocarbon odour was noted in the sample at SD02.

A photo log of sediment cores for each sample location is presented in **Appendix C**.

3.6 Sediment Analytical Results

Tabulated analytical results for the sediment samples and applicable assessment criteria are presented in **Table C** of **Appendix G**. Laboratory certificates are presented in **Appendix H**.

3.6.1 Heavy Metals

For heavy metals the ANZG (2018) Default Guideline Values (DGVs) for toxicants in sediments were used to screen the analytical results. This consisted of DGV and DGV-high criteria.

The following analytical results exceeded the DGV criteria at the following sample locations:

- Arsenic at locations SD01, SD02, SD05, SD06, SD07 and SD08 exceeded the DGV criteria of 20mg/kg;
- Cadmium at locations SD02 and SD05 exceeded the DGV criteria of 1.5 mg/kg;
- Chromium at locations SD01, SD02, SD03, SD04, SD05, SD06, SD07 and SD08 exceeded the DGV criteria of 80mg/kg;
- Copper at locations SD02, SD03, SD04, SD05, SD06, SD07 and SD08 exceeded the DGV criteria of 65mg/kg;
- Lead at all locations SD01, SD02, SD03, SD04, SD05, SD06, SD07 and SD08 exceeded the DGV criteria of 50mg/kg;
- Mercury at locations SD01, SD02, SD03, SD04, SD05, SD06, SD07 and SD08 exceeded the DGV criteria of 0.15mg/kg;
- Nickel at locations SD02 and SD05 exceeded the DGV criteria of 21mg/kg; and
- Zinc at locations SD01, SD02, SD03, SD04, SD05, SD06, SD07 and SD08 exceeded the DGV criteria of 200mg/kg.

In addition to the DGV criteria exceedances reported above the following heavy metals also exceeded the DGV-high criteria at the following sample locations:

- Chromium at location SD02 exceeded the DGV-high criteria of 505mg/kg;
- Lead at locations SD02, SD05, SD06, SD07 and SD08 exceeded the DGV-high criteria of 220mg/kg;
- Mercury at location SD02 exceeded the DGV-high criteria of 1mg/kg; and
- Zinc at locations SD02, SD03, SD04, SD05, SD06, SD07 and SD08 exceeded the DGV-high criteria of 410mg/kg.

3.6.2 TRH

Concentrations of TRH fractions including total petroleum fractions (TPH) in sediment were reported below the SAC in samples analysed with the following exceptions:

- TPH C10-C36 (Sum of total) in SD01, SD02, SD03, SD04, SD05, SD06, SD07 and SD08 exceeded the DGV and DGV-high value criteria of 280mg/kg and 550mg/kg

3.6.3 BTEXN

Concentrations of BTEXN in sediment were reported below the LOR in all samples analysed.

3.6.4 PAHs

Concentrations of PAHs in sediment were reported below the SAC in samples analysed with the following exception:

- PAHs (sum of total) at location SD01 exceeded the DGV criteria of 100mg/kg

3.6.5 PCBs

Concentrations of PCBs in sediment were reported below the LOR and SAC (where available) in all samples analysed.

3.6.6 Speciated phenols

Concentrations of phenols in sediment were reported below the LOR in samples analysed with the following exceptions:

- 2,4,5-trichlorophenol in SD02 with a concentration of 0.15mg/kg was detected above the LOR of 0.05mg/kg.
- 2,4-dimethylphenol in SD01 with a concentration of 0.64mg/kg was detected above the LOR of 0.02mg/kg.
- 2-methylphenol in SD01 with a concentration of 0.38mg/kg was detected above the LOR of 0.02mg/kg
- 3-Methylphenol in SD01 with a concentration of 0.43mg/kg was detected above the LOR of 0.02mg/kg
- Phenol in SD01 with a concentrations of 0.28mg/kg was detected above the LOR of 0.02mg/kg

It is noted that no SAC has been applied or derived for phenols as part of this investigation.

3.6.7 Organotins

Concentrations of organotins including TBT as Sn in sediment were reported below the SAC in all samples analysed.

3.6.8 Dioxins and Furans

Concentrations of PCDD/Fs in sediment samples varied from 139 pg/g at SD01 to 3,183 pg/g at SD02 for Total TEQ WHO –TEQ 2 (0.5 LOR) (mean 1013.7 pg WHO -TEQ g).

The ANZG (2018) DGV and DGV-high criteria do not provide investigation levels for dioxins/furans. Further discussion on this is presented in **Section 3.7.1**.

3.6.9 Sediment Particle Size Distribution

Particle size distributions (PSD) were determined by the analytical laboratory (**Appendix H**) by wet sieving (<63 μm; 63-125 μm; 125-250 μm; 250-500 μm; 500-1000 μm; 1-2 mm; >2 mm fractions) and was undertaken on all samples.

The results of the PSD and the field observations and documentation collected on the day of sampling indicate broadly consistent sediment characteristics of silty sand with trace gravel sized particles at the locations tested. Sediment classification based on the particle sizes measured would indicate approximately 60% sand components, with approximately 40% fines (silts and clays).

Laboratory results for PSD in sediment are presented in Table C of **Appendix G** and field observations for sediment are detailed on field forms presented in **Appendix I.**

3.7 Discussion

3.7.1 Dioxins in sediment

Sediment quality guidelines for polychlorinated dibenzo-p-dioxins and polychlorinated dibenzo-p-furans (PCDD/Fs – commonly referred to as Dioxins and Furans) in Australia are not well established. As noted in **Section 3.4**, neither the National Assessment Guidelines for Dredging (NAGD), nor ANZG (2018) provide guidelines for dioxins which are important contaminants of concern for the sediments that were sampled along the Rhodes foreshore, within the proposed new wharf footprint. In these situations, the ANZG (2018) suggest use of the reference site approach, where a site-specific guideline value is derived on the basis of natural background (reference) concentration. This is outside the scope of the current investigation. However, Jacobs has undertaken a limited literature review on dioxin concentrations in the Parramatta River to provide some context to the dioxin analysis results for the proposed wharf.

As discussed in **Section 2.9.1**, the Environmental Impact Statement (EIS) for the Remediation of the Lednez Site and Homebush Bay (PB, 2002) noted that the maximum dioxin concentration in Homebush Bay sediments was 360 µg/kg (360,000 pg/g). The EIS also noted that background concentrations of dioxins in the Parramatta River were in the order of 0.17 µg/kg (170 pg/g). All values are expressed in 2,3,7,8-TCDD TEQ.

Birch et al., (2007) found concentrations of dioxins in Sydney Harbour decrease markedly with distance from Homebush Bay which is considered to be predominant (historical) industrial source of these contaminants in Sydney Harbour. Dioxin concentrations in sediments in Sydney Harbour varied from 32 to 4,352 pg/g WHO-TEQ (mean of 712 pg/g). "Background" sediment samples collected in the same study from undeveloped areas in Sydney Harbour (upper Middle Harbour and Lane Cove River) varied from 31.5 to 49.5 pg WHO-TEQ g. Baseline PCDD/F concentrations for industrial and urban areas of Port Jackson derived from samples collected in central harbour bays, varied from 81.1 to 367.2 pg WHO-TEQ g.

In a recent study related to a marina development, concentrations of dioxins in (surficial and subsurface) sediment samples in Homebush Bay averaged 979 pg/g WHO-TEQ and 539 pg/g WHO-TEQ at reference locations in surficial sediment beyond the bay. Concentrations of dioxins in Sydney Harbour decrease markedly with distance from Homebush Bay which is considered to be predominant (historical) industrial source of these contaminants (Birch et al, 2007).

Dioxins are strongly affiliated with fine-grained, organic-rich particulate materials. The lowest value of 139.5pg/g for Total WHO –TEQ (LOR) reported in sediment was at nearshore location SD01, which compared to other sample locations was coarser grained. Dioxins in sediment disturbed by the proposed development would be expected to remain partitioned to particles. These particles would settle quickly, but some advection would occur due to the relatively high tidal current velocities at the proposed development site.

3.7.2 Heavy metals in sediment

Concentrations of heavy metals in the samples collected for this investigation exceeded the ANZG (2018) Default Guideline Values for toxicants in sediment for most metals and in most locations. This is not unusual for sediments in the Parramatta River.

As shown in **Table 3.2**, heavy metal concentrations in the sediment samples collected for this investigation are generally consistent with the results of sediment sampling for Homebush Bay (EVS, 1999) and the Port Jackson Estuary (Birch, 2000).

Table 3.2: Comparison of historical and Jacobs sediment results for heavy metals

Heavy Metal	EVS (1999) Homebush Bay (mg/Kg)		Birch (2000) Port Jackson Estuary (mg/Kg)		Jacobs 2020 Results (mg/Kg)	
	Range	Mean	Range	Mean	Range	Mean
Copper	0.56 -21.2	8	4-1,078	124	55.8-166	90
Lead	110-180	150	92-1,319	268	161-521	297
Zinc	290-530	405	18-2,246	548	319-960	516
Cadmium	0.63-1.9	1.1	<1-10	3	0.7-2.8	1.4
Chromium	47-150	90	17-1,472	118	86.2-505	233
Nickel	5.2-1,498	8	12-86	38	9.2-27	18
Arsenic	0.371-2.254	1	-	-	14.2-31.1	23

3.7.3 Semi-volatile organics (TRH and PAH) in sediment

The ANZG (2018) guidelines present criteria for sum of Polyaromatic Hydrocarbons (PAHs) of 100mg/Kg (DGV) and 500mg/Kg (DGV-high). SD01 was the only location to exceed the DGV recording a sum of PAH concentration of 211mg/kg. The exceedance at location SD01 is accredited to the sample location being closest to the shore line of the river, the presence fine sediments and anthropogenic matter.

The ANZECC & ARMCANZ guidelines present guidelines for Total Petroleum Hydrocarbons (TPHs) of 280mg/Kg (DGV) and 550mg/Kg (DGV-high). All samples exceed DGV-high criteria for TPHs.

3.7.4 Sediment mobilisation risks during construction and operation of the ferry wharf

Concentrations and the bioavailability of contaminants in sediment can be influenced strongly by sediment texture. Bioavailability tests of sediment were not undertaken as part of this assessment, however, some assumptions can be made in relation to the particle size and analytical results. Elutriation testing would be required to understand whether contaminants of potential concern in whole sediment remain bound to particulates when resuspended into the water column, or whether contaminants in sediments can contribute to dissolved concentrations in pore water and hold the ability to impact on human health and the environment.

The behaviour of sediment-bound contaminants if resuspended into the water column is of particular interest when assessing the potential for adverse environmental impacts from the proposed construction of the new wharf. The dispersion pattern and fate of resuspended sediment (including associated sediment-bound contaminants) is related to the velocities of tidal currents during the piling and other construction activities that hold the potential to disturb and mobilise sediments.

Simpson et al (2013) recommended the use of Lines-of-evidence (LOEs) and LOE Scoring comprising chemistry, toxicity, bioaccumulation and ecology.

The Chemistry line of evidence indicates consistent Metals, Dioxin and Furan contamination in shallow bed sediments at areas across the near shore area at the Rhodes East Peninsula. Based on the sediment grain size as observed and measured at sampled areas, it is expected that some limited, localised resuspension of contaminated sediment could occur if sediment is disturbed during construction of the new wharf.

Jacobs considers that the fraction of contaminants in sediment that is available for uptake by aquatic biota is likely to be a small component of total contaminant load, with the majority of contaminants in sediment likely to remain bound to particulates rather than released to (bioavailable) dissolved phase(s) if sediment is remobilised.

4. Station Gateway East

As noted in **Section 1**, since the Jacobs (2016) investigation, the Rhodes Planned Precinct has been expanded to include land to the east and west of the Rhodes railway station. These areas are referred to as the Station Gateway East and Station Gateway West character areas. While land use zoning for Station Gateway West will not change, the zoning for the southern part of Station Gateway East will change from Neighbourhood Centre (B1) to Mixed Use (B4), potentially allowing for more sensitive use of the land (see **Figures 1, 2 and 3 in Appendix A**).

Ministerial Direction (No 2.6) under Section 9.1 of the Environmental Planning and Assessment Act requires a preliminary investigation of land in accordance with the Contaminated Land Planning Guidelines (DUAP and EPA, 2008) when changing the use of land that has been used for activities that may cause contamination. Therefore, a preliminary investigation of the land that will change from Neighbourhood Centre (B1) to Mixed Use (B4) has been undertaken. This includes the following properties:

- Lots 1 and 2, DP1103358
- Lots 62 and 63, DP1099780
- SP75954
- Lot 7, DP792101
- Lot 1, DP833959
- SP71065

4.1 Lotsearch report

Jacobs procured a report from Lotsearch Pty Ltd (Lotsearch) for the land bounded by Concord Road, Blaxland Road and Llewellyn Street in Rhodes. The area includes the properties listed above as well as several additional properties. The Lotsearch report is provided in **Appendix J**.

A complete list of the data sources and results from each search is presented in the Lotsearch report.

Key findings from the review of the Lotsearch report were as follows:

- No registered contaminated sites or other potentially contaminating activities were identified within the study area except for the potential dry cleaner discussed below. A number of contaminated sites were identified outside the study area but these were considered to not present a risk to the study area due to separation distance, topographical gradient, nature of the activities or known redevelopment of the land. For example, the land on the western side of the railway includes the former Allied Feeds site which was identified as former contaminated land in the Lotsearch report but has been remediated and redeveloped.
- A dry cleaning business listed as Josephs Dry Cleaners was listed in the UBD Business Directories for 1971, 1972 and 1976 at 5 Blaxland Road, Rhodes. This street address is no longer valid but appears to have been located near the corner of Mary Street East and Blaxland Road, Rhodes, in the south west corner of the Station Gateway East. There is a risk for contamination with chlorinated hydrocarbons due to storage and spills from dry cleaning products.
- The study area is acid sulphate soil class 5 and classes as extremely low risk for acid sulphate soils. However the land to the east of the study area, on the eastern side of Concord Road is acid sulphate soil class 2. This is within 500 meters of the study area and therefore acid sulphate soil risks will need to be considered with any works that could lower the water table below 1 m AHD on the class 2 land.

4.1.1 Historical aerial photographs

The Lotsearch report includes historical aerial photographs of the Station Gateway East area from 1930, 1943, 1949, 1951, 1955, 1970, 1982, 1986, 1991, 2000, 2009, 2015 and 2020. The photos are presented in the Lotsearch report in Appendix J. Comments on Jacobs review of the photographs are provided in **Table 4-1**.

Table 4-1 Summary of aerial photograph review

Year	Comments on Station Gateway East	Comments on surrounding area
1930	The photo is poor quality. There are limited houses in the search area with the majority of the land being vacant. Blaxland Road and the train line are present.	Surrounding areas are similar limited housing largely vacant land.
1943	Further development of properties has occurred in the Llewellyn Street portion of the search area. Concord Road has been constructed.	Significant growth in the number of houses west of the train line and large factory has been constructed south of Mary Street East.
1949	The photo is poor quality. Additional houses have been developed.	Further development of the industrial area to the south and south east of the study area.
1955	With the exclusion of a park area at the very southern end of study area all properties now have houses constructed.	Surrounding areas with significant housing on lots. Train station has increased platform size and further factories and hardstand constructed south of the study area.
1972	Photo is poor quality. Density of housing seems to have increased in the study area.	Further factories have been constructed south and south east of the site. Properties west of the railway line appear to still be residential.
1982	No significant change in the search area.	Factories immediately south of the site have been demolished and the land is generally clear. Lots west of the railway line are largely industrial sheds.
1991	The current commercial building at property SP75954 has been constructed. Otherwise area is largely unchanged.	Land immediately south of the search area has been redeveloped with a car park and two buildings constructed. Area west of the railway line has continued with industrial growth. Factories on the water to the southeast have been removed.
1994	The current commercial building at Lot 1, DP833959 has been constructed. Otherwise area is largely unchanged.	No significant change.
2009	The current commercial building at SP71065 has been constructed.	Car park constructed south east of the site. Industrial growth still present west of the train line.
2020	No significant change.	Significant change west of the trainline. Numerous Highrise apartments either constructed or being constructed.

4.2 NSW Fire and Rescue Fire Station

A review of public maps identified that there is a current NSW Fire and Rescue station at 438 Concord Road (Lot F, DP411859). This property is immediately north of property SP71065 which is included in the rezoning from Neighbourhood Centre (B1) to Mixed Use (B4).

There is a risk that Aqueous Film Forming Foams (AFFF) fire fighting products were stored or used at the Fire Station and this may have led to contamination with Per- and Polyfluoroalkyl substances (PFAS). It is noted that human exposure to PFAS is largely from food and water consumption. Dermal (skin) contact with PFAS is not considered a significant exposure pathway (Department of Health, n.d.). Consumption of surface water or groundwater for drinking supply purposes in the study area is highly unlikely given the reticulated water supply

network and NSW Health advice to use public water supplies over groundwater in urban areas (NSW Health, 2019).

DPIE advised Jacobs that NSW EPA requested information from NSW Fire & Rescue on the station at Rhodes. NSW Fire & Rescue indicated that the station was developed in 1912 and no storage or use of AFFF was identified in a survey. Therefore this station has been ranked as a low priority and would not be investigated further anytime soon.

5. Conclusions

The objectives of the additional contamination investigation were to gather additional soil and groundwater quality data from the Ikea property to confirm the findings of the Jacobs (2016) investigation, gather additional PFAS groundwater quality data from the Leeds Street character, collect sediment quality data for the proposed ferry wharf in order to comment on potential impacts from construction and operation of the wharf and to provide a preliminary investigation of contamination issues in the Station Gateway East area.

The purpose of the investigation was to assist DPIE in determining that the proposed rezoning of the Rhodes Planned Precinct can proceed, i.e. that the land is suitable, or can be made suitable, for the proposed uses and to determine if any additional controls in relation to staging of development are required to manage contamination risks.

This work has now been completed and the conclusions are detailed below.

5.1 Contamination issues at the Ikea property

The Jacobs (2016) investigation identified concentrations of dioxins, heavy metals, TRH and Benzo(a)pyrene in fill samples which exceeded the adopted SAC at two locations (BH06 and BH07), both located in the northern portion of the Ikea property (i.e. the area reclaimed between 1961 and 1972). Concentrations of dissolved metals (Copper, Lead, Nickel and Zinc) in groundwater were also identified to exceed the SAC at certain locations across the Leeds Street area.

The additional soil investigation at the Ikea property was intended to further investigate the historical reclaimed area and while access restrictions reduced the ability collect soil samples, several boreholes were advanced in this area. Concentrations of contaminants in soil were generally consistent with the Jacobs (2016) findings. While there were some exceedances of the SAC, these were limited to minor exceedances of ecological investigation or screening levels. In relation to dioxins, concentrations in 4 of the 19 soil samples collected from the Ikea property during both investigations exceeded the derived guideline value for residential land with garden or accessible soil (HIL A). Only one sample had dioxin concentrations exceeding the derived guideline value for public open space (HIL C). Asbestos was also identified in two soil samples and it is likely that asbestos is present in other locations based on the nature of the fill material.

It is likely that significant earthworks, including basement construction, will be undertaken during the future development of the area. This will provide opportunities for removal or selective placement or containment of contaminated soils.

Further investigation and risk assessment and/or remediation will be required during the later stages of the development approval process. However, Jacobs considers the land can be made be suitable for the proposed use and the rezoning can proceed. Furthermore, the results of this investigation and the previous Jacobs (2016) investigation do not indicate a need for staging controls as part of the rezoning.

The existing State Environmental Planning Policy 55 (SEPP 55) and Council Contaminated Land Policy requirements should adequately ensure that appropriate investigation, risk assessment and remediation of the land is carried out as part of the development assessment process. Conditions of development consent would normally require the preparation and implementation of a construction environmental management plan to ensure impacts associated with earthworks and remediation are appropriately controlled.

5.2 PFAS contamination issues within the Leeds Street character area

Groundwater samples for the purposes of PFAS analysis were collected from seven of the nine wells as part groundwater sampling undertaken in May 2021. Concentrations of PFAS were below the LOR in six of the samples submitted for analysis. Minor concentrations of PFOS and PFOA were recorded in the sample collected from groundwater monitoring well MW14; however, the concentrations were below the PFAS human health guidelines for both drinking water and recreational water that were adopted for this investigation. The

concentrations reported for PFOS and PFOA in MW14 were also below the respective ecological investigation levels for 95% species protection in "slightly to moderately disturbed ecosystems".

While the presence of PFAS in soil remains unquantified and soil testing for PFAS (e.g. waste classification sampling) will be required as part of subsequent investigations to support development at the site, the general absence of PFAS concentrations above the LOR in groundwater data and a general lack of known PFAS sources indicates that leaching from extensive PFAS impacts in soil is unlikely.

5.3 Sediment quality issues at the proposed ferry wharf location

The sediment investigation identified elevated concentrations of heavy metals and dioxins in shallow bed sediments across the proposed ferry wharf area. The concentrations are consistent with sediment quality for this area of the Parramatta River.

Based on the sediment grain size as observed and measured at sampled locations, it is expected that some limited, localised resuspension of contaminated sediment could occur if sediment is disturbed during construction of the new wharf.

Jacobs considers that the fraction of contaminants in sediment that is available for uptake by aquatic biota is likely to be a small component of total contaminant load, with the majority of contaminants in sediment likely to remain bound to particulates rather than released to (bioavailable) dissolved phase(s) if sediment is remobilised.

As noted in Section 1.1, the development of the proposed ferry wharf at Rhodes will require an environmental assessment by Transport for NSW under Part 5 of the Environmental Planning and Assessment Act 1979. Based on the sediment quality identified in this investigation, measures to mitigate sediment suspension and transport during the construction of the wharf will likely be required.

The potential for mobilisation of impacted sediments during construction will be of a short-term nature and the potential risks to human health and the environment from disturbing sediments will therefore be low. The localised disturbance of impacted sediments and the relatively minor construction aspects of the wharf can be effectively managed using traditional controls, including:

- the use of silt curtains around the piles being driven and the broader piling vessel;
- real-time turbidity monitoring using appropriate instruments and visual observations;
- placement of clean gravel on top of bed sediments to provide a cover layer and reduce the potential for disturbance;
- Photographic evidence and documentation;
- Undertaking piling activities during appropriate tidal conditions.

The above list of proposed mitigation measures (among others) will assist in reducing the duration and the distance that resuspended sediments may move from the construction footprint, and limit impacts on the receiving aquatic environment.

In relation to the operation of the wharf, an assessment of contaminated sediment suspension and transport due to the operation of vessels in Homebush Bay and Parramatta River was undertaken as part of the Sydney Harbour Estuary Processes Study (Freewater, P, 2018). The study noted that:

"It is possible that in some areas of the Parramatta River, where suspended sediments from Homebush Bay may settle post-event, that vessel waves may re-suspend material and impact on the ultimate fate of contaminated sediments. However, investigations into sediment re-suspension from the longer period RiverCat wake which identified that re-suspension from RiverCats was limited to within 0.5 m of the seabed, and normally only occurred during the leading wave of a set of waves generated by the moving vessel. Based on that assessment, it is likely that vessel generated waves have only minor, localised impacts on the transport and ultimate fate of contaminated sediments in the Parramatta River."

NSW EPA has noted that it is unclear if the above statement considered the ferry continually entering shallower waters at the wharf and mobilising sediment due to the proximity to sediments (ferry draft) when stopping, starting, manoeuvring and using it engines. NSW EPA has advised that this aspect should be considered in the environmental assessment by Transport for NSW.

5.4 Preliminary investigation of contamination risks for Station Gateway East

The preliminary investigation for the Station Gateway East area was limited to the area proposed for rezoning from Neighbourhood Centre (B1) to Mixed Use (B4). The scope included procuring and reviewing a Lotsearch report and a review of public mapping. The scope did not include a Preliminary Site Investigation as defined in the NSW EPA Guidelines for Consultants Reporting on Contaminated Land (NSW EPA, 2020).

The study area appears to have historically been used for open space and low density residential. The current commercial buildings on three of the properties appear to have been constructed in approximately the 1990s and 2000s.

Information from the Lotsearch report has not identified any activities that may have caused contamination with the exception of a dry cleaner which may have been located in or close to the southern portion of the study area during the 1970s.

There is a risk for PFAS contamination associated with the Fire Station immediately north of the study area. It is also noted that demolition of residential buildings has occurred historically, and this may have led to asbestos contamination.

While further investigation, risk assessment and potentially remediation will be required for future development of the study area, there is no current indications of gross contamination and Jacobs considers that the land can likely be made suitable for the proposed land uses.

As per the conclusions for the Leeds Street area in Section 5.1, SEPP 55 and Council Contaminated Land Policy requirements should adequately ensure that appropriate investigation, risk assessment and remediation of the land is carried out as part of the development assessment process.

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Appendix A. Figures



Legend

- Rhodes Precinct Boundary
- Character areas
  - Cavell Avenue
  - Leeds Street
  - Station Gateway East
  - Station Gateway West
- Wharfs
- Train station

0 — 250 — 500m
1:6,000 @ A3

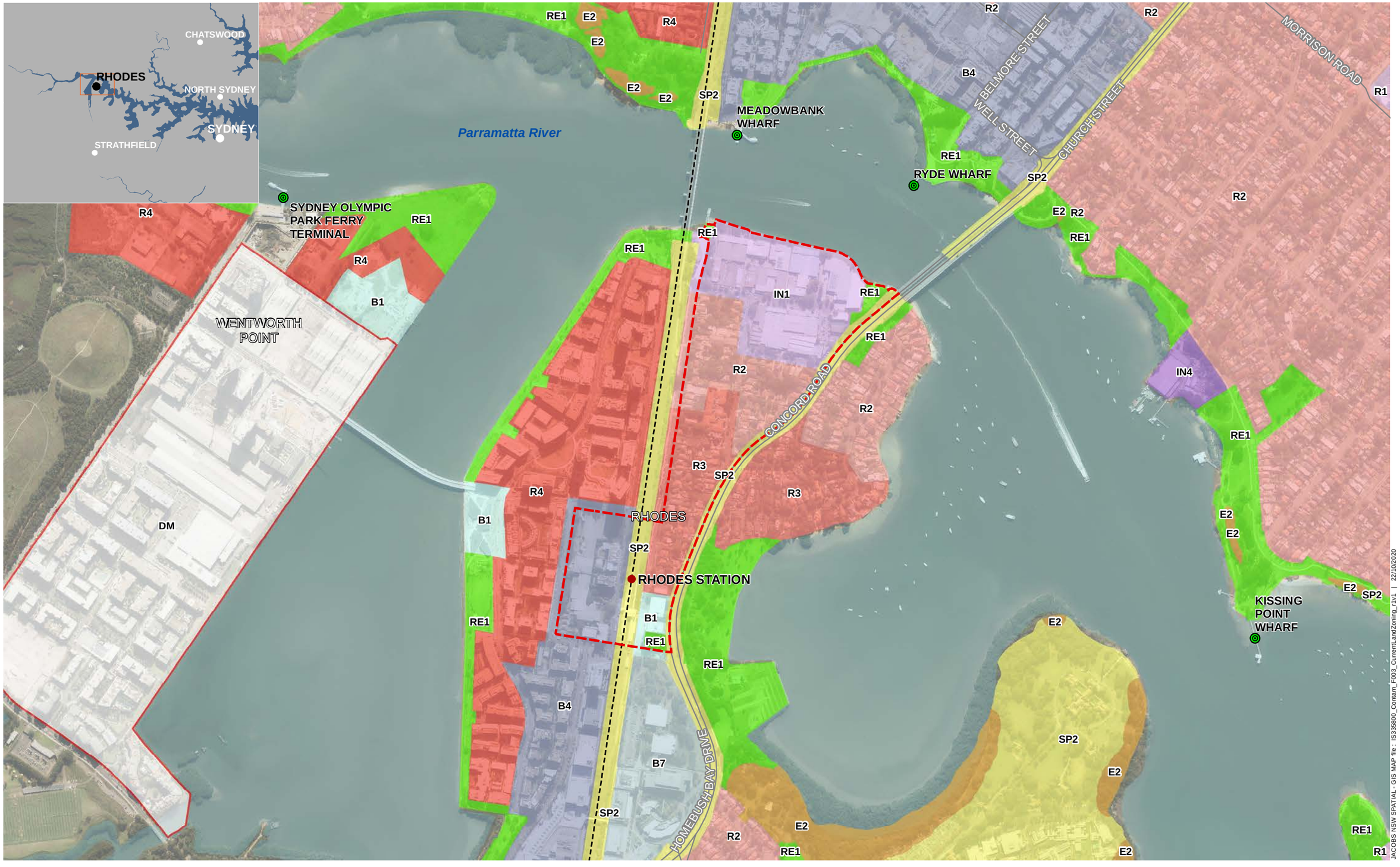
N

Data sources
Jacobs 2020
Ausimage 2016
LPI 2015

Note: Boundaries are approximate and based on the Draft Rhodes Precinct Place Strategy (DPIE, 2020)

RHODES PLANNED PRECINCT

Figure 1 | Rhodes Planned Precinct



Legend

- Rhodes Precinct Boundary
- Wharfs
- Train station
- Railway

Zone

- B1 Neighbourhood Centre
- B4 Mixed Use
- B7 Business Park
- E2 Environmental Conservation
- IN1 General Industrial
- IN4 Working Waterfront
- R1 General Residential
- R2 Low Density Residential
- R3 Medium Density Residential
- R4 High Density Residential
- RE1 Public Recreation
- SP2 Infrastructure
- W2 Recreational Waterways
- DM Deferred matters

0 250 500m
1:8,000 @ A3

N

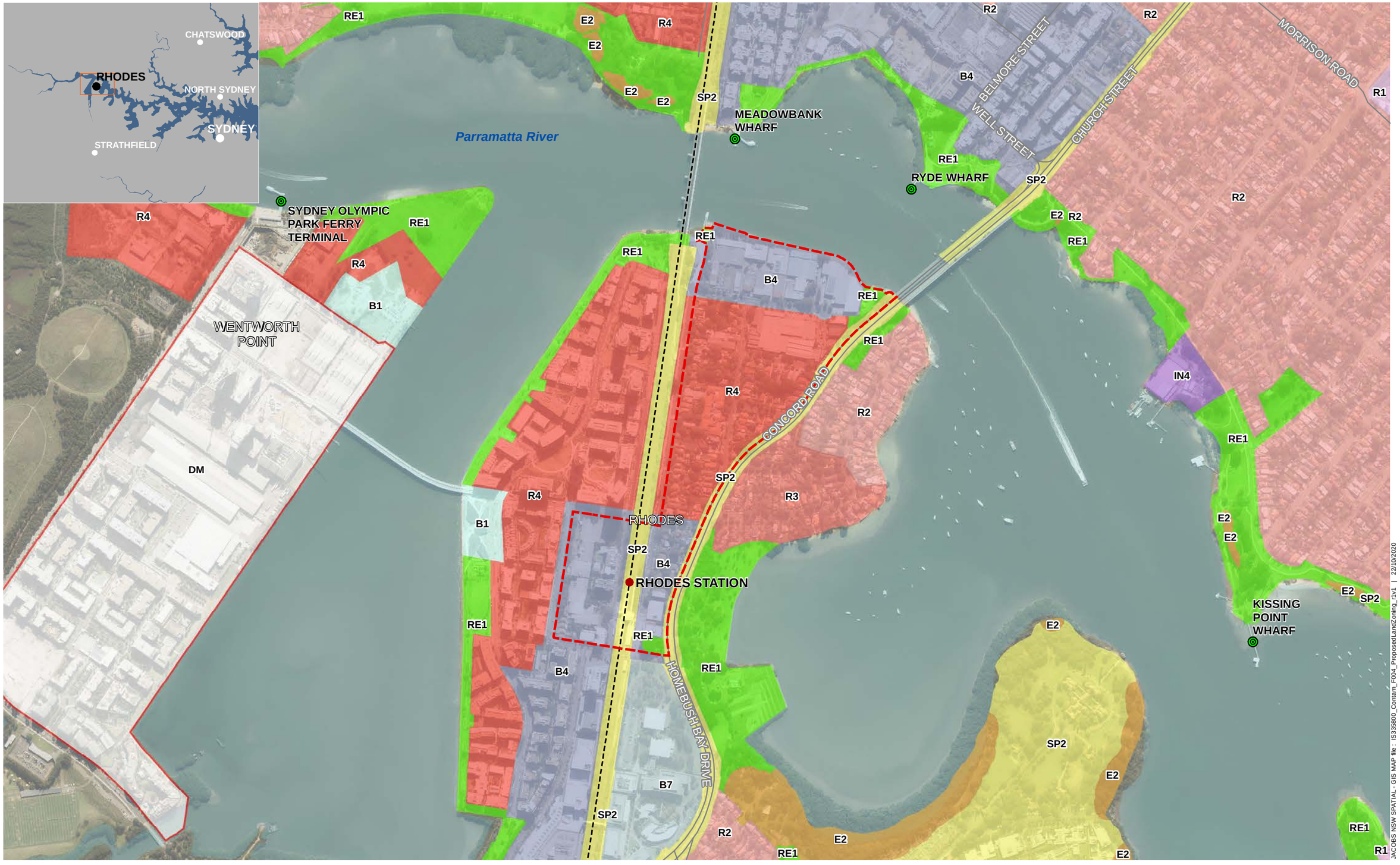
Data sources

Jacobs 2020
Ausimage 2016
LPI 2015
LEP 2020

RHODES PLANNED PRECINCT

Figure 2 | Current land use zoning map

JACOBS NSW SPATIAL - GIS MAP file - IS335800_Contam_F003_CurrentLandZoning_r1v1 | 22/10/2020



Legend

- Rhodes Precinct Boundary
- Wharfs
- Train station
- Railway

Zone

- B1 Neighbourhood Centre
- B4 Mixed Use
- B7 Business Park
- E2 Environmental Conservation
- IN4 Working Waterfront
- R1 General Residential
- R2 Low Density Residential
- R3 Medium Density Residential
- R4 High Density Residential
- RE1 Public Recreation
- SP2 Infrastructure
- W2 Recreational Waterways
- DM Deferred matters

0 250 500m
1:8,000 @ A3

N

Data sources

Jacobs 2020
Ausimage 2016
LPI 2015
LEP 2020

Note: Boundaries are approximate and based on the Rhodes Precinct Explanation of Intended Effect (DPIE, 2020)

RHODES PLANNED PRECINCT

JACOBS NSW SPATIAL - GIS MAP file - IS335800_Contam_F004_ProposedLandZoning_r1v1 | 22/10/2020

Figure 3 | Proposed land use zoning map



Legend

- Area currently zoned General Industrial IN1
- Cadastre

Sampling Locations (Jacobs, 2021)

- Groundwater Sampling Locations (August 2020 and May 2021)
- Soil Sampling Locations

- Previous Soil and Groundwater Sampling Locations
- Groundwater sampling locations (May 2021)

0 — 50 — 100m
1:1,500 @ A3

N

Data sources

Jacobs 2021
Ausimage 2016
LPI 2015

RHODES PLANNED PRECINCT

Figure 4 | Soil and groundwater sample locations



Legend

- Area currently zoned General Industrial IN1
- Cadastre

Sampling Locations (Jacobs, 2021)

- Groundwater Sampling Locations (August 2020 and May 2021)
- Soil Sampling Locations
- Previous Soil and Groundwater Sampling Locations
- Groundwater sampling locations (May 2021)

0 50 100m
1:1,500 @ A3

N

Data sources

Jacobs 2020
Ausimage 2016
LPI 2015

RHODES PLANNED PRECINCT

Figure 5 | Soil and groundwater sample locations overlayed on Aerial photograph from 1961



JACOBS NSW SPATIAL - GIS MAP file: IS335800_Contam_F016_SedimentInvestigationLocations_r2v2 | 22/10/2020

Legend

- Cadastre
- Approximate location of the proposed ferry wharf
- Proposed sediment sampling location
- Approximate 2m depth contour

0 20 40m
1:500 @ A3

N

Data sources
Jacobs 2016
Ausimage 2016
LPI 2015

RHODES PLANNED PRECINCT

Figure 6 | Sediment Investigation Locations

Appendix B. Borelogs

Location ID: BH17

Sheet 1 of 1

Project: Rhodes Planned Precinct

Client: DPIE

Location: Ikea Rhodes EMPU | Bore dia: 110 | Surface Conditions: Concrete | RL (mAHD):
Job No: IS335800 | Driller: Numac | Northings: mN | Logged: K. McLean
Start - Finish Date: 17/8/20 - 17/8/20 | Rig: Geoprobe | Eastings: mE | Checked:

FIELD DATA							SOIL DESCRIPTION				COMMENTS
Sample ID	Sample Type	Visual Ranking	Odour Ranking	PID (ppm)	QA/QC Sample ID	Groundwater Depth (m)	Graphic Log	soil type, unified classification, colour, structure, particle characteristics, minor components	Consistency/ Density	Moisture Condition	drilling method, well construction, water and additional observations
								Concrete			CB: 0-0.15m
BH17_0.2	●	0	A	-				FILL: Sandy CLAY with some gravel, heterogeneous, grey, brown, red, orange, low plasticity. Sands fine grained. Gravels variable.	S	D	HA: 0.15-0.83m
BH17_0.55	●	3	A	-				FILL: Clayey SAND with sandy clays and some gravel, brown, fine to medium coarse grained. Gravels variable. Piece of steel wire and 1 x ACM fragment present.	L S	D D	SA: 0.83-0.93m
						1		FILL: Sandy CLAY, heterogeneous, brown with pale grey, red and yellow, low to medium plasticity. Sands fine grained.	H/C	D	PT: 0.93-6.0m
								FILL:SANDSTONE, highly weathered, reddish/orange brown, fine grained.			
								SANDSTONE, weathered, white/light pale grey, fine grained. Quartz present.	H	D	
						2		Some brown and red sandy clays @ 1.6m.			
								Reddish brown and less weathered @ 2.5m.			
						3		SANDSTONE, moderately weathered, light pale grey/off white with some reddish brown, fine grained.	H	D	
						4		Wet at 3.9m.		W	
								Silty SAND, dark grey, very fine to fine grained. Organic material present.	D	V.M	
BH17_4.5	●	0	A	-							
						5		Clayey SAND, dark greenish grey, very fine to fine grained.	D	V.M-W	
								Sandy CLAY, grey, brownish red and light brown, medium plasticity.	S-F	W	
								Sandy CLAY, light grey with some brownish red and minor light brown, medium to high plasticity. Sands fine grained. Minor rounded, medium coarse sandstone gravels present. Grey, brownish red/brownish orange and light brown @ 5.8m.	S-F	W	
BH17_5.7	●	0	A	-		6		End of borehole at 6m.			

VISUAL RANKING
0 No visible evidence of contamination
1 Slight visible contamination
2 Visible contamination
3 Significant visible contamination

ODOUR RANKING
A No Non-Natural odours
B Slight Non-Natural odours
C Moderate Non-Natural odours
D Strong Non-Natural odours

FIELD DATA ABBREVIATIONS
PID = Photo Ionisation Detector reading (ppm, v/v)
QA/QC Sample ID = Quality Assurance / Quality Control Sample ID

GROUNDWATER SYMBOLS
▼ = Water level (static)
▽ = Water level (during drilling)

FIELD DATA SYMBOLS
● = Environmental Sample
╳ = Non Environmental Sample

MOISTURE CONDITION
D = Dry M = Moist W = Wet
Sl. M = Slightly Moist

DENSITY (N-value)

VL	(very loose)	<10
L	(loose)	10 - 20
MD	(medium dense)	20 - 30
D	(dense)	30 - 50
VD	(very dense)	>50
CO	(compact)	>50/150 mm

CONSISTENCY (Su)

VS	(very soft)	< 12 kPa
S	(soft)	12 - 25
F	(firm)	25 - 50
St	(stiff)	50 - 100
VSt	(very stiff)	100 - 200
H	(hard)	> 200 kPa

ENV 1 MODIFIED BORELOGS 1-22.GPJ 2/9/20

Location ID: BH18

Sheet 1 of 1

Project: Rhodes Planned Precinct

Client: DPIE

Location: Ikea Rhodes EMPU | Bore dia: 110 | Surface Conditions: Concrete | RL (mAHD):
Job No: IS335800 | Driller: Numac | Northings: mN | Logged: K. McLean
Start - Finish Date: 17/8/20 - 17/8/20 | Rig: Geoprobe | Eastings: mE | Checked:

FIELD DATA							SOIL DESCRIPTION				COMMENTS
Sample ID	Sample Type	Visual Ranking	Odour Ranking	PID (ppm)	QA/QC Sample ID	Groundwater Depth (m)	Graphic Log	soil type, unified classification, colour, structure, particle characteristics, minor components	Consistency/ Density	Moisture Condition	drilling method, well construction, water and additional observations
								Concrete			CB: 0-0.15m
BH18_0.2	●	0	A	-				FILL: Sandy CLAY with sands, heterogeneous, low plasticity, fine grained. Some variable gravel and trace rock.	S	D	HA: 0.15-1.0m
BH18_0.5	●	0	A	-				FILL: Sandy Gravelly CLAY with sands, heterogeneous, black, gray, brown, white, orange, low plasticity, fine grained, poorly sorted. Gravels variable.	S	D	PT: 1.0-2.7m
						1		FILL: Clayey SAND with rock and gravels, dark grey/black, fine grained. Rock and gravels angular including coarse sandstone gravels.	C	D	SA: 2.7-2.7m
								FILL: Gravelly sandy CLAY with rock, heterogeneous, light and dark grey, brown and some red, orange and yellow, very low plasticity, poorly sorted. Sands fine grained.	MD	D	
						2					
BH18_2.2	●	0	A	-							
								FILL: Gravel, dark grey, medium coarse to coarse, angular.		D	
								FILL: Sandy CLAY, light grey, with trace brown, black and red, low plasticity. Sands fine grained.	S	D	
								SANDSTONE, light pale grey/off white with some brownish red, fine grained, quartz present, slightly weathered.	H	D	
						3		Refusal and end of borehole at 2.7m.			
						4					
						5					
						6					

VISUAL RANKING
0 No visible evidence of contamination
1 Slight visible contamination
2 Visible contamination
3 Significant visible contamination

ODOUR RANKING
A No Non-Natural odours
B Slight Non-Natural odours
C Moderate Non-Natural odours
D Strong Non-Natural odours

FIELD DATA ABBREVIATIONS
PID = Photo Ionisation Detector reading (ppm, v/v)
QA/QC Sample ID = Quality Assurance / Quality Control Sample ID

GROUNDWATER SYMBOLS
▼ = Water level (static)
▽ = Water level (during drilling)

FIELD DATA SYMBOLS
● = Environmental Sample
╳ = Non Environmental Sample

MOISTURE CONDITION
D = Dry M = Moist W = Wet
Sl. M = Slightly Moist

DENSITY (N-value)

VL	(very loose)	<10
L	(loose)	10 - 20
MD	(medium dense)	20 - 30
D	(dense)	30 - 50
VD	(very dense)	>50
CO	(compact)	>50/150 mm

CONSISTENCY (Su)

VS	(very soft)	< 12 kPa
S	(soft)	12 - 25
F	(firm)	25 - 50
St	(stiff)	50 - 100
VSt	(very stiff)	100 - 200
H	(hard)	> 200 kPa

ENV 1 MODIFIED BORELOGS 1-22.GPJ 2/9/20

Location ID: BH19

Sheet 1 of 1

Project: Rhodes Planned Precinct

Client: DPIE

Location: Ikea Rhodes EMPU | Bore dia: 110 | Surface Conditions: Concrete | RL (mAHD):
Job No: IS335800 | Driller: Numac | Northings: mN | Logged: K. McLean
Start - Finish Date: 18/8/20 - 18/8/20 | Rig: Geoprobe | Eastings: mE | Checked:

FIELD DATA							SOIL DESCRIPTION				COMMENTS
Sample ID	Sample Type	Visual Ranking	Odour Ranking	PID (ppm)	QA/QC Sample ID	Groundwater Depth (m)	Graphic Log	soil type, unified classification, colour, structure, particle characteristics, minor components	Consistency/ Density	Moisture Condition	drilling method, well construction, water and additional observations
								Concrete			CB: 0-0.15m
BH19_0.2	●	0	A	-				FILL: Sandy CLAY with some sands, heterogeneous, light grey with brownish orange, medium plasticity. Sands fine grained. Minor fine to medium coarse, angular gravel present.	S	D	HA: 0.15-0.6m
								FILL: Clayey SAND, brown with trace yellow, fined grained. Loose sandy clays and minor fine to medium coars, angular gravels present.	MD	D	PT: 0.6-0.6m
								Refusal (sandstone or concrete) and end of borehole at 0.6m.			SA: 0.6-0.6m

1
2
3
4
5
6

VISUAL RANKING
0 No visible evidence of contamination
1 Slight visible contamination
2 Visible contamination
3 Significant visible contamination

ODOUR RANKING
A No Non-Natural odours
B Slight Non-Natural odours
C Moderate Non-Natural odours
D Strong Non-Natural odours

FIELD DATA ABBREVIATIONS
PID = Photo Ionisation Detector reading (ppm, v/v)
QA/QC Sample ID = Quality Assurance / Quality Control Sample ID

GROUNDWATER SYMBOLS
▼ = Water level (static)
▽ = Water level (during drilling)

FIELD DATA SYMBOLS
● = Environmental Sample
╳ = Non Environmental Sample

MOISTURE CONDITION
D = Dry M = Moist W = Wet
Sl. M = Slightly Moist

DENSITY (N-value)

VL	(very loose)	<10
L	(loose)	10 - 20
MD	(medium dense)	20 - 30
D	(dense)	30 - 50
VD	(very dense)	>50
CO	(compact)	>50/150 mm

CONSISTENCY (Su)

VS	(very soft)	< 12 kPa
S	(soft)	12 - 25
F	(firm)	25 - 50
St	(stiff)	50 - 100
VSt	(very stiff)	100 - 200
H	(hard)	> 200 kPa

ENV 1 MODIFIED BORELOGS 1-22.GPJ 2/9/20

Location ID: BH20

Sheet 1 of 1

Project: Rhodes Planned Precinct

Client: DPIE

Location: Ikea Rhodes EMPU | Bore dia: 110 | Surface Conditions: Concrete | RL (mAHD):
Job No: IS335800 | Driller: Numac | Northings: mN | Logged: K. McLean
Start - Finish Date: 18/8/20 - 18/8/20 | Rig: Geoprobe | Eastings: mE | Checked:

FIELD DATA							SOIL DESCRIPTION				COMMENTS
Sample ID	Sample Type	Visual Ranking	Odour Ranking	PID (ppm)	QA/QC Sample ID	Groundwater Depth (m)	Graphic Log	soil type, unified classification, colour, structure, particle characteristics, minor components	Consistency/ Density	Moisture Condition	drilling method, well construction, water and additional observations
								Concrete			CB: 0-0.15m
BH20_0.2	●	0	A	-				FILL: SAND with some loose sandy clays, light brown, fine grained. Sandy clays brown and soft with low plasticity.	MD	D	HA: 0.15-1.1m
											PT: 1.1-4.05m
						1		FILL: SANDSTONE, weathered, light pale grey/off white with minor orange, fine to medium coarse grained. Quartz present.	S	D	SA: 4.05-4.1m
BH20_1.0	●	0	A	-							
								FILL: Sandy CLAY / Clayey SAND, brown with light brown, low plasticity, fine grained.	St/D	D	
								Weathered sandstone embedded from 1.7m.			
						2		FILL: Clayey SAND, fine grained. Some weathered, medium coarse to coarse sandstone gravels and organic material (decomposing roots) present.	D	D	
BH20_2.4	●	0	A	-							
								Sandstone, pale light grey/off white and yellowish orange, fine to medium coarse and slightly weathered. Quartz present.	H	D	
						3		SAND, dark brown, very fine to fine grained. Rootlets throughout.	D	Sl.M	
BH20_3.4	●	0	A	-							
								SAND, brown/grey, fine grained. Some roots and rootlets present.	MD	Sl.M	
								Very moist to wet from 3.8m.	V.M-W		
						4		SANDSTONE, light grey, fine to medium coarse grained. Quartz present.	V.M-W	H	
								Refusal and end of borehole at 4.1m.			
						5					
						6					

VISUAL RANKING
0 No visible evidence of contamination
1 Slight visible contamination
2 Visible contamination
3 Significant visible contamination

ODOUR RANKING
A No Non-Natural odours
B Slight Non-Natural odours
C Moderate Non-Natural odours
D Strong Non-Natural odours

FIELD DATA ABBREVIATIONS
PID = Photo Ionisation Detector reading (ppm, v/v)
QA/QC Sample ID = Quality Assurance / Quality Control Sample ID

GROUNDWATER SYMBOLS
▼ = Water level (static)
▽ = Water level (during drilling)

FIELD DATA SYMBOLS
● = Environmental Sample
╳ = Non Environmental Sample

MOISTURE CONDITION
D = Dry M = Moist W = Wet
Sl. M = Slightly Moist

DENSITY (N-value)

VL	(very loose)	<10
L	(loose)	10 - 20
MD	(medium dense)	20 - 30
D	(dense)	30 - 50
VD	(very dense)	>50
CO	(compact)	>50/150 mm

CONSISTENCY (Su)

VS	(very soft)	< 12 kPa
S	(soft)	12 - 25
F	(firm)	25 - 50
St	(stiff)	50 - 100
VSt	(very stiff)	100 - 200
H	(hard)	> 200 kPa

ENV 1 MODIFIED BORELOGS 1-22.GPJ 2/9/20

Location ID: BH21

Sheet 1 of 1

Project: Rhodes Planned Precinct

Client: DPIE

Location: Ikea Rhodes EMPU | Bore dia: 110 | Surface Conditions: Concrete | RL (mAHD):
Job No: IS335800 | Driller: Numac | Northings: mN | Logged: K. McLean
Start - Finish Date: 18/8/20 - 18/8/20 | Rig: Geoprobe | Eastings: mE | Checked:

FIELD DATA							SOIL DESCRIPTION				COMMENTS
Sample ID	Sample Type	Visual Ranking	Odour Ranking	PID (ppm)	QA/QC Sample ID	Groundwater Depth (m)	Graphic Log	soil type, unified classification, colour, structure, particle characteristics, minor components	Consistency/ Density	Moisture Condition	drilling method, well construction, water and additional observations
								Concrete			CB: 0-0.15m
BH21_0.2	●	0	A	-				FILL: Gravelly SAND, light brown/grey, fine grained, poorly sorted. Gravels fine to medium coarse and angular.	S	D	HA: 0.15-0.7m
BH21_0.6	●	0	A	-				FILL: Sandy CLAY, heterogeneous, light grey, brown, orange, low plasticity. Sands fine grained. Some gravels including coal and minor sandstone fragments present. Gravels fine to medium coarse and angular.	S	D	SA 0.7-1.0m
						1					PT: 1.0-5.15m
								FILL: Sandy CLAY, brown and light grey, medium to high plasticity. Sands fine grained. Minor gravels present. Gravels fine and angular.	S	SI.M	
BH21_1.3	●	0	A	-	QC101 & QC201			FILL: Gravelly sandy CLAY, heterogeneous, low plasticity, fine grained, poorly sorted. Sands fine grained. Gravels sandstone, fine to coarse and angular.	S	SI.M	
								FILL: SANDSTONE, brownish yellow.	H	D	
								FILL: Sandy CLAY, light brown with minor white, red and dark grey, low plasticity. Sands fine grained.	S	SI.M	
						2		FILL: Sandy CLAY, light brown/orange brown with some pale light grey, low plasticity. Sands fine grained. Imbedded weathered fine sandstone gravel. Light pale grey/off whote and some orange brown from 2.1m.	S	SI.M	
								SANDSTONE, weathered, orange and fine grained.	H	D	
								Sandy CLAY, light pale grey/pale off white, low to very low plasticity. Sands fine grained. Weathered sandstone present.	F	SI.M	
						3		Light brown/orange brown present from 3.0m.			
								Sandy CLAY, brownish red with some pale light grey/off white, low plasticty. Sands fine grained.	V.S	SI.M	
								SANDSTONE, brownish red.	H	D	
								Sandy CLAY, pale light grey/off white, low plasticity. Sands fine grained.	S	SI.M	
								Sandy CLAY, light brown with some brownish orange, medium plasticity. Sands fine grained.	V.S	SI. M	
						4		SANDSTONE, weathered, brownish red.	H	W	
								Sandy CLAY, light grey, medium to high plasticity. Sands fine grained. Minor weathered sandstone gravel present.	V.S	V.M	
BH21_4.3	●	0	A	-				SAND, dark brown/black, very fine grained. Organic material present.	MD	V.M	
								SAND, dark brown, fine grained. Organic material and trace shale fragments present.			
								Sandy CLAY, greenish grey, medium to high plasticity. Sands fine grained. Minor organic material present.	VS	W	
BH21_4.8	●	0	A	-				SANDSTONE, weathered, grey to light brown, fine to medium coarse grained. Some sandy clay present.	H	W	
						5		Grey from 5.1m.			
								Refusal and end of borehole at 5.15m.			
						6					

ENV 1 MODIFIED BORELOGS 1-22.GPJ 2/9/20

VISUAL RANKING
0 No visible evidence of contamination
1 Slight visible contamination
2 Visible contamination
3 Significant visible contamination

ODOUR RANKING
A No Non-Natural odours
B Slight Non-Natural odours
C Moderate Non-Natural odours
D Strong Non-Natural odours

FIELD DATA ABBREVIATIONS
PID = Photo Ionisation Detector reading (ppm, v/v)
QA/QC Sample ID = Quality Assurance / Quality Control Sample ID

GROUNDWATER SYMBOLS
▼ = Water level (static)
▽ = Water level (during drilling)

FIELD DATA SYMBOLS
● = Environmental Sample
╳ = Non Environmental Sample

MOISTURE CONDITION
D = Dry M = Moist W = Wet
Sl. M = Slightly Moist

DENSITY (N-value)

VL	(very loose)	<10
L	(loose)	10 - 20
MD	(medium dense)	20 - 30
D	(dense)	30 - 50
VD	(very dense)	>50
CO	(compact)	>50/150 mm

CONSISTENCY (Su)

VS	(very soft)	< 12 kPa
S	(soft)	12 - 25
F	(firm)	25 - 50
St	(stiff)	50 - 100
VSt	(very stiff)	100 - 200
H	(hard)	> 200 kPa

Location ID: BH22

Sheet 1 of 1

Project: Rhodes Planned Precinct

Client: DPIE

Location: Ikea Rhodes EMPU | Bore dia: 110 | Surface Conditions: Concrete | RL (mAHD):
Job No: IS335800 | Driller: Numac | Northings: mN | Logged: K. McLean
Start - Finish Date: 18/8/20 - 18/8/20 | Rig: Geoprobe | Eastings: mE | Checked:

FIELD DATA							SOIL DESCRIPTION			COMMENTS
Sample ID	Sample Type	Visual Ranking	Odour Ranking	PID (ppm)	QA/QC Sample ID	Groundwater Depth (m)	soil type, unified classification, colour, structure, particle characteristics, minor components	Consistency/ Density	Moisture Condition	drilling method, well construction, water and additional observations
							Concrete			CB: 0-0.15m
BH22_0.2	●	0	A	-			FILL: Sandy CLAY / Clayey SAND, brown, fine grained, very low plasticity. Some fine to coarse and angular gravel present.	MD S	D D	HA: 0.15-1.1m
							FILL: Sandy CLAY, brown, very low plasticity. Some fine to coarse and angular gravel present.	S	D	PT: 1.1-3.05
BH22_0.8	●	0	A	-		1	FILL: Gravelly sandy CLAY, heterogeneous, brown with minor light pale grey and trace orange, low plasticity, poorly sorted. Sands fine grained. Gravels fine to coarse and angular.			SA: 3.05-3.1m
							FILL: Sandy CLAY, brown, very low plasticity. Sands fine grained. Minor sandstone and medium coarse gravel present. Some light grey and black.	F	D	
							FILL: SANDSTONE, weathered, pale light brown.	H	D	
BH22_1.4	●	0	A	-			FILL: Sandy CLAY with weathered sandstone, light brown / pale light orange brown, very low plasticity (friable). Sands fine grained. Sandstone pale light grey with quartz.		D	
						2	FILL: SANDSTONE, weathered, orange with some brownish red.	H	D	
BH22_2.35-2.45	●	0	A	-			FILL: Gravelly clayey SAND, light brown, fine grained. Gravels fine and angular. Dark brown. Light brown with some sandy clay and gravels fine to coarse.	C	D	
							FILL: Gravelly sandy CLAY, heterogeneous, very low plasticity (friable). Sands fine grained. Some sandstone present.		D	
						3		H	D	
							FILL: Concrete.			
							FILL: Sandstone, weathered, pale light grey.			
							Refusal and end of borehole at 3.1m.			
						4				
						5				
						6				

ENV 1 MODIFIED BORELOGS 1-22.GPJ 2/9/20

VISUAL RANKING
0 No visible evidence of contamination
1 Slight visible contamination
2 Visible contamination
3 Significant visible contamination

ODOUR RANKING
A No Non-Natural odours
B Slight Non-Natural odours
C Moderate Non-Natural odours
D Strong Non-Natural odours

FIELD DATA ABBREVIATIONS
PID = Photo Ionisation Detector reading (ppm, v/v)
QA/QC Sample ID = Quality Assurance / Quality Control Sample ID

GROUNDWATER SYMBOLS
▼ = Water level (static)
▽ = Water level (during drilling)

FIELD DATA SYMBOLS
● = Environmental Sample
╳ = Non Environmental Sample

MOISTURE CONDITION
D = Dry M = Moist W = Wet
Sl. M = Slightly Moist

DENSITY (N-value)

VL	(very loose)	<10
L	(loose)	10 - 20
MD	(medium dense)	20 - 30
D	(dense)	30 - 50
VD	(very dense)	>50
CO	(compact)	>50/150 mm

CONSISTENCY (Su)

VS	(very soft)	< 12 kPa
S	(soft)	12 - 25
F	(firm)	25 - 50
St	(stiff)	50 - 100
VSt	(very stiff)	100 - 200
H	(hard)	> 200 kPa

Appendix C. Sediment Photo Log

Photo Log of Sediment Cores	
Photo 1: SD01	Photo 2: SD02
	
Photo 3: SD03	Photo 4: SD04
	
Photo 5: SD05	Photo 6: SD06
	

Photo Log of Sediment Cores	
Photo 7: SD07	Photo 8: SD08
	

Appendix D. Quality Assurance/Quality Control (QA/QC)

For the purpose of assessing the quality of data presented in this report, Jacobs collected and analysed field Quality Control (QC) samples while the laboratory completed their own internal QC. The QC results and assessment of the overall data quality is presented in this appendix.

Analytical data validation is the process of assessing whether data is in compliance with method requirements and project specifications. The primary objectives of this process are to ensure that data of known quality are reported and to identify if the data can be used to fulfil the overall project objectives.

The data validation guidelines are based upon guidance documents published by the United States Environmental Protection Agency (USEPA, 1994[1], 1999[2], 2006[3]) and the National Environment Protection Measure (NEPM, 1999[4]). The process involves the checking of analytical procedure compliance and an assessment of the accuracy and precision of analytical data from a range of Quality Assurance / Quality Control (QA/QC) measures, generated from both the sampling and analytical programs. Specific elements that have been checked and assessed for this project include:

- Frequency of conducting quality control measurements, field QA/QC, including:
  - Record keeping;
  - Sample collection and labelling;
  - Chain of Custody procedures;
  - Sample storage and transport; and
  - Decontamination procedures;
- The occurrence of apparently unusual or anomalous results, e.g. laboratory results that appear to be inconsistent with field observations or measurements; and
- Holding time breaches.

D.1 Quality Control Plan

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

D.1.1 Field QA/QC Program

Field QA/QC comprised the collection of blind duplicate, split duplicate, rinsate blank, trip blank and trip spike samples.

D.1.1.1 Environmental Samples

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

D.1.1.2 Blind Duplicate Samples

[1] United States Environmental Protection Agency (USEPA) 1994, Guidance for the Data Quality Objectives Process, EPA QA/G-4

[2] United States Environmental Protection Agency (USEPA) 2000, Data Quality Objectives Process for Hazardous Waste Site Investigations, EPA QA/G-4HW

[3] United States Environmental Protection Agency (USEPA) 2006, Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA/G-4

[4] National Environmental Protection (Assessment of Site Contamination) Measure 1999, Guideline on Site Characterisation (as amended on 16 May 2013).

Blind duplicate samples were provided by the collection of two environmental samples from the same location. These samples were preserved, stored, transported, prepared and analysed in an identical manner by the primary laboratory (ALS). The results of analyses on the blind duplicate sample pair were assessed by calculating the Relative Percentage Differences (RPDs) between the results. The RPD was calculated as the difference between the results divided by their mean value and expressed as a percentage. If the RPD exceeded the adopted Data Acceptance Criteria (See Section 9.3) for any analytes, additional investigation was undertaken, or justification was provided for not undertaking additional investigation.

Blind duplicate samples were collected at a rate of one duplicate for every 20 environmental samples in accordance with the requirements of the NEPM (2013).

D.1.1.3 Split duplicate samples

Split duplicate samples provided a check on the analytical proficiency of the primary (ALS) and secondary (Eurofins) laboratories. Split duplicates samples were provided by the collection of two environmental samples from the same location. These samples were preserved, stored and transported in an identical manner. The spilt samples were analysed by the secondary laboratory. The results of analyses on the split duplicate sample pair were assessed by calculating the RPDs between the results. The RPD was calculated as the difference between the results divided by their mean value and expressed as a percentage.

Split duplicate samples were collected at a rate of one duplicate for every 20 environmental samples in accordance with the requirements of the NEPM (2013).

Note: Due to the lack of local specialist secondary labs capable of undertaking this type of analysis in Australia, and the practical restrictions associated with sending samples overseas during imposition of Covid-19 controls, Jacobs has elected to rely on the internal QA/QC systems of the primary lab (ALS) for QA/QC analysis of dioxins. Excluding dioxins, all other nominated analytes analysed as part of the Split duplicate analysis was included for samples submitted to the secondary laboratory (Eurofins) for quality control purposes. Given the low sampling density nominated for this investigation and considering all other nominated analytes were included in the split replicate analysis, Jacobs does not believe exclusion of dioxins in the split duplicate analysis had a measurable impact on the usability and reliability of the sample and analysis plan.

D.1.1.4 Rinsate blank samples

Rinsate (equipment)blank samples consist of collection of samples of laboratory-prepared water was passed over decontaminated field equipment. Rinsate blank samples were prepared on site, labelled with a unique sample identification number and transported to the primary laboratory for analysis as regular environmental samples. The purpose of a rinsate blank sample was to assess the efficiency of decontamination procedures.

The rinsate blank samples were collected from non-disposable sampling equipment used during sediment (steel core barrel), soil (steel push tube casing) and groundwater sampling (interface meter). Rinsate blank samples were collected at a rate of one rinsate blank per day, per matrix per piece of equipment as detailed in AS 4482.1-2005.

D.1.1.5 Trip blanks

The trip blank samples consisted of laboratory-supplied purge water. The purpose of trip blank samples was to detect potential contamination during field storage and sample transport. These samples were kept within eskies/cool boxes filled with ice during sampling activities and were not opened in the field. One trip blank sample was submitted to the laboratory for analysis with the environmental samples for each sampled media (soil, sediment and groundwater) for each sampling event (July to August 2020 and May 2021). Trip blanks were analysed at the laboratory as regular samples for BTEX compounds only for the July to August 2020 sampling event, whilst the trip blank sample submitted as part of the May 2021 PFAS sampling event was analysed for the suite of PFAS compounds as per the environmental samples.

D.1.1.6 Trip spikes

The trip spike samples consisted of laboratory-supplied purge water spiked with a known concentration of analytes (e.g. BTEX). The purpose of the trip spike was to assess/determine volatile compound loss during sample transport. These samples were kept within eskies/cool boxes filled with ice during sampling activities and were not opened in the field. One trip spike sample was submitted to the laboratory for analysis with the environmental samples for each sampled media (soil, sediment and groundwater). Trip spikes were analysed at the laboratory as regular samples for BTEX compounds only.

D.1.2 Laboratory QA/QC Program

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

D.1.2.1 Laboratory Duplicate Samples

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

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

D.1.2.2 Laboratory Control Samples

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

D.1.2.3 Surrogates

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

D.1.2.4 Matrix Spikes

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

D.1.2.5 Method Blanks

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

D.1.3 Data Acceptance Criteria

The QA/QC Data was assessed against the Data Acceptance Criteria (DAC) provided in **Table D.1**.

Table D.1: QA/QC Compliance Assessment

QA/QC sample	DQI	Objectives	Acceptance criteria
Field QA/QC samples			
Blind and split duplicate samples	Precision Comparability	To ensure the primary data is reliable and fit for purpose. The assessment of blind replicate and split samples is undertaken by calculating the Relative Percent Difference (RPD) of the replicate or split concentration compared with the original sample concentration. The RPD is defined as: $RPD = 100 \times \frac{\lvert X1 - X2 \rvert}{Average}$ Where: X1 and X2 are the concentration of the original and replicate or split samples.	Analysed for the same chemicals as the primary sample. Typical RPDs are noted in AS 4482.1-2005 as between 30 – 50%. Higher RPDs may be acceptable for heterogeneous material or where concentrations are close to the LOR (i.e. less than 10 times the LOR). The following acceptance criteria applied are as follows ▪ <100% RPD when <10 times EQL ▪ <50% RPD when > 10 times EQL and <20 times EQL ▪ 30% RDP when >20 times EQL
Rinsate samples	Precision Accuracy	Ensure that cross contamination has not occurred from sampling equipment, sampling procedure, or during storage and transport of samples.	Each rinsate sample is analysed as per the primary samples. Analytical result < LOR.
Field blanks	Representativeness	Ensure that sample collection has not been affected by ambient, background concentrations.	Each field blank sample is analysed as per the primary samples. Analytical result < LOR.
Laboratory QA/QC			
Laboratory duplicates	Precision	To ensure precision of the analysis method and replicability of analysis due to potential sample heterogeneity. Assessment as per blind replicates and split samples	As per laboratory QC report

QA/QC sample	DQI	Objectives	Acceptance criteria
Matrix spike recoveries	Accuracy	To assess the effect of the matrix on the accuracy of the analytical method used. Assessment is undertaken by determining the percent recovery of the known spike or addition to the sample. $\% \text{ Recovery} = 100 \times \frac{C - A}{B}$ Where: A = Concentration of analyte determined in the original sample; B = Added Concentration; C = Calculated Concentration.	As per laboratory QC report
Method blanks	Accuracy	To assess potential bias introduced by the laboratory analytical method for a relevant analyte. A method blank assesses the component of the analytical result introduced from laboratory equipment. Each blank is analysed as per the original samples.	Analytical result < LOR
Note: LOR = Laboratory level of Reporting or the minimum detection limit for a particular analyte			

D.1.4 Data quality evaluation

Based on the outcomes of the DQO process, the quality of the data collected as part of the investigation was assessed on a range of factors including:

- Data precision;
- Data accuracy;
- Data representativeness;
- Documentation and data completeness; and
- Data comparability.

The relevant evaluation criteria for each of these issues are presented in **Table D.2**.

Table D.2: DQO Evaluation Criteria

Data Quality Objective	Evaluation Criteria
Precision and accuracy	Use of properly trained and qualified field personnel.
	Assessment of the RPD for laboratory and field duplicate samples.
	Assessment of the analytical results for the laboratory quality control samples
	Collection and assessment of rinsate blanks.
Data representativeness	Collection of representative samples (and adequate number) from each location.
Documentation completeness	Site conditions properly described.
	Investigation area properly described.
	Understanding of Site history and chemicals of interest presented.
	Sampling locations properly described and accurately located.
Data completeness	Samples tested for appropriate chemicals of interest
	Completion, chain of custody forms, laboratory sample receipt and test certificates from National Association of Testing Authorities (NATA) registered laboratories.
	Consideration of key receptors of interest.
	Remediation strategies assessed, and preferred selection based upon Site specific factors.
Data Comparability	Selection of NATA certified laboratory using NEPM testing procedures
	Appropriate sampling techniques, sample storage and transportation of samples used
	Intra-laboratory duplicate (blind duplicate) and inter-laboratory duplicate (split duplicate) samples

D.2 Field QA/QC Assessment

All works completed during this contaminated land investigation were conducted in accordance with Jacobs work instructions. The essential elements of the QA/QC programs and their assessment are presented in **Table D.3**.

Table D.3: Field QA/QC Program

Action	Description
Use of Experienced Personnel	Field work was undertaken by trained Jacobs scientists/engineers with previous experience in contaminated site assessment, field sampling techniques and health and safety issues.
Record Keeping	Records of all field activities including sample collection, field parameters while sampling and sampling notes were maintained on relevant field documentation.
Sample Collection	A new pair of disposable nitrile gloves were worn during sampling and were replaced between each sample collected or after contact with any potentially contaminating material. Disposable equipment was replaced between each sampling location.

Action	Description
	Equipment re-used throughout the sampling program was appropriately calibrated and decontaminated between sampling locations.
Sample Labelling	A unique sample number was used for each sample and recorded in field sheets.
Chain of Custody	Chain of Custody procedures were applied for all sample transfers. Custody sheets list sample numbers, date of collection and analyses required and document the batch custodial history.
Sample Storage	The collected samples were transferred to approved sampling containers with appropriate preservation as required and then placed in cool storage prior to transfer to NATA accredited laboratories for the requested analyses (ALS and Eurofins).
Decontamination	Non-disposable equipment with potential to develop cross contamination was decontaminated between sampling locations.

D.2.1 Sample Holding Times

Holding time relates to the recommended maximum period between sample collection in the field and laboratory extraction and/or analysis time. Exceedances of holding time may potentially result in sample degradation, specifically for some volatile or particularly sensitive analytes (such as microorganisms). There were no holding time breaches for extraction and analysis of samples.

D.2.2 Field Duplicates

Quality control field blind duplicate and split duplicate samples were collected to assess aspects of field protocols and laboratory performance and to confirm the validity of the laboratory data. Field duplicates were collected in general accordance with AS 4482.1-2005 guidelines (Standards Australia 2005). Quality control samples are summarised in **Table D.4**.

Table D.4: Quality Control Samples

Parent Sample	Intra-Laboratory Duplicate	Inter-Laboratory Triplicate
SD03 (sediment)	SD_QC01	SD_QC02
BH21_1.3 (soil)	QC101_200818	QC201_200818
MW09 (groundwater)	QC101_200825	QC201_200825
MW13 (groundwater)	QC101_210520	QC201_210520

The following Relative Percent Difference (RPD) for each Estimate Quantitation Limit (EQL) multiplier range were adopted to assess precision and heterogeneity of samples:

- Pass: RPD <100%, Analysis result < 10 times EQL
- Pass-1: RPD < 50%, Analysis result > 10 times EQL and <20 times EQL
- Pass-2: RPD < 30%, Analysis result > 20 times EQL

A total of 11 primary soil, 8 primary sediment and 3 primary groundwater samples were analysed as part of July to August 2020 sampling event, whilst 7 groundwater samples were analysed as part of the May 2021 PFAS sampling event . The following rationale with respect to field duplicates was adopted:

- Contaminated Land Assessment: One blind duplicate/split duplicate sample per 20 primary samples.

Table D.5 provides a summary of the blind and split duplicate samples collected as part of the sampling program.

Table D.5: Quality Control Sampling Frequency

QC Sample Type	No. Samples	QC sample rate achieved	Comments
Soil samples (July to August 2020)			
Primary	11		
Blind duplicate	1	1 per 11	Target rate (9%) achieved
Split duplicate	1	1 per 11	Target rate (9%) achieved
Groundwater samples (July to August 2020)			
Primary	3		
Blind duplicate	1	1 per 3	Target rate (33%) achieved
Blind duplicate	1	1 per 3	Target rate (33%) achieved
Groundwater sample (May 2020)			
Primary	7		
Blind duplicate	1	1 per 7	Target rate (14%) achieved
Blind duplicate	1	1 per 7	Target rate (14%) achieved
Sediment samples (July to August 2020)			
Primary	8		
Blind Duplicate	1	1 per 8	Target rate (12.5%) achieved
Split Duplicate	1	1 per 8	Target rate (12.5%) achieved. Split duplicate not analysed for dioxins and furans.

Blind and split duplicate samples for soil, sediment and groundwater were analysed to assess the quality control during the field sampling program (July to August 2020 and May 2021). Overall, the rate of blind and split duplicate analysis exceeded and therefore conformed to the Australian Standard (AS 4482.1 - 2005) requirement of 5% blind and split duplicate analysis.

D.2.2.1 Blind and Split Duplicate RPD results

The relative percent differences (RPDs) all analytes for the blind and split duplicate samples were within acceptable limits, with the exception of exception of the samples and analytes detailed in **Table D.6**.

Table D.6: Summary of RPD Non-conformances

Parent Sample	Blind Duplicate Sample		Split Duplicate Sample	
	Sample ID	RPD Non-conformance	Sample ID	RPD Non-conformance
SD03	SD_QC01	Chromium (37%) Naphthalene (84%) - PAHs 19 RPD exceedances including (sum of total) (58%),	SD_QC02	Copper (33%) TRH >C16-C34 (170%) TRH >C34-C40 (121%) TRH >C10-C40 (sum total) (178%)

Parent Sample	Blind Duplicate Sample		Split Duplicate Sample	
	Sample ID	RPD Non-conformance	Sample ID	RPD Non-conformance
		Tributyltin as SN (113%) 1,2,3,4,6,7,8-Heptachlorodibenzofuran (36%) 1,2,3,4,7,8,9-Heptachlorodibenzofuran (37%) 1,2,3,4,7,8-Hexachlorooxanthrene (43%) 2,3,4,6,7,8-Hexachlorodibenzofuran (34%) 2,3,4,7,8-Pentachlorodibenzofuran (68%) 23478-PeCDF I-TEQ2 (0.5 LOR) (68%) 2378-TCDD I-TEQ2 (0.5 LOR) (42%) 23478-PeCDF I-TEQ1 (zero) (68%) 2378-TCDD I-TEQ1 (zero) (42%) 23478-PeCDF I-TEQ3 (LOR) (68%) 2378-TCDD I-TEQ3 (LOR) (42%) Hexa-Dioxins (38%) Penta-Dioxins (34%) Penta-Furans (41%) Hepta-Furans (38%) Tetra-Furans (40%) 23478-PeCDF WHO-TEQ2 (0.5 LOR) (68%) 2378-TCDD WHO-TEQ2 (0.5 LOR) (42%) Total TEQ WHO-TEQ2 (0.5 LOR) (31%) 23478-PeCDF WHO-TEQ1 (zero) (68%) 2378-TCDD WHO-TEQ1 (zero) (42%) Total TEQ WHO-TEQ1 (zero) (31%)		TPH C10-C14 (55%) TPH C15-C28 (176%) TPH C29-C36 (172%) TPH C10-C36 (sum of total) (187%) Naphthalene (191%) PAHs 19 RPD exceedances including (sum of total) (198%)

Parent Sample	Blind Duplicate Sample		Split Duplicate Sample	
	Sample ID	RPD Non-conformance	Sample ID	RPD Non-conformance
		2378-TCDD WHO-TEQ3 (LOR) (42%) 23478-PeCDF WHO-TEQ3 (LOR) (68%) Total TEQ WHO-TEQ3 (LOR) (31%), 2,3,7,8-Tetrachlorooxanthrene (42%)		
BH21_1.3	QC101_200818	PAHs (sum of total) (141%) 1,2,3,4,6,7,8-Heptachlorooxanthrene (33%) 1,2,3,4,6,7,8,9-Octachlorooxanthrene (35%) 2378-TCDD I-TEQ2 (0.5 LOR) (128%) 2378-TCDD I-TEQ1 (zero) (200%) Hexa-Dioxins (49%) Hexa-Furans (30%) Octa-Dioxin (35%) Hepta-Dioxins (39%) Tetra-Furans (52%) Tetra-Dioxins (70%) 2378-TCDD WHO-TEQ2 (0.5 LOR) (128%) 2378-TCDD WHO-TEQ1 (zero) (200%)	QC201_200825	1,2,3,4,6,7,8-Heptachlorooxanthrene (50%) 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (69%)

Blind and split duplicate RPD results for soil and sediment are presented in **Table D** and RPD results for groundwater are presented in **Table E.1** and **Table E.2** of **Appendix G**.

Soil

RPD non-conformances were reported for PAH (sum of total) and 11 separate Dioxins/Furans compounds between the primary (BH21_1.3) and blind duplicate soil samples (QC101_200818) whilst only one RPD non-conformance 1,2,3,4,6,7,8-Heptachlorooxanthrene was reported between the primary sample and the split duplicate sample (QC201_200825).

RPDs calculate the difference in magnitude between two samples and do not take into account the minor differences in actual concentrations. The primary and blind/split duplicate samples were collected from heterogeneous fill material. The RPD discrepancies between the primary and blind duplicate and split duplicate samples may be associated with the inherent heterogeneity of soil which has likely contributed to the variability of the sampled soil and concentrations within the primary and blind/split duplicate samples. The RPD non-

conformances between the primary and blind/split duplicate samples are considered unlikely to impact the usability of the data set.

Sediment

Sample SD03 (primary) and SD_QC01 (blind duplicate) recorded a chromium concentration of 180mg/kg and124mg/kg respectively which equated to an RPD of 37% and an exceedance of the RPD acceptance limit. Similarly, an RPD exceedance for copper was also reported between the primary sample (SD03) and the split duplicate sample (SD_QC02). As was the case with the reported RPD non-conformances for soil, the elevated RPDs are likely due to the heterogeneous and disturbed nature of sampled sediment material. As a result the RPD non-conformance reported for chromium and copper between the primary and blind/split duplicate samples is considered unlikely to impact the usability of the data.

The TRH and TPH RPD exceedances reported between the SD03 and SD_QC02 are attributed to the split duplicate returning concentrations below the LOR. Sample SDQC_02 reported a concentration of Naphthalene below the LOR of 0.005mg/kg. The parent and duplicate samples recorded values of 0.22mg/kg and 0.09mg/kg respectively. The interlaboratory duplicate sample presented a concentration of 0.097mg/kg whilst the parent and duplicate sample 16.5mg/kg and 9.1mg/kg.

As detailed in **Table D.6**, a number of dioxin/furans compounds reported RPD exceedances between the primary and blind duplicate samples. This is likely due to the heterogeneous and disturbed nature of the sampled material and not due to inefficiencies/inadequacies of the sampling or analytical procedures. As a result, the RPD non-conformances reported between the primary and blind duplicate samples for dioxins/furans are considered unlikely to affect the usability of the data set.

Groundwater

No RPD non-conformances were reported for the groundwater primary sample and blind or split duplicate samples for the July to August 2020 sampling event or the May 2021 PFAS sampling event. The RPDs for the groundwater blind and split duplicates were within the acceptable limits.

D.2.3 Rinsate Blanks

Four rinsate blank samples (2 x soil, 1 x sediment, 1 x groundwater) were collected as part of the July to August 2020 soil, sediment and groundwater sampling event, whilst three rinsate blank samples were collected as part of the May 2021 PFAS sampling event. This equated to 1 rinsate blank sample per day of sampling, per matrix and per piece of equipment used during sampling, which therefore conforms to the required frequency of rinsate sample collection as per the Australian Standard (AS 4482.1 - 2005).

Rinsate blank samples did not report concentration of compounds above the LOR, with the exception of the following:

- Chromium (III+VI) (4 µg/L) in SD_R01
- Zinc (6 µg/L) in SD_R01

The core barrel used during sediment sampling and used in the collection of rinsate sample SD_R01, along with grabs, core trays and bowls and other reusable equipment was first rinsed, then washed between sampling locations with a 1% Liquinox® (laboratory grade, phosphate free) and deionised water solution and then rinsed with laboratory supplied deionised water to remove the solution. The core barrel and reusable implements were then rinsed again using n-hexane solution before being triple rinsed with laboratory supplied deionised water to complete the decontamination process. The decontamination procedure applied to equipment during sediment sampling equipment was consistent throughout and is considered sufficient and effective for the purposed of the sediment sampling program.

The detection of chromium and zinc in SD_R01 represent trace amounts, only marginally above the LOR and is considered minor and unlikely to affect the usability of the data set.

Rinsate sample results are presented in **Table F** of **Appendix G**.

D.2.4 Trip Blanks

The trip blanks consisted of laboratory-supplied purge water or analyte free clean sand. The purpose of trip blanks was to detect potential contamination during sample transport. These samples were kept within eskies filled with ice during sampling activities and were not opened in the field. One trip blank sample per sampled media (soil, sediment and groundwater) was submitted to the laboratory for analysis with the environmental samples for each of the sampling events (July to August 2020 and May 2021). For the July to August sampling event, trip blanks were analysed at the laboratory as regular samples for BTEX compounds only. For the May 2021 PFAS sampling event the trip blank sample was analysed for the full PFAS suite as per the environmental samples.

The concentrations of BTEX compounds in all trip blank samples from the July to August 2020 sampling event, as well as the concentrations of PFAS in the trip blank sample from the May 2021 PFAS sampling event were below the respective laboratory LOR demonstrating that no cross contamination occurred during sample handling and therefore conformed to the DAC.

Trip bank results are presented in **Table F.1 and Table F.2** of **Appendix G**.

D.2.5 Trip Spikes

The trip spikes consisted of laboratory-supplied purge water or clean sand spiked with a known concentration of BTEX analytes. The purpose of the trip spike was to determine volatile compound loss during sample transport. These samples were kept within eskies filled with ice during sampling activities and were not opened in the field. One trip spike sample was submitted to the laboratory for analysis with the environmental samples for each sampled media (soil, sediment and groundwater) as part of the July to August sampling event. Trip spikes were analysed at the laboratory as regular samples for BTEX compounds only.

The concentrations of BTEX compounds were within the acceptable ranges for the percentage recoveries in all trip spike samples analysed as part of the July to August 2020 sampling event and therefore conformed to the DAC.

No trip spike sample was analysed as part of the May 2021 PFAS sampling event. As PFAS are non-volatile, potential compound loss is not a risk during transport and therefore a trip spike was not required for the May 2021 PFAS sampling event.

Trip spike results are presented in **Table G** of **Appendix G**.

D.3 Laboratory QA/QC Assessment

Samples collected as part of the additional contamination investigation (July to August 2020 and May 2021) were submitted to the following laboratories:

- Australian laboratory Services (ALS) – Primary laboratory
- Eurofins Environmental Testing Australia (Eurofins) – Secondary laboratory

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

Quality assurance procedures adopted by the analytical laboratories included analysis of blanks, laboratory duplicates, laboratory control samples, matrix spikes and surrogate spikes (for organics).

QA/QC reporting provided by the laboratories is included in **Appendix I**.

D.3.1 Analytical Methods

The laboratory analytical methods to the soil, sediment and groundwater samples is provided on the laboratory certificates presented in **Appendix I**.

D.3.2 QA/QC Frequency Compliance

All laboratory QA/QC sample types (i.e. method blanks, matrix spikes, duplicates, surrogates, laboratory control samples) have prescribed frequencies for how regularly they must be conducted as per the laboratories DQIs.

The quality control report for the soil and soil equipment rinsate samples (batch ES2029204) indicates that the frequency of laboratory duplicates and matrix spikes was slightly outside the expected range in relation to PAH/Phenols and TRH for the water (rinsate) matrix. This is not considered to affect the usability of the data.

The frequency of all other laboratory QA/QC analysis conformed to the required frequency of analysis.

D.3.3 Laboratory duplicates

Laboratory duplicate samples are prepared in the laboratory by splitting a field sample and analysing it as two independent samples. The analysis of laboratory duplicate samples provides an indication of analytical precision and may be influenced by sample heterogeneity. The laboratory duplicate RPDs are used to assess laboratory precision. Laboratory duplicates are typically analysed at a frequency of 1 in 20, with a minimum of one analysed per batch.

Review of the laboratory QA/QC reports indicated no duplicate outliers in laboratory reports for both the July to August 2020 and May 2021 PFAS sampling events. Overall, the results for the laboratory duplicates indicate that the laboratory precision is acceptable for this investigation.

D.3.4 Laboratory control samples

Laboratory control samples (LCS) or Quality Control check samples are prepared within the laboratory by spiking an aliquot of an appropriate clean matrix reagent with known concentrations of specific analytes. The LCS is then analysed and the results are used to assess the laboratory performance on sample preparation and analysis procedure. Certified reference material may also be used to assess analytical accuracy independent of the investigations. Accuracy is assessed by calculation of percent recovery. LCS are typically analysed at a frequency of 1 in 20, with a minimum of one analysed per analytical batch.

A review of the QA/QC reports indicated no laboratory control outliers in laboratory reports for both the July to August 2020 and May 2021 PFAS sampling events.

D.3.5 Surrogate variation

Surrogates are compounds which are similar to the organic analytes of interest in chemical composition, extraction, and chromatographic behaviour, but which are not normally found in field samples. Surrogates are generally spiked into all sample aliquots prior to preparation and analysis by chromatographic methods. Percent recoveries are calculated for each surrogate, providing an indication of analytical accuracy. US EPA methodology (SW – 846) requires that surrogate testing be performed whenever analysing by Gas Chromatography or HPLC.

Review of the laboratory QA/QC reports indicated no surrogate outliers with the exception of the following:

- D7-N-MeFOSE (36%) in 797983 exceeded the QC limit of 50-150% for PFAS

- D9-N-EtFOSE (37%) in 797983 exceeded the QC limit of 50-150% for PFAS
- D5-N-EtFOSAA (16%) in 797983 exceeded the QC limit of 50-150% for PFAS
- D3-N-MeFOSAA (18%) in 797983 exceeded the QC limit of 50-150% for PFAS

Surrogate outliers were all reported in Eurofins laboratory report, 797983 from the May 2021 sampling event. All surrogate outliers were for PFAS.

Eurofins noted that all reported surrogate outliers in laboratory report, 797983 were reviewed. The review indicated there was no positive corresponding PFAS result and no data was affected.

Overall, the results for the laboratory duplicates indicate that the laboratory precision is acceptable for this investigation.

D.3.6 Matrix spikes

Matrix spikes are samples prepared within the laboratory by dividing a field sample into two aliquots, then spiking each with identical concentrations of the analytes. The matrix spike and matrix spike duplicate are then analysed separately, and the results compared to determine the effects of the sample matrix on the accuracy and precision of the analytes. Accuracy is assessed by the calculation of the percent recovery.

Review of the laboratory QA/QC reports indicated no matrix spike outliers occurred in laboratory reports for both the July to August 2020 and May 2021 PFAS sampling events. Overall, the matrix spike results indicate the laboratory accuracy is acceptable for this investigation.

D.3.7 Laboratory method blanks

Laboratory method or control blanks consist of reagents specific to each individual analytical method and are prepared and analysed by laboratories in the same manner as regular samples. The preparation and analysis of laboratory blanks enables the measurement of contamination within the laboratory. Laboratory blanks are typically analysed at a frequency of 1 in 20, with a minimum of one analysed per batch.

Review of the laboratory QA/QC reports indicated that no method blank outliers occurred in laboratory reports for both the July to August 2020 and May 2021 PFAS sampling events. The laboratory method blank results indicate that the laboratory precision was acceptable.

D.4 Data quality Indicators (DQI)

D.4.1 Precision

Non-conformance of the RPD were noted throughout the soil and sediment samples for a variety of analytes from the July to August 2020 sampling event. As noted above the RPD non-conformances are likely due to the heterogeneous and disturbed nature of the sampled material and not due to inefficiencies/inadequacies of the sampling or analytical procedures. As a result, the RPD non-conformances reported between the primary and blind duplicate samples are considered unlikely to affect the usability of the data set.

D.4.2 Accuracy

Field accuracy was assessed using rinsate blank, trip blank and trip spike samples. Laboratory accuracy was assessed by the analysis of laboratory control samples and method blanks and percentage recoveries of matrix spikes and surrogates. The rinsate blank sample, SD_R01, from the July to August 2020 sampling event, returned concentrations of chromium (4 µg/L) and zinc (6 µg/L) above the LOR of 1 µg/L and 5 µg/L respectively. Given the low concentrations levels the assessment of these results indicated the accuracy of the analytical results were acceptable and represent an accurate measure of the reported data.

Surrogate outliers were also reported for PFAS in Eurofins laboratory report. 797983. However following a review of the surrogate outliers and the corresponding PFAS results in the split duplicate sample, indicate there were no PFAS results in the split duplicate sample and that no data was affected.

D.4.3 Representativeness

Jacobs consider the samples collected from the site to be representative of the materials being targeted as part of this investigation. Jacobs staff ensured samples collected were representative of the material observed in the sediment, boreholes and monitoring wells.

D.4.4 Completeness

All samples were collected and analysed in accordance with the sampling and analysis program. All other required QA/QC data, including both field and laboratory data as outlined in the sampling and analysis program were provided and were complete.

D.4.5 Comparability

Samples were collected by experienced Jacobs environmental scientists in accordance with the sampling and analysis program using appropriate Jacobs protocols and analysed in accordance with NATA accredited laboratory methods.

D.5 Assessment

Jacobs completed the minimum number of QA/QC sample anlaysis for this investigation. Based on the laboratory results for the primary, field QA/QC and laboratory QA/QC sample analysis, the data is considered acceptable for the purposes of this investigation.

Appendix E. Summary of the adopted site acceptance criteria for the soil and groundwater investigation

E.1 General

Site Assessment Criteria (SAC) for the soil and groundwater investigation have been adopted from the National Environment Protection (Assessment of Site Contamination) Measure 1999 (as revised 2013) - *Schedule B1 Guideline on Investigation levels for Soil and Groundwater* (NEPC, 2013).

For the purposes of a preliminary screening of risks associated with potential rezoning options for the investigation area, Jacobs has adopted SAC based on the most sensitive potential future land uses.

The SAC adopted for the assessment of soil include:

- Health-based Investigation Levels (HIL A) for soil contaminants based on residential land use with garden/accessible soil (home grown produce <10% fruit and vegetable intake, (no poultry), also includes children's day care centres, preschools and primary schools. It is noted that the likely future land use will be medium density residential with minimal opportunities for soil access (HIL B). However, the more sensitive HIL A investigation levels have been adopted for the purposes of preliminary risk screening.
- Health-based Screening Levels (HSLs) for selected petroleum compounds for vapour intrusion based on low to high density residential land use and clay soils. The screening level that applies to the surface to 1 meter below ground has been adopted as a conservative approach.
- Ecological Investigation Levels (EILs) based on urban residential and public open space land use and soil physicochemical properties determined from the site investigation.
- Ecological Screening Levels (ESLs) for fine soils and urban residential and public open space land use. The most conservative value for coarse or fine soils was chosen for each parameter.
- Management Limits for TRH Fractions F1-F4 for fine soils and residential, parkland and public open space land use.

In relation to the EILs for soil, further information on the development of these levels for this assessment is provided in Section E.2 below.

There are no Health Investigation Levels for dioxins in soil published in NEPC (2013) or otherwise recognised by the NSW EPA. Therefore, Jacobs has derived site specific HILs for dioxins in soil. The derivation of these values are presented in **Appendix F**.

NEPC (2013) provides health based screening levels for different forms of asbestos contamination in soil. To apply these screening levels, significant investigations, excavation and sample volumes are required to assess the volume of asbestos relative to soil. Jacobs has adopted a high level criterion to assess the presence / absence of asbestos in soil samples and whether additional investigations are required to assess the risk to site users. The high level criteria adopted by Jacobs is no asbestos in any form present in soil samples (above the laboratory reporting limit of 0.1g/kg) or observed in surficial soils or excavated materials.

In relation to groundwater, the NEPC (2013) sets out Groundwater Investigation Levels (GILs) which are equivalent to the guidance provided in the NSW EPA Contaminated Sites, Guidelines for the Assessment and Management of Groundwater Contamination (2007). The investigation levels are based on:

- Health-based Screening Levels (HSLs) for selected petroleum compounds for vapour intrusion based on low to high density residential land use and clay soils.
- Australia and New Zealand Environment and Conservation Council (ANZECC) and Agriculture and Research Management Council of Australia and New Zealand (ARMCANZ), Australian and New Zealand Guidelines for

Fresh and Marine Water Quality (2000) (ANZECC Guidelines). GILs for marine water and for slightly to moderately disturbed systems have been adopted for this investigation.

The adopted SAC values are presented on the analysis summary tables provided in **Appendix H**.

E.2 Ecological investigation levels

Ecological investigation levels (EILs) for the protection of terrestrial ecosystems have been derived for common contaminants in soil based on a species sensitivity distribution (SSD) model developed for Australian conditions. EILs have been derived for As, Cu, CrIII, DDT, naphthalene, Ni, Pb and Zn.

EILs apply principally to contaminants in the top 2 metres of soil at the finished surface/ground level which corresponds to the root zone and habitation zone of many species. In arid regions, where the predominant species may have greater root penetration, specific considerations may result in their application to 3 metres depth.

The methodology assumes that the ecosystem is adapted to the ambient background concentration (ABC) for the locality and that it is only adding contaminants over and above this background concentration which has an adverse effect on the environment.

The ABC of a contaminant is the soil concentration in a specified locality that is the sum of the naturally occurring background level and the contaminant levels that have been introduced from diffuse or non-point sources by general anthropogenic activity not attributed to industrial, commercial, or agricultural activities, for example, motor vehicle emissions.

The preferred method to determine the ABC is to measure the ABC at an appropriate reference site. This approach is essential in areas where there is a high naturally occurring background level such as will occur in mineralised areas.

An added contaminant limit (ACL) is the added concentration (above the ABC) of a contaminant above which further appropriate investigation and evaluation of the impact on ecological values is required. The EIL is derived by summing the ACL and the ABC.

ACLs are based on the soil characteristics of pH, CEC and clay content. Empirical relationships that can model the effect of these soil properties on toxicity are used to develop soil-specific values. These soil-specific values take into account the biological availability of the element in various soils. In this approach different soils will have different contaminant EILs rather than a single generic EIL for each contaminant.

The adopted soil characteristics (pH, clay content and cation exchange capacity) have been selected from sample BH15_0.8 – 1.1 from the Jacobs (2016) investigation as the sample was considered to be representative of the primary soil type (clay) at the site and that the soils are unlikely to be impacted by anthropogenic sources.

Table E.1: Calculating the ACL

ACLs	mg/kg								
	BH15_0.8-1.1	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
pH	4.2				60				
CEC	5.2							30	70
% clay	46			400					
Generic	-	100				1100			

Information derived from **Table 1B(1)** *Soil-specific added contaminant limits for aged zinc in soils*, **Table 1B(2)** *Soil-specific added contaminant limits for aged copper in soils,* **Table 1B(3)** *Soil-specific added contaminant limits for aged chromium III and nickel in soils,* and **Table 1B(4)** *Generic added contaminant limits for lead in soils (commercial/industrial) irrespective of their physicochemical properties (NEPM 2013).*

Table E.2: Calculating the ABC

ABC	mg/kg							
	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
BH15_0.8 – 1.1	10	n/a	15	<5	10	n/a	<5	<5

Sample BH15_0.8 – 1.1 (clay) was assumed to be representative of the 'background concentration' of the site due to the depth 0.8-1.1 m bgl in conjunction with its elevation and nature of material encountered and that it is unlikely to be impacted by anthropogenic sources.

The EIL is derived by summing the ACL and the ABC. The rounding rules are applicable to EILs:

- <1 to nearest 0.1
- 1 to <10 to nearest integer
- 10 to < 100 to nearest 5
- 100 to <1000 to nearest 10
- ≥1000 to nearest 100

Table E.3: Calculating the EILs

EILs	mg/kg									
	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	DDT	Naphthalene
ABC + ACL			415 [3]	65 [3]	1110 [3]		35 [3]	75[3]		
NEPM 2013	100 [1]								180 [1]	170 [1]
NEPM 1999		3 [2]				1 [2]				

[1]Generic EILs for aged arsenic, DDT and Naphthalene from **Table 1B(5)** for 'urban residential and public open space' land use.

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

[3]EILs derived from NEPM 2013 equation ABC+ACL.

E.3 PFAS in Groundwater

E.3.1 Health based investigation levels

The PFAS National Environmental Management Plan Version 2.0 (PFAS NEMP) includes guidance values for the sum of PFOS and PFHxS and for PFOA in drinking water and recreational water for the protection of human health. The guidance values detailed in the PFAS NEMP for the protection of recreational water users is based on the NHMRC (August, 2019) Guidance of Per and Polyfluoroalkyl Substances (PFAS) in Recreational Water (NHMRC, 2019).

The human health guideline values for drinking water and recreational water adopted for this monitoring program are presented in **Table E.4**.

Table E.4: Investigation criteria for groundwater and surface water for the protection of human health (µg/L) (PFAS NEMP)

Exposure Scenario	PFOS + PFHxS	PFOA
Drinking water	0.07[1]	0.56[1]
Recreational water	2.0	10

Notes:

1. Based on the Australian Government Department of Health (2019) Health Based Guidance Values for PFAS for use in site investigations in Australia.

Sydney Water supplies potable water throughout the Investigation Area. At the time of the investigation, none of the information reviewed by Jacobs indicates that there is any beneficial use of groundwater in the investigation Area, including licensed potable users of groundwater within and/or immediately surrounding Leeds Street character area. Considering the absence of known potable groundwater users on and/or adjacent to the site, as well as the presence of the Parramatta River, both the health based guideline values for drinking water and recreational water have been considered. Given that the guideline values for drinking water are more conservative (i.e. lower concentration limits), PFAS results, in addition to being screened against the recreational water values, have also been screened against the PFAS NEMP guidelines for drinking water, despite the lack of potable groundwater use in the area.

The adopted PFAS SAC values are presented in **Table B.2** provided in **Appendix H**.

E.3.2 Ecological Investigation Levels

The PFAS NEMP includes surface water guideline values for ecological protection. Groundwater guideline values for ecological protection have not been established. For the purposes of assessing contamination with respect to ecological receptors and considering the presence of the Parramatta River adjacent to the area, the guideline values for surface water have been adopted for groundwater

The PFAS NEMP includes guideline values for PFOS and PFOA in surface water for the protection of aquatic ecosystems. These are based on the technical draft default guideline values developed by the Australia and New Zealand Environment Conservation Council (ANZECC).

The PFAS NEMP states that the draft guidelines do not account for effects which result from the bio-magnification of toxicants in air-breathing animals or in animals which prey on aquatic organisms.

It is noted that the PFAS NEMP includes investigation levels for the protection of aquatic ecosystems based on 99% species protection – high conservation value ecosystems, 95% species protection – slightly to moderately disturbed systems, 90% species protection – highly disturbed systems and 80% species protection - highly disturbed systems. In NSW the 95% species protection level – slightly to moderately disturbed ecosystems, is generally applied for all waterways as a conservative approach, except for waterways that mainly flow through relatively undisturbed national parks, world heritage areas or wetlands of outstanding ecological significance where the 99% species protection values are applied. Therefore, the 95% species protection values with respect to PFAS, have been adopted as the investigation criteria for surface water ecological protection direct toxicity. These values are presented in **Table E.5**.

Table 5.5: Investigation criteria for surface water ecological protection – direct toxicity (µg/L) (PFAS NEMP)

Exposure Scenario	PFOS	PFOA
Freshwater direct toxicity, slightly to moderately disturbed ecosystem (95% species protection)[#1]	0.13	220

#1 – Marine 95% species protection for slightly to moderately disturbed ecosystems, as outlined in the PFAS NEMP 2020, utilised the same values as Freshwater 95% species protection.

Freshwater 95% species protection guideline values from the PFAS NEMP (2020) have been applied to this investigation as the groundwater PFAS investigation criteria for ecological protection.

The adopted PFAS SAC values are presented int **Table B.2** provided in **Appendix H**.

Appendix F. Derivation of the site specific investigation level for dioxins in soil

F.1 Introduction

The name "dioxins" is often used for the family of structurally and chemically related polychlorinated dibenzo para dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs). Certain dioxin-like polychlorinated biphenyls (PCBs) with similar toxic properties are also included under the term “dioxins”. Some 419 types of dioxin-related compounds have been identified but only 29 of these are considered to have significant toxicity, with 2,3,7,8-tetrachlorodibenzo para dioxin (TCDD) being the most toxic (WHO, 2016).

The 29 compounds considered to have significant toxicity have similar toxicological profiles. However, their toxicological potencies differ. Therefore, the WHO has developed an approach for reporting concentrations of dioxins using toxicity equivalence (TEQ) relative to a reference compound, which in this case is TCDD. The relative toxicity of each compound is expressed as a toxicity equivalency factor (TEF) and the product of the concentration and the TEF for each substance in the mixture results in a TEQ concentration relative to 2,3,7,8-TCDD. The sum of the resultant TEQ for each substance yields a single concentration for the TEQ of the mixture (NEPC, 2013a).

The most recent update to the TEQ system was developed by the WHO in 2005 and it is the 2005 TEQ system that is recommended for dioxin assessment in the National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended 2013 (NEPM) (NEPC, 2013a).

There are no generic screening guidelines for dioxins in soil in the NEPM or other documents endorsed by the NSW EPA. Therefore, a site-specific investigation level was derived as part of the Contamination and Acid Sulphate Soils Report for the Rhodes East Priority Investigation Area prepared by Jacobs in 2016 (Jacobs, 2016).

The Jacobs (2016) derived investigation level for dioxins in soil, expressed as the sum of PCCDs, PCDFs and PCBs (WHO 2005) was 120 ng/kg.

A review of the derivation of the site investigation level was carried out as part of this Additional Contamination Investigation. The approach has now been refined to include the derivation of two Health Investigation Levels – an HIL A value for the assessment of soil within the proposed residential land and an HIL C value for assessment of soil in the public open space.

The derivation of the revised site investigation levels for dioxins in soil is presented in this appendix.

F.2 Future land uses

For the purposes of this risk assessment, it has been assumed that the land currently zoned for industrial use will be rezoned to permit more sensitive uses. The land will be zoned for Mixed Use and will include medium density residential housing. For this stage of assessment, Jacobs has derived a site-specific investigation level for dioxins in soil consistent with Health Investigation Level A (HIL A) which is defined in the NEPM as “residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry), also includes childcare centres, preschools and primary schools.” It is noted that actual development at a specific property may be more consistent with HIL B – Residential with minimal opportunities for soil access; including dwellings with fully and permanently paved yard space such as units, high-rise buildings and apartments. The adoption of a screening value based on the HIL A scenario provides for a conservative approach.

It is also assumed that the land fronting the Parramatta River will be used for public open space and as such will be consistent with HIL C which is defined in the NEPM as “public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths.”

F.3 Exposure pathways

Dioxins have low solubility in water and have a strong adsorption to particulate organic matter (Gatehouse, R. 2004). Therefore, dioxins are not normally associated with groundwater or dissolved phase surface water contamination. Dioxins are also semi-volatile and do not normally volatise from soil and are therefore not normally associated with vapour intrusion impacts. Therefore, dioxins are primarily associated with particulates and organic matter in the environment. While dioxin uptake to plants is not significant, human exposure through soil adhering to home-grown produce may occur.

Based on the assumed future land uses and the dioxin properties above, the potential exposure pathways considered in this assessment are as follows:

- Incidental ingestion of soil and indoor dust (including soil adhering to home-grown produce);
- Dermal contact with soil and indoor dust; and,
- Inhalation of outdoor and indoor dust.

F.4 Acceptable intake

The Joint Food and Agriculture Organization of the United Nations (FAO)/WHO Expert Committee on Food Additives has established a provisional tolerable intake of 70 pg/kg body weight per month for PCDDs, PCDFs and coplanar PCBs expressed as TEFs (WHO, 2002). This provisional value was endorsed for use in Australia by the Therapeutic Goods Administration and National Health and Medical Research Council in 2002 (NHMRC, 2002). The monthly intake value is equivalent to 2.3 pg/kg body weight per day.

F.5 Background exposure

The Office of Chemical Safety (2004) estimated the mean Average Daily Lifetime Exposure to total dioxins of 1.32 pg/kg body weight/day (WHO TEQ). This represents approximately 60% of the acceptable intake. For the purposes of deriving the sites specific HIL for dioxins, it has been assumed that 55% of the background exposure is via the ingestion and dermal contact pathways while 5% is via the inhalation pathway.

F.6 Derivation of site-specific Health Investigation Levels

Site specific HIL A and HIL C values have been derived for dioxins (expressed as the sum PCCDs, PCDFs and PCBs TEQ WHO 2005) using the HIL calculator available in the NEPM Toolbox (NEPC 2013b).

An HIL A value was derived for screening of dioxin concentrations in soil for land that may be used for residential purposes. The NEPM notes that intake of soil through adherence to home-grown produce is considered only minor in comparison with the overall incidental soil / dust ingestion rates and is adequately encompassed within the level of uncertainty inherent in the ingestion rates adopted.

An HIL C value has also been derived for screening of dioxin concentrations in soil for land that may be used for public open space.

The default or recommended values from Schedule B7 of the NEPM or within the HIL Spreadsheet have been adopted with the following exceptions to account for the toxicity of dioxins and site specific conditions:

TRV_0 = Toxicity reference value for the quantification of oral intakes (as mg/kg/day) = $2.3x10^{-9}$ mg/kg/day

BI_0 = Background intakes relevant to oral / dermal exposures (from sources other than soil) as % of the TRV_0 = 55%

BA_0 = oral bioavailability = 100% (conservative assumption)

TRV_D = Toxicity reference value for the quantification of dermal intakes (as mg/kg/day) = $2.3x10^{-9}$ mg/kg/day

TRV_i = Toxicity reference value for the quantification of inhalation intakes (as mg/m^3) = 3.71×10^{-9} mg/m^3 (based on the TRV_0 and a conversion based on inhalation rate of 9.5 m^3/day and a body weight of 15kg)

BI_i = Background intakes relevant to inhalation exposures (from sources other than soil) as % of the TRV_0 = 5% (conservative assumption)

U_m = mean annual wind speed at a height of 10m. Value used is 3.7 m/s based on the mean of the monthly means of 9am and 3pm wind speed for the period 1996 to 2010 at the Bureau of Meteorology Sydney Olympic Park station.

The HILs for a young child are the limiting HILs and therefore the details of the calculations for HIL A and HIL C for this receptor are presented in the tables at the end of this appendix.

F.6.1 Final HILs

The HILs for dioxins in soil derived for a young child are:

HIL A (Residential land with garden / accessible soil) – 110 ng/kg (sum PCCDs, PCDFs and PCBs TEQ WHO 2005)

HIL C (public open space) – 172 ng/kg (sum PCCDs, PCDFs and PCBs TEQ WHO 2005)

These values have been used as part of the Site Assessment Criteria. Note that the laboratory reporting for dioxins analysis is in picograms per gram (pg/g). This is equivalent to ng/kg.

It is noted that the Health Risk Assessment for the former Allied Feeds site at Rhodes (GHD, 2005) derived a site-specific soil criterion of 89 ng/kg for open space surface soils. The same exposure pathways were assumed for this criterion. However, some of the input parameters to the HIL equations were different; the main reason being that Jacobs has utilised more recent guidance from the NEPM and enHealth than was used in the Allied Feeds site assessment.

It is also noted that the soil acceptance criterion for dioxins in soil referenced in the Environmental Impact Statement (EIS) for the remediation of the Lednez site in Rhodes (PB, 2002) was 85 ng/kg for open space surface soils. The methodology used to derive this criterion was not provided in the EIS report.

F.7 References

Gatehouse R, 2004, *Ecological Risk Assessment of Dioxins in Australia*, National Dioxins Program Technical Report No. 11, Australian Government Department of the Environment and Heritage, Canberra.

Jacobs, 2016. *Rhodes East Priority Investigation Area, Contamination and Acid Sulphate Soils Report*, prepared by Jacobs Group (Australia) Pty Ltd dated 15 December, 2016.

NEPC, 2013a. *National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended 2013,* National Environment Protection Council, 2013.

NEPC, 2013b. *ASC NEPM Toolbox, HILs Spreadsheet*, National Environment Protection Council, 2013.

NHMRC, 2002. *Dioxins: Recommendation for a Tolerable Monthly Intake for Australians*, National Health and Medical Research Council, Canberra

Office of Chemical Safety, 2004, *Human Health Risk Assessment of Dioxins in Australia, National Dioxins Program Technical Report No. 12*, Australian Government Department of the Environment and Heritage, Canberra.

PB, 2002. *Environmental Impact Statement, Remediation of Lednez Site, Rhodes and Homebush Bay*, Parsons Brinckerhoff Australia Pty Ltd, December 2002.

US EPA, 1992. *Dermal Exposure Assessment: Principles and Applications.* Office of Health and Environmental Assessment. EPA/600/6-88/005Cc.

WHO, 2002. *Evaluation of Certain Food Additives and Contaminants*, Fifty-seventh report of the Joint FAO/WHO Expert Committee on Food Additives, World Health Organization, 2002.

WHO, 2016. *Dioxins and their effects on human health*, World Health Organisation web page dated 4 October 2016 accessed on 23 September 2020.

Derivation of Investigation Levels
HIL A - Low Density Residential

Summary of Exposure Parameters		Abbreviation	units	Parameter	References/Notes
Soil and Dust Ingestion Rate	- Young children (0-5 years)	IR_{SC}	mg/day	100	Schedule B7, Table 5
	- Adults	IR_{SA}	mg/day	50	Schedule B7, Table 5
Surface Area of Skin	- Young children (0-5 years)	SA_C	cm^2/day	2700	Schedule B7, Table 5
	- Adults	SA_A	cm^2/day	6300	Schedule B7, Table 5
Soil-to-Skin Adherence Factor		AF	mg/cm^2/day	0.5	Schedule B7, Table 5
Time Spent Outdoors		ETo	hours	4	Schedule B7, Table 5
Time Spent Indoors		ETi	hours	20	Schedule B7, Table 5
Lung Retention Factor		RF	-	0.375	Schedule B7, Table 5
Particulate Emission Factor		PEFo	(m^3/kg)	4.4E+08	Calculated for scenario, refer to Equations 19 and 20 and assumptions in Schedule B7
Indoor Air Dust Factor		PEFi	(m^3/kg)	2.6E+07	As per Equation 21 based assumptions presented in Schedule B7
Fraction of indoor dust comprised of outdoor soil		TF	-	0.5	Assume 50% soil concentration present in dust as noted in Schedule B7
Indoor Air-to-Soil Gas Attenuation Factor		α	-	0.1	Value adopted as discussed in Section 5.5 of Schedule B7
Body weight	- Young children (0-5 years)	BW_C	kg	15	Schedule B7, Table 5
	- Adults	BW_A	kg	70	Schedule B7, Table 5
Exposure Frequency		EF	days/year	365	Schedule B7, Table 5
Exposure Duration	- Young children (0-5 years)	ED_C	years	6	Schedule B7, Table 5
	- Adults	ED_A	years	29	Schedule B7, Table 5
Averaging Time (non-carcinogenic)		AT_T	days	ED*365	Calculated based on ED for each relevant age group, multiplied by 24 hours for the assessment of inhalation exposures
Averaging Time (carcinogenic)		AT_{NT}	days	25550	Based on lifetime of 70 years, multiplied by 24 hours for the assessment of inhalation exposures

Threshold Calculations - Young Child aged 2-3 years

Compound	Toxicity Reference Value Oral (TRV_O) (mg/kg/day)	GI Absorption (GAF) (unitless)	Toxicity Reference Value Dermal (TRV_D) (mg/kg/day)	Oral Bioavailability BA_O (%)	Dermal Absorption Factor (DAF) (unitless)	Background Intake Oral/Dermal (BI_O) (% of TDI)	Toxicity Reference Value Inhalation (TRV_I) (mg/m^3)	Tolerable Daily Intake Inhalation (TDI) (mg/kg/day)	Background Intake Inhalation (BIi) (% of TC)	Plant Uptake Factor (incl % intake) Adults (kg/day) (eqn 16)	Plant Uptake Factor (incl % intake) Children (kg/day) (eqn 16)	Pathway Specific HILs (mg/kg)				Soil Vapour HIL (mg/m^3) (eqn 12)	Derived Soil HIL (not rounded) (mg/kg) (eqn 2 for relevant pathways)
												Soil Ingestion (eqn 3)	Home-grown produce (eqn 15)	Dermal (eqn 6)	Dust (eqn 9)		
Dioxins (Sum PCCD, PCDF and PCBs TEQ WHO 2005)	2.30E-09	1	2.3E-09	100%	0.03	55%	3.71E-09	1.1E-09	5%	NA	NA	1.6E-04	NA	3.8E-04	5.7E-01	NA	1.10E-04

NA Pathway not assessed

Soil-to-Air Particulate Emission Factor

Refer to Appendix B and Section 5.3.3.1 of Schedule B7 for additional information and references

$$PEF = \frac{Q/C \bullet 3600}{0.036 \bullet (1-V) \bullet (\frac{U_m}{U_t})^3 \bullet F_x}$$

As per Equation 19

where:

A =	area of site (acres)
Q/C =	dispersion factor ($g/m^2/s$ per kg/m^3)
V =	fraction of vegetative cover (unitless)
U_m =	mean annual windspeed (m/s)
U_t =	equivalent threshold value (m/s)
x =	constant as per Cowherd et al. (1985)
F_x =	windspeed distribution function (unitless)

HIL A (low density residential)

Site Data	Comments
0.50	Assumed as default (minimum)
90.80	As per Appendix B
0.75	Assumed for residential, as per Table 6 of Schedule B7
3.7	Bureau of Meteorology Sydney Olympic Park station
7.2	Default as per UK EA (2009)
1.7	Calculated on the basis of Equation 20
0.609	Calculated on the basis of Equation 20

PEF = 4.4E+08 (m^3/kg)

Derivation of Investigation Levels
HIL C - Recreational

Summary of Exposure Parameters		Abbreviation	units	Parameter	References/Notes
Soil and Dust Ingestion Rate	- Young children (0-5 years)	IR_{SC}	mg/day	50	50% of HIL A assumption, Schedule B7, Table 5
	- Adults	IR_{SA}	mg/day	25	50% of HIL A assumption, Schedule B7, Table 5
Surface Area of Skin	- Young children (0-5 years)	SA_C	cm^2/day	2700	As per enHealth (2012)
	- Adults	SA_A	cm^2/day	6300	As per enHealth (2012) for male and female combined
Soil-to-Skin Adherence Factor		AF	mg/cm^2/day	0.5	Schedule B7, Table 5
Time Spent Outdoors		ETo	hours	2	Schedule B7, Table 5
Time Spent Indoors		ETi	hours	0	Schedule B7, Table 5
Lung Retention Factor		RF	-	0.375	Schedule B7, Table 5
Particulate Emission Factor		PEFo	(m^3/kg)	2.6E+07	As per Equation 21 based assumptions presented in Schedule B7
Indoor Air Dust Factor		$PEFo_{res}$	(m^3/kg)	2.9E+07	Air dust loading as per enHealth (2010)
Ratio of air concentrations indoors to outdoors		RIO	-	0.5	Assume 50% soil concentration present in dust as noted in Schedule B7
Outdoor Air-to-Soil Gas Attenuation Factor		α	-	0.05	Value adopted as discussed in Section 5.5 of Schedule B7
Body weight	- Young children (0-5 years)	BW_C	kg	15	Schedule B7, Table 5
	- Adults	BW_A	kg	70	Schedule B7, Table 5
Exposure Frequency		EF	days/year	365	Schedule B7, Table 5
Exposure Duration	- Young children (0-5 years)	ED_C	years	6	Schedule B7, Table 5
	- Adults	ED_A	years	29	Schedule B7, Table 5
Averaging Time (non-carcinogenic)		AT_T	days	ED*365	Calculated based on ED for each relevant age group, multiplied by 24 hours for the assessment of inhalation exposures
Averaging Time (carcinogenic)		AT_{NT}	days	25550	Based on lifetime of 70 years, multiplied by 24 hours for the assessment of inhalation exposures

Threshold Calculations - Young Child Aged 2-3 years

Compound	Toxicity Reference Value Oral (TRV_O) (mg/kg/day)	GI Absorption (GAF) (unitless)	Toxicity Reference Value Dermal (TRV_D) (mg/kg/day)	Oral Bioavailability BA_O (%)	Dermal Absorption Factor (DAF) (unitless)	Background Intake Oral/Dermal (BI_O) (% of TDI)	Toxicity Reference Value Inhalation (TRV_I) (mg/m^3)	Tolerable Daily Intake Inhalation (TDI) (mg/kg/day)	Background Intake Inhalation (BIi) (% of TC)	Pathway Specific HILs (mg/kg)				Soil Vapour HIL (mg/m^3) (eqn 12)	Derived Soil HIL (not rounded) (mg/kg) (eqn 2 for relevant pathways)
										Soil Ingestion (eqn 3)	Home grown produce	Dermal (eqn 6)	Dust (eqn 9)		
Dioxins (Sum PCCD, PCDF and PCBs TEQ WHO 2005)	2.30E-09	1	2.3E-09	100%	0.03	55%	3.71E-09	1.1E-09	5%	3.1E-04	NA	3.8E-04	2.9E+00	NA	1.72E-04
									NA	Pathway not assessed					

Appendix G. Analytical Data Tables

											Field ID	BH17_0.55	BH17_4.5	BH18_0.2	BH18_2.2	BH19_0.2	BH20_1.0	BH20_3.4
											Location Code	BH17	BH17	BH18	BH18	BH19	BH20	BH20
											Sampled Date	17/08/2020	17/08/2020	17/08/2020	17/08/2020	18/08/2020	18/08/2020	18/08/2020
											Lab Report No.	ES2029204	ES2029204	ES2029204	ES2029204	ES2029204	ES2029204	ES2029204
											Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal
ChemName	Units	EQL	CRCCARE No.10 Table 4 HSL-A (direct contact) Low Density Residential	NEPM 2013 Table 1A(1) HIL A Soil	NEPM 2013 Table 1A(3) HSL A/B Sand for Vapour Intrusion 0-1m	1-2m	2-4m	>4m	NEPM 2013 Table 1B(7) Management Limits, Coarse Soil, Residential/Parkland/Public Open Space	NEPM 2013 Table 1B(6) ESL, Coarse Soil, Urban Residential/Public Open Space	NEPM 2013 EILs - Urban residential and public open space							
Metals																		
Arsenic	mg/kg	5		100[#2]							100	7	14	5	10	5	<5	<5
Cadmium	mg/kg	1		20							3	<1	<1	<1	<1	<1	<1	<1
Chromium (III+VI)	mg/kg	2									415	12	7	9	19	22	25	6
Copper	mg/kg	5		6000							65	64	<5	17	32	26	<5	<5
Lead	mg/kg	5		300[#5]							1110	62	<5	14	82	27	<5	7
Mercury	mg/kg	0.1		40[#7]							1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2		400							35	7	<2	2	22	6	2	<2
Zinc	mg/kg	5		7400							75	117	<5	13	216	52	<5	16
Physiochemical parameters																		
Moisture Content	%	1										12.6	40.7	15.5	11.2	15.8	5.9	18
TRH - NEPM 2013 Fractions																		
TRH >C6 - C10	mg/kg	10	4400						700			<10	<10	<10	<10	<10	<10	<10
TRH >C10 - C16	mg/kg	50	3300						1000			<50	<50	<50	<50	<50	<50	<50
TRH >C16 - C34	mg/kg	100	4500						2500	300		<100	<100	<100	<100	<100	<100	<100
TRH >C34 - C40	mg/kg	100	6300						10,000	2800		<100	<100	<100	<100	<100	<100	<100
TRH >C10 - C40 (Sum of total)	mg/kg	50										<50	<50	<50	<50	<50	<50	<50
TRH >C6 - C10 less BTEX (F1)	mg/kg	10			45[#10]	70[#10]	110[#10]	200[#10]		180		<10	<10	<10	<10	<10	<10	<10
TRH >C10 - C16 less Naphthalene (F2)	mg/kg	50			110[#11]	240[#11]	440[#11]	NL[#12]		120		<50	<50	<50	<50	<50	<50	<50
TPH - NEPM 1999 Fractions																		
TPH C6 - C9	mg/kg	10										<10	<10	<10	<10	<10	<10	<10
TPH C10 - C14	mg/kg	50										<50	<50	<50	<50	<50	<50	<50
TPH C15 - C28	mg/kg	100										<100	<100	<100	<100	<100	<100	<100
TPH C29-C36	mg/kg	100										<100	<100	<100	<100	<100	<100	<100
TPH C10 - C36 (Sum of total)	mg/kg	50										<50	<50	<50	<50	<50	<50	<50
BTEXN																		
Benzene	mg/kg	0.2	100		0.5	0.5	0.5	0.5		50		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	mg/kg	0.5	4500		55	NL[#12]	NL[#12]	NL[#12]		70		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	mg/kg	0.5	1400		3	NL[#12]	NL[#12]	NL[#12]			170	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	0.5	14000		160	220	310	540		85		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene (m & p)	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene (o)	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Xylene Total	mg/kg	0.5	12000		40	60	95	170		105		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total BTEX	mg/kg	0.2										<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Polycyclic aromatic hydrocarbons (PAHs)																		
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5										0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5										0.9	0.6	0.6	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5										1.2	1.2	1.2	1.2	1.2	1.2	1.2
Acenaphthene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	mg/kg	0.5										0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a) pyrene	mg/kg	0.5								0.7		0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	mg/kg	0.5										0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	mg/kg	0.5										0.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
PAHs (Sum of total)	mg/kg	0.5		300[#13]								2.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Semi Volatile Organic Compounds (SVOCs)																		
3- & 4-Methylphenol	µg/kg	1000										<1000	<1000	<1000	<1000	<1000	<1000	<1000
Polychlorinated Biphenyls																		
PCBs (Sum of total)	mg/kg	0.1		1[#1]								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

ChemName	Units	EQL	CRCCARE No.10 Table 4 HSL-A (direct contact) Low Density Residential	NEPM 2013 Table 1A(1) HIL A Soil	NEPM 2013 Table 1A(3) HSL A/B Sand for Vapour Intrusion 0-1m	1-2m	2-4m	>4m	NEPM 2013 Table 1B(7) Management Limits, Coarse Soil, Residential/Parkland/Public Open Space	NEPM 2013 Table 1B(6) ESL, Coarse Soil, Urban Residential/Public Open Space	NEPM 2013 EILs - Urban residential and public open space	Field ID	BH17_0.55	BH17_4.5	BH18_0.2	BH18_2.2	BH19_0.2	BH20_1.0	BH20_3.4
												Location Code	BH17	BH17	BH18	BH18	BH19	BH20	BH20
												Sampled Date	17/08/2020	17/08/2020	17/08/2020	17/08/2020	18/08/2020	18/08/2020	18/08/2020
												Lab Report No.	ES2029204	ES2029204	ES2029204	ES2029204	ES2029204	ES2029204	ES2029204
												Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Phenols																			
2,4,5-trichlorophenol	mg/kg	0.5											<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-trichlorophenol	mg/kg	0.5											<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dichlorophenol	mg/kg	0.5											<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dimethylphenol	mg/kg	0.5											<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-dichlorophenol	mg/kg	0.5											<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-chlorophenol	mg/kg	0.5											<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-methylphenol	mg/kg	0.5											<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-nitrophenol	mg/kg	0.5											<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-chloro-3-methylphenol	mg/kg	0.5											<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	mg/kg	2		100									<2	<2	<2	<2	<2	<2	<2
Phenol	mg/kg	0.5		3000									<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Asbestos																			
Organic Fibre	g/kg	0.1											0	0	0	0	0	0	0
Synthetic Mineral Fibre	g/kg	0.1											0	0	0	0	0	0	0
Sample Weight	g	0.01											2.87	21	57.1	71.4	64	288	358
Description	Comment												1	1	1	1	1	1	1
Approved Presence/Absence	Comment												Yes	No	No	Yes [#14]	No	No	No
Asbestos (Trace)	Fibres	5											-	<5	<5	<5	<5	<5	<5
Asbestos Type	Comment												Ch	Nil	Nil	Ch	Nil	Nil	Nil

Env Stds Comments
#1:PCBs: HIL refers to non-dioxin like PCBs only. Where PCB source is known, or suspected at a site, a site-specific assessment of exposure to all PCBs (inc dioxin like PCBs) should be undertaken
#2:Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where appropriate (refer Shedule B7).
#3: Not used
#4:Assumed pH=6, refer Table 1B(2)
#5:Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considered. Site-specific bioavailability should be considered where appropriate.
#6:Not used
#7:Elemental mercury: HIL does not address elemental mercury. a site specific assessment should be considered if elemental mercury is present, or suspected to be present.
#8:Assumed CEC=20cmol/kg, refer Table 1B(3)
#9:Assumed CEC=20cmol/kg and pH=6.5, refer Table 1B(1)
#10:To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#11:To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#12:Derived soil HSL exceeds soil saturation concentraiton
#13:Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinogenic PAHs (should meet BaP TEQ HIL) & napthalene (should meet relevant HSL)
#14: No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
#15: Ch

										Field ID	BH21_1.3	QC101_200818	BH21_4.8	BH22_0.8	BH22_2.35-2.45
										Location Code	BH21	BH21	BH21	BH22	BH22
										Sampled Date	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
										Lab Report No.	ES2029204	ES2029204	ES2029204	ES2029204	ES2029204
										Sample Type	Normal	Field_D	Normal	Normal	Normal
ChemName	Units	EQL	CRCCARE No.10 Table 4 HSL-A (direct contact) Low Density Residential	NEPM 2013 Table 1A(1) HIL A Soil	NEPM 2013 Table 1A(3) HSL A/B Sand for Vapour Intrusion 0-1m	1-2m	2-4m	>4m	NEPM 2013 Table 1B(7) Management Limits, Coarse Soil, Residential/Parkland/Public Open Space	NEPM 2013 Table 1B(6) ESL, Coarse Soil, Urban Residential/Public Open Space	NEPM 2013 EILs - Urban residential and public open space					
Metals															
Arsenic	mg/kg	5		100[#2]							100	<5	<5	<5	5	<5
Cadmium	mg/kg	1		20							3	<1	<1	<1	<1	<1
Chromium (III+VI)	mg/kg	2									415	10	9	19	14	6
Copper	mg/kg	5		6000							65	77	68	<5	23	7
Lead	mg/kg	5		300[#5]							1110	88	128	<5	59	27
Mercury	mg/kg	0.1		40[#7]							1	0.2	0.2	<0.1	<0.1	<0.1
Nickel	mg/kg	2		400							35	3	3	<2	12	2
Zinc	mg/kg	5		7400							75	133	146	<5	48	37
Physiochemical parameters																
Moisture Content	%	1										10.9	13.5	18	13.7	11.2
TRH - NEPM 2013 Fractions																
TRH >C6 - C10	mg/kg	10	4400						700			<10	<10	<10	<10	<10
TRH >C10 - C16	mg/kg	50	3300						1000			<50	<50	<50	<50	<50
TRH >C16 - C34	mg/kg	100	4500						2500	300		<100	<100	<100	<100	<100
TRH >C34 - C40	mg/kg	100	6300						10,000	2800		<100	<100	<100	<100	<100
TRH >C10 - C40 (Sum of total)	mg/kg	50										<50	<50	<50	<50	<50
TRH >C6 - C10 less BTEX (F1)	mg/kg	10			45[#10]	70[#10]	110[#10]	200[#10]		180		<10	<10	<10	<10	<10
TRH >C10 - C16 less Naphthalene (F2)	mg/kg	50			110[#11]	240[#11]	440[#11]	NL[#12]		120		<50	<50	<50	<50	<50
TPH - NEPM 1999 Fractions																
TPH C6 - C9	mg/kg	10										<10	<10	<10	<10	<10
TPH C10 - C14	mg/kg	50										<50	<50	<50	<50	<50
TPH C15 - C28	mg/kg	100										<100	<100	<100	<100	<100
TPH C29-C36	mg/kg	100										<100	<100	<100	<100	<100
TPH C10 - C36 (Sum of total)	mg/kg	50										<50	<50	<50	<50	<50
BTEXN																
Benzene	mg/kg	0.2	100		0.5	0.5	0.5	0.5		50		<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	mg/kg	0.5	4500		55	NL[#12]	NL[#12]	NL[#12]		70		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	mg/kg	0.5	1400		3	NL[#12]	NL[#12]	NL[#12]			170	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	mg/kg	0.5	14000		160	220	310	540		85		<0.5	<0.5	<0.5	<0.5	<0.5
Xylene (m & p)	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
Xylene (o)	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
Xylene Total	mg/kg	0.5	12000		40	60	95	170		105		<0.5	<0.5	<0.5	<0.5	<0.5
Total BTEX	mg/kg	0.2										<0.2	<0.2	<0.2	<0.2	<0.2
Polycyclic aromatic hydrocarbons (PAHs)																
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5										0.6	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5										1.2	1.2	1.2	1.2	1.2
Acenaphthene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	mg/kg	0.5										<0.5	0.6	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a) pyrene	mg/kg	0.5								0.7		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	mg/kg	0.5										<0.5	0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	mg/kg	0.5										<0.5	0.9	<0.5	<0.5	<0.5
Fluorene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	mg/kg	0.5										<0.5	0.9	<0.5	0.5	<0.5
PAHs (Sum of total)	mg/kg	0.5		300[#13]								<0.5	2.9	<0.5	0.5	<0.5
Semi Volatile Organic Compounds (SVOCs)																
3- & 4-Methylphenol	µg/kg	1000										<1000	<1000	<1000	<1000	<1000
Polychlorinated Biphenyls																
PCBs (Sum of total)	mg/kg	0.1		1[#1]								<0.1	<0.1	<0.1	<0.1	<0.1

										Field ID	BH21_1.3	QC101_200818	BH21_4.8	BH22_0.8	BH22_2.35-2.45
										Location Code	BH21	BH21	BH21	BH22	BH22
										Sampled Date	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
										Lab Report No.	ES2029204	ES2029204	ES2029204	ES2029204	ES2029204
										Sample Type	Normal	Field_D	Normal	Normal	Normal
			CRCCARE No.10 Table 4 HSL-A (direct contact) Low Density	NEPM 2013 Table 1A(1) HIL A Soil	NEPM 2013 Table 1A(3) HSL A/B Sand for Vapour Intrusion				NEPM 2013 Table 1B(7) Management Limits, Coarse Soil, Residential/Parkland/Public Open Space	NEPM 2013 Table 1B(6) ESL, Coarse Soil, Urban Residential/Public Open Space	NEPM 2013 EILs - Urban residential and public open space				
ChemName	Units	EQL	Residential		0-1m	1-2m	2-4m	>4m							
Phenols															
2,4,5-trichlorophenol	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-trichlorophenol	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dichlorophenol	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dimethylphenol	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
2,6-dichlorophenol	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
2-chlorophenol	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
2-methylphenol	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
2-nitrophenol	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
4-chloro-3-methylphenol	mg/kg	0.5										<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	mg/kg	2		100								<2	<2	<2	<2	<2
Phenol	mg/kg	0.5		3000								<0.5	<0.5	<0.5	<0.5	<0.5
Asbestos																
Organic Fibre	g/kg	0.1										0	0	0	0	0
Synthetic Mineral Fibre	g/kg	0.1										0	0	0	0	0
Sample Weight	g	0.01										46.2	48.5	22.2	65.4	54.9
Description	Comment											1	1	1	1	1
Approved Presence/Absence	Comment											No	No	No	No	No
Asbestos (Trace)	Fibres	5										<5	<5	<5	<5	<5
Asbestos Type	Comment											Nil	Nil	Nil	Nil	Nil

Env Stds Comments
#1:PCBs: HIL refers to non-dioxin like PCBs only. Where PCB source is known, or suspected at a site, a site-specific assessment of exposure to all PCBs (inc dioxin like PCBs) should be undertaken
#2:Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where appropriate (refer Shedule B7).
#3: Not used
#4:Assumed pH=6, refer Table 1B(2)
#5:Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considered. Site-specific bioavailability should be considered where appropriate.
#6:Not used
#7:Elemental mercury: HIL does not address elemental mercury. a site specific assessment should be considered if elemental mercury is present, or suspected to be present.
#8:Assumed CEC=20cmol/kg, refer Table 1B(3)
#9:Assumed CEC=20cmol/kg and pH=6.5, refer Table 1B(1)
#10:To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#11:To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#12:Derived soil HSL exceeds soil saturation concentraiton
#13:Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinogenic PAHs (should meet BaP TEQ HIL) & napthalene (should meet relevant HSL)
#14: No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
#15: Ch

				Field ID	BH17_0.55	BH17_4.5	BH18_0.2	BH18_2.2	BH19_0.2	BH20_1.0	BH20_3.4	BH21_1.3	QC101_200818	BH21_4.8	BH22_0.8	BH22_2.35-2.45
				Location Code	BH17	BH17	BH18	BH18	BH19	BH20	BH20	BH21	BH21	BH21	BH22	BH22
				Sampled Date	17/08/2020	17/08/2020	17/08/2020	17/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
				Lab Report No.	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082
				Sample Type	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Field_D	Primary	Primary	Primary
ChemName	Units	EQL	Jacobs 2020 Derived Dioxins in soil criteria for residential - HIL A [#1]	Jacobs 2020 Derived Dioxins in soil criteria for public open space - HIL C [#1]												
Dioxins LOR																
1234678-HpCDD LOR	pg/g	-			<2.5	<2.5	<2.5	<2.5	<2.5	<2.4	<2.4	<2.5	<2.5	<2.5	<2.5	<2.4
1234678-HpCDF LOR	pg/g	-			<2.5	<2.5	<2.5	<2.5	<2.5	<2.4	<2.4	<2.5	<2.5	<2.5	<2.5	<2.4
1234789-HpCDF LOR	pg/g	-			<2.5	<2.5	<2.5	<2.5	<2.5	<2.4	<2.4	<2.5	<2.5	<2.5	<2.5	<2.4
123478-HxCDD LOR	pg/g	-			<2.5	<2.5	<2.5	<2.5	<2.5	<2.4	<2.4	<2.5	<2.5	<2.5	<2.5	<2.4
123478-HxCDF LOR	pg/g	-			<2.5	<2.5	<2.5	<2.5	<2.5	<2.4	<2.4	<2.5	<2.5	<2.5	<2.5	<2.4
123678-HxCDD LOR	pg/g	-			<2.5	<2.5	<2.5	<2.5	<2.5	<2.4	<2.4	<2.5	<2.5	<2.5	<2.5	<2.4
123678-HxCDF LOR	pg/g	-			<2.5	<2.5	<2.5	<2.5	<2.5	<2.4	<2.4	<2.5	<2.5	<2.5	<2.5	<2.4
123789-HxCDD LOR	pg/g	-			<2.5	<2.5	<2.5	<2.5	<2.5	<2.4	<2.4	<2.5	<2.5	<2.5	<2.5	<2.4
123789-HxCDF LOR	pg/g	-			<2.5	<2.5	<2.5	<2.5	<2.5	<2.4	<2.4	<2.5	<2.5	<2.5	<2.5	<2.4
12378-PeCDD LOR	pg/g	-			<2.5	<2.5	<2.5	<2.5	<2.5	<2.4	<2.4	<2.5	<2.5	<2.5	<2.5	<2.4
12378-PeCDF LOR	pg/g	-			<2.5	<2.5	<2.5	<2.5	<2.5	<2.4	<2.4	<2.5	<2.5	<2.5	<2.5	<2.4
23478-PeCDF LOR	pg/g	-			<2.5	<2.5	<2.5	<2.5	<2.5	<2.4	<2.4	<2.5	<2.5	<2.5	<2.5	<2.4
2378-TCDD LOR	pg/g	-			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
OCDD LOR	pg/g	-			<10	<9.9	<9.8	<10	<9.9	<9.8	<9.8	<9.8	<9.8	<9.9	<9.9	<9.8
OCDF LOR	pg/g	-			<5	<5	<4.9	<5	<5	<4.9	<4.9	<4.9	<4.9	<5	<4.9	<4.9
Dioxins & Furans																
1,2,3,4,6,7,8-Heptachlorooxanthrene	pg/g	[#2]			1250	83.1	58.2	2550	692	101	111	235	168	65	523	435
1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/g	[#2]			172	<2.5	<2.5	637	52.7	<2.4	<2.4	30.5	27.4	<2.5	41	66.3
1,2,3,4,7,8,9-Heptachlorodibenzofuran	pg/g	[#2]			14.5	<2.5	<2.5	39.1	3.8	<2.4	<2.4	<2.5	<2.5	<2.5	3.3	4.9
1,2,3,4,7,8-Hexachlorooxanthrene	pg/g	[#2]			11.3	<2.5	<2.5	37.1	5.6	<2.4	<2.4	5.2	3.3	<2.5	4.5	11.7
1,2,3,4,7,8-Hexachlorodibenzofuran	pg/g	[#2]			10.9	<2.5	<2.5	65.8	5.2	<2.4	<2.4	3.4	<2.5	<2.5	5.4	7.3
1,2,3,6,7,8-Hexachlorooxanthrene	pg/g	[#2]			46.3	2.7	<2.5	159	15.1	<2.4	3.8	6.6	6.2	<2.5	15.3	19.5
1,2,3,6,7,8-Hexachlorodibenzofuran	pg/g	[#2]			6.6	<2.5	3.1	39.4	5.1	<2.4	<2.4	3.5	<2.5	<2.5	3.9	5.3
1,2,3,7,8,9-Hexachlorodibenzofuran	pg/g	[#2]			<2.5	<2.5	<2.5	<2.5	<2.5	<2.4	<2.4	<2.5	<2.5	<2.5	<2.5	<2.4
1,2,3,7,8-Pentachlorooxanthrene	pg/g	[#2]			9.2	<2.5	<2.5	43.3	7.3	<2.4	<2.4	2.7	3.2	<2.5	3.9	8.9
1,2,3,7,8-Pentachlorodibenzofuran	pg/g	[#2]			3.3	<2.5	<2.5	11.3	<2.5	<2.4	<2.4	2.6	<2.5	<2.5	<2.5	4.3
2,3,4,6,7,8-Hexachlorodibenzofuran	pg/g	[#2]			7.3	<2.5	<2.5	42.1	2.5	<2.4	<2.4	2.7	<2.5	<2.5	<2.5	5
2,3,4,7,8-Pentachlorodibenzofuran	pg/g	[#2]			3.4	<2.5	<2.5	14.4	<2.5	<2.4	<2.4	3	2.6	<2.5	<2.5	5.5
2,3,7,8-Tetrachlorodibenzofuran	pg/g	[#2]			2.3	<0.5	<0.5	9.3	1.8	<0.5	1.5	2.2	1.2	<0.5	2.1	4.5
1,2,3,4,6,7,8,9-Octachlorooxanthrene	pg/g	[#2]			48,400	3020	5070	22,000	70,100	11,500	6230	11,500	8060	4920	31,600	26,300
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	pg/g	[#2]			1050	<5	7.6	793	147	<4.9	<4.9	63.1	62.4	<5	164	290
Dioxins Total LOR [#3]																
Hexa-Dioxins LOR	pg/g	-			<25	<17.4	<9.8	<20	<19.9	<12.2	<19.6	<27	<22.1	<9.9	<19.8	<26.9
Hexa-Furans LOR	pg/g	-			<22.5	<9.9	<14.7	<25	<19.9	<2.4	<2.4	<22.1	<22.1	<2.5	<24.7	<26.9
Octa-Dioxin LOR	pg/g	-			<10	<9.9	<9.8	<10	<9.9	9.8	<9.8	<9.8	<9.8	<9.9	<9.9	<9.8
Octa-Furan LOR	pg/g	-			5	<5	<4.9	<5	<5	<4.9	4.9	<4.9	<4.9	<5	<4.9	<4.9
Penta-Dioxins LOR	pg/g	-			<17.5	<22.3	<2.5	<22.5	<19.9	<2.4	<22	<17.2	<19.7	<14.9	<29.7	<22
Penta-Furans LOR	pg/g	-			<25	<2.5	<19.6	<35	<22.4	<2.4	<2.4	<27	<27	<2.5	<22.3	<31.8
Hepta-Dioxins LOR	pg/g	-			<5	<5	<4.9	<5	<5	<4.9	<4.9	<4.9	<4.9	<5	<4.9	<4.9
Hepta-Furans LOR	pg/g	-			10	<7.4	<4.9	<10	<9.9	<7.3	<7.3	<9.8	<9.8	<2.5	<9.9	<9.8
Tetra-Furans LOR	pg/g	-			<8	<0.5	<4.4	<9.5	<8	<0.5	<5.9	<8.4	8.8	<0.5	<8.9	<7.8
Tetra-Dioxins LOR	pg/g	-			<6.5	<5.5	<0.5	<5.5	<5	<0.5	<4.4	<5.4	<4.9	<1.5	<4.9	<5.9
Dioxins Total																
Hexa-Dioxins	pg/g	[#3]			525	733	<9.8	1910	341	20.3	275	210	128	154	227	532
Hexa-Furans	pg/g	[#3]			254	<9.9	<14.7	1500	102	<2.4	<2.4	47.6	35.1	<2.5	63.6	106
Octa-Dioxin	pg/g	[#3]			48,400	3020	5070	22,000	70,100	11,500	6230	11,500	8060	4920	31,600	26,300
Octa-Furan	pg/g	[#3]			1050	<5	7.6	793	147	<4.9	<4.9	63.1	62.4	<5	164	290
Penta-Dioxins	pg/g	[#3]			222	139	<2.5	801	239	<2.4	27.6	95.5	72.8	43.5	88.8	272
Penta-Furans	pg/g	[#3]			84.7	<2.5	46.5	383	59.3	<2.4	<2.4	45.5	40.1	<2.5	49.3	88.2
Hepta-Dioxins	pg/g	[#3]			2430	507	159	5830	1380	222	436	500	337	223	1080	996
Hepta-Furans	pg/g	[#3]			815	<7.4	6.1	1660	184	<7.3	<7.3	75.9	71.4	<2.5	127	189
Total TEQ	-	[#3]			1	1	1	1	1	1	1	1	1	1	1	1
Tetra-Furans	pg/g	[#3]			57.9	<0.5	40.2	254	58.8	<0.5	17.9	69.4	40.8	<0.5	71.9	103
Tetra-Dioxins	pg/g	[#3]			158	202	<0.5	525	213	<0.5	12.1	83.7	40.2	181	76.5	213

					Field ID	BH17_0.55	BH17_4.5	BH18_0.2	BH18_2.2	BH19_0.2	BH20_1.0	BH20_3.4	BH21_1.3	QC101_200818	BH21_4.8	BH22_0.8	BH22_2.35-2.45
					Location Code	BH17	BH17	BH18	BH18	BH19	BH20	BH20	BH21	BH21	BH21	BH22	BH22
					Sampled Date	17/08/2020	17/08/2020	17/08/2020	17/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
					Lab Report No.	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082
					Sample Type	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Field_D	Primary	Primary	Primary
ChemName	Units	EQL	Jacobs 2020 Derived Dioxins in soil criteria for residential - HIL A [#1]	Jacobs 2020 Derived Dioxins in soil criteria for public open space - HIL C [#1]													
Dioxins WHO-TEQ 0xLOR [#4]																	
1234678-HpCDD WHO-TEQ1 (zero)	pg/g	1.25				12.5	0.83	0.58	25.5	6.92	1.01	1.11	2.35	1.68	0.65	5.23	4.35
1234678-HpCDF WHO-TEQ1 (zero)	pg/g	1.25				1.72	0	0	6.37	0.53	0	0	0.31	0.27	0	0.41	0.66
1234789-HpCDF WHO-TEQ1 (zero)	pg/g	1.25				0.15	0	0	0.39	0.04	0	0	0	0	0	0.03	0.05
123478-HxCDD WHO-TEQ1 (zero)	pg/g	1.25				1.13	0	0	3.71	0.56	0	0	0.52	0.33	0	0.45	1.17
123478-HxCDF WHO-TEQ1 (zero)	pg/g	1.25				1.09	0	0	6.58	0.52	0	0	0.34	0	0	0.54	0.73
123678-HxCDD WHO-TEQ1 (zero)	pg/g	1.25				4.63	0.27	0	15.9	1.51	0	0.38	0.66	0.62	0	1.53	1.95
123678-HxCDF WHO-TEQ1 (zero)	pg/g	1.25				0.66	0	0.31	3.94	0.51	0	0	0.35	0	0	0.39	0.53
123789-HxCDD WHO-TEQ1 (zero)	pg/g	1.25				2.78	0.69	0	7.28	0.94	0	0.74	0.43	0.47	0	0.85	1.58
123789-HxCDF WHO-TEQ1 (zero)	pg/g	1.25				0	0	0	0	0	0	0	0	0	0	0	0
12378-PeCDD WHO-TEQ1 (zero)	pg/g	1.25				9.21	0	0	43.3	7.26	0	0	2.69	3.23	0	3.93	8.94
12378-PeCDF WHO-TEQ1 (zero)	pg/g	1.25				0.1	0	0	0.34	0	0	0	0.08	0	0	0	0.13
23478-PeCDF WHO-TEQ1 (zero)	pg/g	1.25				1.01	0	0	4.32	0	0	0	0.9	0.79	0	0	1.66
2378-TCDD WHO-TEQ1 (zero)	pg/g	0.25				2.4	0	0	5.16	2.61	0	0	0	1.14	0	11.2	2.18
OCDD WHO-TEQ1 (zero)	pg/g	5				14.52	0.91	1.52	6.6	21.03	3.45	1.87	3.45	2.42	1.48	9.48	7.89
OCDF WHO-TEQ1 (zero)	pg/g	2.5				0.32	0	0	0.24	0.04	0	0	0.02	0.02	0	0.05	0.09
Total TEQ WHO-TEQ1 (zero)	pg/g	0				53.17	2.7	2.41	134.76	42.88	4.46	4.25	12.57	11.09	2.13	34.29	32.86
Dioxins I-TEQ 0xLOR [#4]																	
1234678-HpCDD I-TEQ1 (zero)	pg/g	-				12.5	0.83	0.58	25.5	6.92	1.01	1.11	2.35	1.68	0.65	5.23	4.35
1234678-HpCDF I-TEQ1 (zero)	pg/g	-				1.72	0	0	6.37	0.53	0	0	0.31	0.27	0	0.41	0.66
1234789-HpCDF I-TEQ1 (zero)	pg/g	-				0.15	0	0	0.39	0.04	0	0	0	0	0	0.03	0.05
123478-HxCDD I-TEQ1 (zero)	pg/g	-				1.13	0	0	3.71	0.56	0	0	0.52	0.33	0	0.45	1.17
123478-HxCDF I-TEQ1 (zero)	pg/g	-				1.09	0	0	6.58	0.52	0	0	0.34	0	0	0.54	0.73
123678-HxCDD I-TEQ1 (zero)	pg/g	-				4.63	0.27	0	15.9	1.51	0	0.38	0.66	0.62	0	1.53	1.95
123678-HxCDF I-TEQ1 (zero)	pg/g	-				0.66	0	0.31	3.94	0.51	0	0	0.35	0	0	0.39	0.53
123789-HxCDD I-TEQ1 (zero)	pg/g	-				2.78	0.69	0	7.28	0.94	0	0.74	0.43	0.47	0	0.85	1.58
123789-HxCDF I-TEQ1 (zero)	pg/g	-				0	0	0	0	0	0	0	0	0	0	0	0
12378-PeCDD I-TEQ1 (zero)	pg/g	-				4.61	0	0	21.65	3.63	0	0	1.35	1.62	0	1.97	4.47
12378-PeCDF I-TEQ1 (zero)	pg/g	-				0.16	0	0	0.57	0	0	0	0.13	0	0	0	0.22
23478-PeCDF I-TEQ1 (zero)	pg/g	-				1.69	0	0	7.2	0	0	0	1.5	1.32	0	0	2.77
2378-TCDD I-TEQ1 (zero)	pg/g	-				2.4	0	0	5.16	2.61	0	0	0	1.14	0	11.2	2.18
OCDD I-TEQ1 (zero)	pg/g	-				48.4	3.02	5.07	22	70.1	11.5	6.23	11.5	8.06	4.92	31.6	26.3
OCDF I-TEQ1 (zero)	pg/g	-				1.05	0	0.01	0.79	0.15	0	0	0.06	0.06	0	0.16	0.29
Total TEQ I-TEQ1 (zero)	pg/g	-				83.92	4.81	5.96	132.18	88.43	12.51	8.61	19.98	15.68	5.57	54.56	48.19
Dioxins WHO-TEQ 0.5xLOR [#5]																	
1234678-HpCDF WHO-TEQ2 (0.5 LOR)	pg/g	-				1.72	0.01	0.01	6.37	0.53	0.01	0.01	0.31	0.27	0.01	0.41	0.66
1234789-HpCDF WHO-TEQ2 (0.5 LOR)	pg/g	-				0.15	0.01	0.01	0.39	0.04	0.01	0.01	0.01	0.01	0.01	0.03	0.05
123478-HxCDD WHO-TEQ2 (0.5 LOR)	pg/g	-				1.13	0.12	0.12	3.71	0.56	0.12	0.12	0.52	0.33	0.12	0.45	1.17
123478-HxCDF WHO-TEQ2 (0.5 LOR)	pg/g	-				1.09	0.12	0.12	6.58	0.52	0.12	0.12	0.34	0.12	0.12	0.54	0.73
123678-HxCDD WHO-TEQ2 (0.5 LOR)	pg/g	-				4.63	0.27	0.12	15.9	1.51	0.12	0.38	0.66	0.62	0.12	1.53	1.95
123678-HxCDF WHO-TEQ2 (0.5 LOR)	pg/g	-				0.66	0.12	0.31	3.94	0.51	0.12	0.12	0.35	0.12	0.12	0.39	0.53
123789-HxCDD WHO-TEQ2 (0.5 LOR)	pg/g	-				2.78	0.69	0.12	7.28	0.94	0.12	0.74	0.43	0.47	0.12	0.85	1.58
123789-HxCDF WHO-TEQ2 (0.5 LOR)	pg/g	-				0.13	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
12378-PeCDD WHO-TEQ2 (0.5 LOR)	pg/g	-				9.21	1.24	1.23	43.3	7.26	1.22	1.22	2.69	3.23	1.24	3.93	8.94
12378-PeCDF WHO-TEQ2 (0.5 LOR)	pg/g	-				0.1	0.04	0.04	0.34	0.04	0.04	0.04	0.08	0.04	0.04	0.04	0.13
23478-PeCDF WHO-TEQ2 (0.5 LOR)	pg/g	-				1.01	0.37	0.37	4.32	0.37	0.37	0.37	0.9	0.79	0.37	0.37	1.66
2378-TCDD WHO-TEQ2 (0.5 LOR)	pg/g	-				2.4	0.25	0.25	5.16	2.61	0.24	0.24	0.25	1.14	0.25	11.2	2.18
OCDD WHO-TEQ2 (0.5 LOR)	pg/g	-				14.52	0.91	1.52	6.6	21.03	3.45	1.87	3.45	2.42	1.48	9.48	7.89
OCDF WHO-TEQ2 (0.5 LOR)	pg/g	-				0.32	0	0	0.24	0.04	0	0	0.02	0.02	0	0.05	0.09
Total TEQ WHO-TEQ2 (0.5 LOR)	pg/g	-				53.29	5.26	5.07	134.89	43.42	7.24	6.75	12.95	11.63	4.94	34.94	32.98
Dioxins I-TEQ 0.5xLOR [#5]		-															
1234678-HpCDD I-TEQ2 (0.5 LOR)	pg/g	-				12.5	0.83	0.58	25.5	6.92	1.01	1.11	2.35	1.68	0.65	5.23	4.35
1234678-HpCDF I-TEQ2 (0.5 LOR)	pg/g	-				1.72	0.01	0.01	6.37	0.53	0.01	0.01	0.31	0.27	0.01	0.41	0.66
1234789-HpCDF I-TEQ2 (0.5 LOR)	pg/g	-				0.15	0.01	0.01	0.39	0.04	0.01	0.01	0.01	0.01	0.01	0.03	0.05
123478-HxCDD I-TEQ2 (0.5 LOR)	pg/g	-				1.13	0.12	0.12	3.71	0.56	0.12	0.12	0.52	0.33	0.12	0.45	1.17
123478-HxCDF I-TEQ2 (0.5 LOR)	pg/g	-				1.09	0.12	0.12	6.58	0.52	0.12	0.12	0.34	0.12	0.12	0.54	0.73
123678-HxCDD I-TEQ2 (0.5 LOR)	pg/g	-				4.63	0.27	0.12	15.9	1.51	0.12	0.38	0.66	0.62	0.12	1.53	1.95
123678-HxCDF I-TEQ2 (0.5 LOR)	pg/g	-				0.66	0.12	0.31	3.94	0.51	0.12	0.12	0.35	0.12	0.12	0.39	0.53
123789-HxCDD I-TEQ2 (0.5 LOR)	pg/g	-				2.78	0.69	0.12	7.28	0.94	0.12	0.74	0.43	0.47	0.12	0.85	1.58
123789-HxCDF I-TEQ2 (0.5 LOR)	pg/g	-				0.13	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
12378-PeCDD I-TEQ2 (0.5 LOR)	pg/g	-				4.61	0.62	0.61	21.65	3.63	0.61	0.61	1.35	1.62	0.62	1.97	4.47
12378-PeCDF I-TEQ2 (0.5 LOR)	pg/g	-				0.16	0.06	0.06	0.57	0.06	0.06	0.06	0.13	0.06	0.06	0.06	0.22
23478-PeCDF I-TEQ2 (0.5 LOR)	pg/g	-				1.69	0.62	0.61	7.2	0.62	0.61	0.61	1.5	1.32	0.62	0.62	2.77
2378-TCDD I-TEQ2 (0.5 LOR)	pg/g	-				2.4	0.25	0.25	5.16	2.61	0.24	0.24	0.25	1.14	0.25	11.2	2.18
OCDD I-TEQ2 (0.5 LOR)	pg/g	-				48.4	3.02	5.07	22	70.1	11.5	6.23	11.5	8.06	4.92	31.6	26.3
OCDF I-TEQ2 (0.5 LOR)	pg/g	-				1.05	0	0.01	0.79	0.15	0	0	0.06	0.06	0	0.16	0.29
Total TEQ I-TEQ2 (0.5 LOR)	pg/g	-				84.04	7.03	8.29	132.3	89.24	14.95	10.77	20.36	16.25	8.04	55.48	48.32

					Field ID	BH17_0.55	BH17_4.5	BH18_0.2	BH18_2.2	BH19_0.2	BH20_1.0	BH20_3.4	BH21_1.3	QC101_200818	BH21_4.8	BH22_0.8	BH22_2.35-2.45
					Location Code	BH17	BH17	BH18	BH18	BH19	BH20	BH20	BH21	BH21	BH21	BH22	BH22
					Sampled Date	17/08/2020	17/08/2020	17/08/2020	17/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
					Lab Report No.	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082
					Sample Type	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Field_D	Primary	Primary	Primary
ChemName	Units	EQL	Jacobs 2020 Derived Dioxins in soil criteria for residential - HIL A [#1]	Jacobs 2020 Derived Dioxins in soil criteria for public open space - HIL C [#1]													
Dioxins WHO-TEQ 1xLOR [#6]																	
1234678-HpCDD WHO-TEQ3 (LOR)	pg/g	1.25				12.5	0.83	0.58	25.5	6.92	1.01	1.11	2.35	1.68	0.65	5.23	4.35
1234678-HpCDF WHO-TEQ3 (LOR)	pg/g	1.25				1.72	0.02	0.02	6.37	0.53	0.02	0.02	0.31	0.27	0.02	0.41	0.66
1234789-HpCDF WHO-TEQ3 (LOR)	pg/g	1.25				0.15	0.02	0.02	0.39	0.04	0.02	0.02	0.02	0.02	0.02	0.03	0.05
123478-HxCDD WHO-TEQ3 (LOR)	pg/g	1.25				1.13	0.25	0.25	3.71	0.56	0.24	0.24	0.52	0.33	0.25	0.45	1.17
123478-HxCDF WHO-TEQ3 (LOR)	pg/g	1.25				1.09	0.25	0.25	6.58	0.52	0.24	0.24	0.34	0.25	0.25	0.54	0.73
123678-HxCDD WHO-TEQ3 (LOR)	pg/g	1.25				4.63	0.27	0.25	15.9	1.51	0.24	0.38	0.66	0.62	0.25	1.53	1.95
123678-HxCDF WHO-TEQ3 (LOR)	pg/g	1.25				0.66	0.25	0.31	3.94	0.51	0.24	0.24	0.35	0.25	0.25	0.39	0.53
123789-HxCDD WHO-TEQ3 (LOR)	pg/g	1.25				2.78	0.69	0.25	7.28	0.94	0.24	0.74	0.43	0.47	0.25	0.85	1.58
123789-HxCDF WHO-TEQ3 (LOR)	pg/g	1.25				0.25	0.25	0.25	0.25	0.25	0.24	0.24	0.25	0.25	0.25	0.25	0.24
12378-PeCDD WHO-TEQ3 (LOR)	pg/g	1.25				9.21	2.48	2.46	43.3	7.26	2.45	2.44	2.69	3.23	2.48	3.93	8.94
12378-PeCDF WHO-TEQ3 (LOR)	pg/g	1.25				0.1	0.07	0.07	0.34	0.07	0.07	0.07	0.08	0.07	0.07	0.07	0.13
2378-TCDD WHO-TEQ3 (LOR)	pg/g	0.25				2.4	0.5	0.49	5.16	2.61	0.49	0.49	0.49	1.14	0.5	11.2	2.18
23478-PeCDF WHO-TEQ3 (LOR)	pg/g	1.25				1.01	0.74	0.74	4.32	0.75	0.73	0.73	0.9	0.79	0.74	0.74	1.66
OCDD WHO-TEQ3 (LOR)	pg/g	5				14.52	0.91	1.52	6.6	21.03	3.45	1.87	3.45	2.42	1.48	9.48	7.89
OCDF WHO-TEQ3 (LOR)	pg/g	2.5				0.32	0	0	0.24	0.04	0	0	0.02	0.02	0	0.05	0.09
Total TEQ WHO-TEQ3 (LOR)	pg/g	0	110	172		53.42	7.83	7.74	135.01	43.95	10.01	9.26	13.34	12.17	7.76	35.6	33.1
Dioxins I-TEQ 1xLOR [#6]																	
1234678-HpCDD I-TEQ3 (LOR)	pg/g	-				12.5	0.83	0.58	25.5	6.92	1.01	1.11	2.35	1.68	0.65	5.23	4.35
1234678-HpCDF I-TEQ3 (LOR)	pg/g	-				1.72	0.02	0.02	6.37	0.53	0.02	0.02	0.31	0.27	0.02	0.41	0.66
1234789-HpCDF I-TEQ3 (LOR)	pg/g	-				0.15	0.02	0.02	0.39	0.04	0.02	0.02	0.02	0.02	0.02	0.03	0.05
123478-HxCDD I-TEQ3 (LOR)	pg/g	-				1.13	0.25	0.25	3.71	0.56	0.24	0.24	0.52	0.33	0.25	0.45	1.17
123478-HxCDF I-TEQ3 (LOR)	pg/g	-				1.09	0.25	0.25	6.58	0.52	0.24	0.24	0.34	0.25	0.25	0.54	0.73
123678-HxCDD I-TEQ3 (LOR)	pg/g	-				4.63	0.27	0.25	15.9	1.51	0.24	0.38	0.66	0.62	0.25	1.53	1.95
123678-HxCDF I-TEQ3 (LOR)	pg/g	-				0.66	0.25	0.31	3.94	0.51	0.24	0.24	0.35	0.25	0.25	0.39	0.53
123789-HxCDD I-TEQ3 (LOR)	pg/g	-				2.78	0.69	0.25	7.28	0.94	0.24	0.74	0.43	0.47	0.25	0.85	1.58
123789-HxCDF I-TEQ3 (LOR)	pg/g	-				0.25	0.25	0.25	0.25	0.25	0.24	0.24	0.25	0.25	0.25	0.25	0.24
12378-PeCDD I-TEQ3 (LOR)	pg/g	-				4.61	1.24	1.23	21.65	3.63	1.22	1.22	1.35	1.62	1.24	1.97	4.47
12378-PeCDF I-TEQ3 (LOR)	pg/g	-				0.16	0.12	0.12	0.57	0.12	0.12	0.12	0.13	0.12	0.12	0.12	0.22
23478-PeCDF I-TEQ3 (LOR)	pg/g	-				1.69	1.24	1.23	7.2	1.24	1.22	1.22	1.5	1.32	1.24	1.24	2.77
2378-TCDD I-TEQ3 (LOR)	pg/g	-				2.4	0.5	0.49	5.16	2.61	0.49	0.49	0.49	1.14	0.5	11.2	2.18
OCDD I-TEQ3 (LOR)	pg/g	-				48.4	3.02	5.07	22	70.1	11.5	6.23	11.5	8.06	4.92	31.6	26.3
OCDF I-TEQ3 (LOR)	pg/g	-				1.05	0	0.01	0.79	0.15	0	0	0.06	0.06	0	0.16	0.29
Total TEQ I-TEQ3 (LOR)	pg/g	-				84.17	9.25	10.61	132.43	90.04	17.38	12.94	20.74	16.81	10.51	56.41	48.44
Dioxins WHO-TEF																	
1234678-HpCDD WHO-TEF	pg/g	-				0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1234678-HpCDF WHO-TEF	pg/g	-				0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1234789-HpCDF WHO-TEF	pg/g	-				0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
123478-HxCDD WHO-TEF	pg/g	-				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123478-HxCDF WHO-TEF	pg/g	-				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123678-HxCDD WHO-TEF	pg/g	-				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123678-HxCDF WHO-TEF	pg/g	-				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123789-HxCDD WHO-TEF	pg/g	-				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123789-HxCDF WHO-TEF	pg/g	-				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
12378-PeCDD WHO-TEF	pg/g	-				1	1	1	1	1	1	1	1	1	1	1	1
12378-PeCDF WHO-TEF	pg/g	-				0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
23478-PeCDF WHO-TEF	pg/g	-				0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
2378-TCDD WHO-TEF	pg/g	-				1	1	1	1	1	1	1	1	1	1	1	1
OCDD WHO-TEF	pg/g	-				0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
OCDF WHO-TEF	pg/g	-				0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
Dioxins I-TEF																	
1234678-HpCDD I-TEF	pg/g	-				0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1234678-HpCDF I-TEF	pg/g	-				0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1234789-HpCDF I-TEF	pg/g	-				0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
123478-HxCDD I-TEF	pg/g	-				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123478-HxCDF I-TEF	pg/g	-				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123678-HxCDD I-TEF	pg/g	-				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123678-HxCDF I-TEF	pg/g	-				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123789-HxCDD I-TEF	pg/g	-				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123789-HxCDF I-TEF	pg/g	-				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
12378-PeCDD I-TEF	pg/g	-				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
12378-PeCDF I-TEF	pg/g	-				0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
23478-PeCDF I-TEF	pg/g	-				0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
2378-TCDD I-TEF	pg/g	-				1	1	1	1	1	1	1	1	1	1	1	1
OCDD I-TEF	pg/g	-				0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
OCDF I-TEF	pg/g	-				0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

				Field ID	BH17_0.55	BH17_4.5	BH18_0.2	BH18_2.2	BH19_0.2	BH20_1.0	BH20_3.4	BH21_1.3	QC101_200818	BH21_4.8	BH22_0.8	BH22_2.35-2.45
				Location Code	BH17	BH17	BH18	BH18	BH19	BH20	BH20	BH21	BH21	BH21	BH22	BH22
				Sampled Date	17/08/2020	17/08/2020	17/08/2020	17/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020	18/08/2020
				Lab Report No.	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082	EB2090082
				Sample Type	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Field_D	Primary	Primary	Primary
ChemName	Units	EQL	Jacobs 2020 Derived Dioxins in soil criteria for residential - HIL A [#1]	Jacobs 2020 Derived Dioxins in soil criteria for public open space - HIL C [#1]												
PCDDs and PCDFs																
1234678-HpCDD WHO-TEQ2 (0.5 LOR)	pg/g	-			12.5	0.83	0.58	25.5	6.92	1.01	1.11	2.35	1.68	0.65	5.23	4.35
1,2,3,7,8,9-Hexachlorooxanthrene	pg/g	-			27.8	6.9	<2.5	72.8	9.4	<2.4	7.4	4.3	4.7	<2.5	8.5	15.8
2,3,7,8-Tetrachlorooxanthrene	pg/g	-			2.4	<0.5	<0.5	5.2	2.6	<0.5	<0.5	<0.5	1.1	<0.5	11.2	2.2
234678-HxCDF I-TEF	pg/g	-			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
234678-HxCDF I-TEQ1 (zero)	pg/g	-			0.73	0	0	4.21	0.25	0	0	0.27	0	0	0	0.5
234678-HxCDF I-TEQ2 (0.5 LOR)	pg/g	-			0.73	0.12	0.12	4.21	0.25	0.12	0.12	0.27	0.12	0.12	0.12	0.5
234678-HxCDF I-TEQ3 (LOR)	pg/g	-			0.73	0.25	0.25	4.21	0.25	0.24	0.24	0.27	0.25	0.25	0.25	0.5
234678-HxCDF WHO-TEQ3 (LOR)	pg/g	-			0.73	0.25	0.25	4.21	0.25	0.24	0.24	0.27	0.25	0.25	0.25	0.5
234678-HxCDF LOR pg/g	pg/g	-			2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.5	2.5	2.5	2.5	2.4
234678-HxCDF WHO-TEQ1 (zero)	pg/g	-			0.73	0	0	4.21	0.25	0	0	0.27	0	0	0	0.5
234678-HxCDF WHO-TEQ2 (0.5 LOR)	pg/g	-			0.73	0.12	0.12	4.21	0.25	0.12	0.12	0.27	0.12	0.12	0.12	0.5
234678-HxCDF WHO-TEF	pg/g	-			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
2378-TCDF I-TEF	pg/g	-			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
2378-TCDF I-TEQ1 (zero)	pg/g	-			0.23	0	0	0.93	0.18	0	0.15	0.22	0.12	0	0.21	0.45
2378-TCDF I-TEQ2 (0.5 LOR)	pg/g	-			0.23	0.02	0.02	0.93	0.18	0.02	0.15	0.22	0.12	0.02	0.21	0.45
2378-TCDF WHO-TEQ2 (0.5 LOR)	pg/g	-			0.23	0.02	0.02	0.93	0.18	0.02	0.15	0.22	0.12	0.02	0.21	0.45
2378-TCDF I-TEQ3 (LOR)	pg/g	-			0.23	0.05	0.05	0.93	0.18	0.05	0.15	0.22	0.12	0.05	0.21	0.45
2378-TCDF WHO-TEQ1 (zero)	pg/g	-			0.23	0	0	0.93	0.18	0	0.15	0.22	0.12	0	0.21	0.45
2378-TCDF WHO-TEQ3 (LOR)	pg/g	-			0.23	0.05	0.05	0.93	0.18	0.05	0.15	0.22	0.12	0.05	0.21	0.45
2378-TCDF LOR pg/g	pg/g	-			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
2378-TCDF WHO-TEF	pg/g	-			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Dioxins Total Peaks																
Hexa-Dioxins No. of Peaks	pg/g	-			10	7	4	8	8	5	8	11	9	4	8	11
Hexa-Furans No. of Peaks	pg/g	-			9	4	6	10	8	1	1	9	9	1	10	11
Octa-Dioxin No. of Peaks	pg/g	-			1	1	1	1	1	1	1	1	1	1	1	1
Octa-Furan No. of Peaks	pg/g	-			1	1	1	1	1	1	1	1	1	1	1	1
Penta-Dioxins No. of Peaks	pg/g	-			7	9	1	9	8	1	9	7	8	6	12	9
Penta-Furans No. of Peaks	pg/g	-			10	1	8	14	9	1	1	11	11	1	9	13
Hepta-Dioxins No. of Peaks	pg/g	-			2	2	2	2	2	2	2	2	2	2	2	2
Hepta-Furans No. of Peaks	pg/g	-			4	3	2	4	4	3	3	4	4	1	4	4
Tetra-Furans No. of Peaks	pg/g	-			16	1	9	19	16	1	12	17	18	1	18	16
Tetra-Dioxins No. of Peaks	pg/g	-			13	11	1	11	10	1	9	11	10	3	10	12

Env Stds Comments

						Field ID	MW04	MW07	MW09	QC101_200825
						Location Code	MW04	MW07	MW09	MW09
						Sampled Date	25/08/2020	25/08/2020	25/08/2020	25/08/2020
						Lab Report No.	ES2029842	ES2029842	ES2029842	ES2029842
						Sample Type	Normal	Normal	Normal	Field_D
			NEPM 2013 Table 1A(4) HSL A/B GW, Sand for Vapour Intrusion			NEPM 2013 Table 1C GILs, Marine Waters				
ChemName	**Units**	**EQL**	2-4m	4-8m	>8m					
Metals										
Arsenic (Filtered)	µg/L	1					<10	<10	<10	<10
Cadmium (Filtered) [#8]	µg/L	0.1				0.7[#1]	<1	<1	<1	<1
Chromium (III+VI) (Filtered)	µg/L	1					<10	<10	<10	<10
Copper (Filtered) [#8]	µg/L	1				1.3[#2]	<10	<10	<10	<10
Lead (Filtered) [#8]	µg/L	1				4.4[#2]	<10	<10	<10	<10
Mercury (Filtered)	µg/L	0.1				0.1[#3]	<0.1	<0.1	<0.1	<0.1
Nickel (Filtered) [#8]	µg/L	1				7[#2]	<10	<10	<10	<10
Zinc (Filtered)	µg/L	5				15[#4]	<50	<50	<50	<50
TRH - NEPM 2013 Fractions										
TRH >C6 - C10	µg/L	20					<20	20	<20	<20
TRH >C10 - C16	µg/L	100					<100	<100	<100	<100
TRH >C16 - C34	µg/L	100					<100	<100	<100	<100
TRH >C34 - C40	µg/L	100					<100	<100	<100	<100
TRH >C10 - C40 (Sum of total)	µg/L	100					<100	<100	<100	<100
TRH >C6 - C10 less BTEX (F1)	µg/L	20	1000[#5]	1000[#5]	1000[#5]		<20	20	<20	<20
TRH >C10 - C16 less Naphthalene (F2)	µg/L	100	1000[#6]	1000[#6]	1000[#6]		<100	<100	<100	<100
TPH - NEPM 1999 Fractions										
TPH C6 - C9	µg/L	20					<20	<20	<20	<20
TPH C10 - C14	µg/L	50					<50	<50	<50	<50
TPH C15 - C28	µg/L	100					<100	<100	<100	<100
TPH C29-C36	µg/L	50					<50	<50	<50	<50
TPH C10 - C36 (Sum of total)	µg/L	50					<50	<50	<50	<50
BTEXN										
Benzene	µg/L	1	800	800	900	500[#7]	<1	<1	<1	<1
Ethylbenzene	µg/L	2	NL	NL	NL		<2	<2	<2	<2
Naphthalene	µg/L	1	NL	NL	NL	50[#7]	<1	<1	<1	<1
Toluene	µg/L	2	NL	NL	NL		<2	<2	<2	<2
Xylene (m & p)	µg/L	2					<2	<2	<2	<2
Xylene (o)	µg/L	2					<2	<2	<2	<2
Xylene Total	µg/L	2	NL	NL	NL		<2	<2	<2	<2
Total BTEX	µg/L	1					<1	<1	<1	<1
Polycyclic aromatic hydrocarbons (PAHs)										
Acenaphthene	µg/L	1					<1	<1	<1	<1
Acenaphthylene	µg/L	1					<1	<1	<1	<1
Anthracene	µg/L	1					<1	<1	<1	<1
Benz(a)anthracene	µg/L	1					<1	<1	<1	<1
Benzo(k)fluoranthene	µg/L	1					<1	<1	<1	<1
Benzo(b+j)fluoranthene	µg/L	1					<1	<1	<1	<1
Benzo(g,h,i)perylene	µg/L	1					<1	<1	<1	<1
Benzo(a) pyrene	µg/L	0.5					<0.5	<0.5	<0.5	<0.5
Chrysene	µg/L	1					<1	<1	<1	<1
Dibenz(a,h)anthracene	µg/L	1					<1	<1	<1	<1
Fluoranthene	µg/L	1					<1	<1	<1	<1
Fluorene	µg/L	1					<1	<1	<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	1					<1	<1	<1	<1
Phenanthrene	µg/L	1					<1	<1	<1	<1
Pyrene	µg/L	1					<1	<1	<1	<1
PAHs (Sum of total)	µg/L	0.5					<0.5	<0.5	<0.5	<0.5
Monocyclic Aromatic Hydrocarbons (MAHs)										
1,2,4-trimethylbenzene	µg/L	5					<5	<5	<5	<5
1,3,5-trimethylbenzene	µg/L	5					<5	<5	<5	<5
Isopropylbenzene	µg/L	5					<5	<5	<5	<5
n-butylbenzene	µg/L	5					<5	<5	<5	<5
n-propylbenzene	µg/L	5					<5	<5	<5	<5
p-isopropyltoluene	µg/L	5					<5	<5	<5	<5
sec-butylbenzene	µg/L	5					<5	<5	<5	<5
tert-butylbenzene	µg/L	5					<5	<5	<5	<5
Halogenated Benzenes										
1,2,3-trichlorobenzene	µg/L	5					<5	<5	<5	<5
1,2,4-trichlorobenzene	µg/L	5				20[#3]	<5	<5	<5	<5
1,2-dichlorobenzene	µg/L	5					<5	<5	<5	<5
1,3-dichlorobenzene	µg/L	5					<5	<5	<5	<5
1,4-dichlorobenzene	µg/L	5					<5	<5	<5	<5
2-chlorotoluene	µg/L	5					<5	<5	<5	<5
4-chlorotoluene	µg/L	5					<5	<5	<5	<5
Bromobenzene	µg/L	5					<5	<5	<5	<5
Chlorobenzene	µg/L	5					<5	<5	<5	<5
Halogenated Hydrocarbons										
1,2-dibromoethane	µg/L	5					<5	<5	<5	<5
Bromomethane	µg/L	50					<50	<50	<50	<50
Dichlorodifluoromethane	µg/L	50					<50	<50	<50	<50
Iodomethane	µg/L	5					<5	<5	<5	<5
Trichlorofluoromethane	µg/L	50					<50	<50	<50	<50

						Field ID	MW04	MW07	MW09	QC101_200825
						Location Code	MW04	MW07	MW09	MW09
						Sampled Date	25/08/2020	25/08/2020	25/08/2020	25/08/2020
						Lab Report No.	ES2029842	ES2029842	ES2029842	ES2029842
						Sample Type	Normal	Normal	Normal	Field_D
			NEPM 2013 Table 1A(4) HSL A/B GW, Sand for Vapour Intrusion			NEPM 2013 Table 1C GILs, Marine Waters				
ChemName	**Units**	**EQL**	2-4m	4-8m	>8m					
Chlorinated Hydrocarbons										
1,1,1,2-tetrachloroethane	µg/L	5					<5	<5	<5	<5
1,1,1-trichloroethane	µg/L	5					<5	<5	<5	<5
1,1,2,2-tetrachloroethane	µg/L	5					<5	<5	<5	<5
1,1,2-trichloroethane	µg/L	5				1900	<5	<5	<5	<5
1,1-dichloroethane	µg/L	5					<5	<5	<5	<5
1,1-dichloroethene	µg/L	5					<5	<5	<5	<5
1,2,3-trichloropropane	µg/L	5					<5	<5	<5	<5
1,2-dibromo-3-chloropropane	µg/L	5					<5	<5	<5	<5
1,2-dichloroethane	µg/L	5					<5	<5	<5	<5
1,2-dichloropropane	µg/L	5					<5	<5	<5	<5
1,3-dichloropropane	µg/L	5					<5	<5	<5	<5
2,2-dichloropropane	µg/L	5					<5	<5	<5	<5
Bromodichloromethane	µg/L	5					<5	<5	<5	<5
Bromoform	µg/L	5					<5	<5	<5	<5
Carbon tetrachloride	µg/L	5					<5	<5	<5	<5
Chlorodibromomethane	µg/L	5					<5	<5	<5	<5
Chloroethane	µg/L	50					<50	<50	<50	<50
Chloroform	µg/L	5					<5	<5	<5	<5
Chloromethane	µg/L	50					<50	<50	<50	<50
cis-1,2-dichloroethene	µg/L	5					<5	<5	<5	<5
cis-1,3-dichloropropene	µg/L	5					<5	<5	<5	<5
Dibromomethane	µg/L	5					<5	<5	<5	<5
Hexachlorobutadiene	µg/L	5					<5	<5	<5	<5
Trichloroethene (TCE)	µg/L	5					<5	<5	<5	<5
Tetrachloroethene (PCE)	µg/L	5					<5	<5	<5	<5
trans-1,2-dichloroethene	µg/L	5					<5	<5	<5	<5
trans-1,3-dichloropropene	µg/L	5					<5	<5	<5	<5
Vinyl chloride	µg/L	50					<50	<50	<50	<50
Volatile Organic Compounds (VOCs)										
1,1-dichloropropene	µg/L	5					<5	<5	<5	<5
cis-1,4-Dichloro-2-butene	µg/L	5					<5	<5	<5	<5
Pentachloroethane	µg/L	5					<5	<5	<5	<5
Styrene	µg/L	5					<5	<5	<5	<5
trans-1,4-Dichloro-2-butene	µg/L	5					<5	<5	<5	<5
Semi Volatile Organic Compounds (SVOCs)										
3- & 4-Methylphenol	µg/L	2					<2	<2	<2	<2
Phenols										
2,4,5-trichlorophenol	µg/L	1					<1	<1	<1	<1
2,4,6-trichlorophenol	µg/L	1					<1	<1	<1	<1
2,4-dichlorophenol	µg/L	1					<1	<1	<1	<1
2,4-dimethylphenol	µg/L	1					<1	<1	<1	<1
2,6-dichlorophenol	µg/L	1					<1	<1	<1	<1
2-chlorophenol	µg/L	1					<1	<1	<1	<1
2-methylphenol	µg/L	1					<1	<1	<1	<1
2-nitrophenol	µg/L	1					<1	<1	<1	<1
4-chloro-3-methylphenol	µg/L	1					<1	<1	<1	<1
Pentachlorophenol	µg/L	2				11[#3]	<2	<2	<2	<2
Phenol	µg/L	1				400	<1	<1	<1	<1
Solvents										
Methyl Ethyl Ketone	µg/L	50					<50	<50	<50	<50
2-hexanone (MBK)	µg/L	50					<50	<50	<50	<50
4-Methyl-2-pentanone	µg/L	50					<50	<50	<50	<50
Carbon disulfide	µg/L	5					<5	<5	<5	<5
Vinyl acetate	µg/L	50					<50	<50	<50	<50

Env Stds Comments

#1:Values calculated using hardness of 30 mg/L CaCO3. Chemical for which possible bioaccumulation and secondary poisoning effects should be considered.
#2:Values calculated using hardness of 30 mg/L CaCO3. Refer ANZECC & ARMCANZ (2000) for site specific hardness guidance
#3:Chemical for which possible bioaccumulation and secondary poisoning effects should be considered, refer to ANZECC & ARMCANZ (2000) for further guidance.
#4:Values calculated using hardness of 30 mg/L CaCO3. Figure may not protect key species from chronic toxicity. Refer ANZECC & ARMCANZ (2000) for guidance
#5:To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#6:To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#7:Figure may not protect key species from chronic toxicity, refer to ANZECC & ARMCANZ (2000) for further guidance.
#8: EQLs for cadmium, copper, lead and nickel were higher that the adopted screening criteria

						Field ID	MW03	MW04	MW07	MW09	MW12	MW13	MW14
						Location	MW03	MW04	MW07	MW09	MW12	MW13	MW14
						Sample Date	21-May-21	20-May-21	20-May-21	17-May-21	20-May-21	20-May-21	21-May-21
						Lab Report No.	ES2119196	ES2119196	ES2119196	ES2119196	ES2119196	ES2119196	ES2119196
			PFAS NEMP 2020 Table 1 Drinking Water	PFAS NEMP 2020 Table 1 Recreational Water	PFAS NEMP 2020 Table 5 Freshwater 95% [1]								
ChemName	**Unit**	**EQL**											
Per- and Poly-fluoroalkyl Substances (PFAS)													
Perfluorooctanesulfonic acid (PFOS)	µg/L	**0.01**			**0.13**		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	**0.05**
Perfluorooctanoic acid (PFOA)	µg/L	**0.01**	**0.56**	**10**	**220**		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	**0.03**
Perfluorooctanesulfonamide (PFOSA)	µg/L	**0.02**					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	**0.02**					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoro-n-pentanoic acid (PFPeA)	µg/L	**0.02**					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	**0.02**					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	**0.02**					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanesulfonic acid (PFHxS)	µg/L	**0.02**					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	**0.02**					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	**0.02**					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	**0.02**					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	**0.02**					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanesulfonic acid (PFBS)	µg/L	**0.02**					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanesulfonic acid (PFDS)	µg/L	**0.02**					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic aicd (PFTeDA)	µg/L	**0.05**					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	**0.02**					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	**0.02**					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	**0.1**					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
N-ethyl perfluorooctane sulfonamido acetic acid	µg/L	**0.02**					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
N-ethyl perfluorooctane sulfonamide	µg/L	**0.05**					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-methyl perfluorooctanesulfonamido ethanol	µg/L	**0.05**					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-ethyl perfluorooctanesulfonamido ethanol	µg/L	**0.05**					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamide	µg/L	**0.05**					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
N-methyl perfluorooctane sulfonamido acetic acid	µg/L	**0.02**					<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Sum (PFHxS + PFOS)	µg/L	**0.01**	**0.07**	**2**			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	**0.05**
Sum of PFAS	µg/L	**0.01**					<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	**0.08**
Sum of PFAS (WA DER List)	µg/L	**0.01**					<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	**0.08**
(n:2) Fluorotelomer Sulfonic Acids													
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	**0.05**					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	**0.05**					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	**0.05**					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	**0.05**					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Env Stds Comments

1 - Guideline values for 95% Marine Water are the same as 95% Freshwater

Jacobs

Table C - Sediment Analytical Results
Rhodes Planned Precinct Additional Investigation

				Location ID	SD01	SD02	SD03	SD03	SD04	SD05	SD06	SD07	SD08
				Field ID	SD01	SD02	SD_QC01	SD03	SD04	SD05	SD06	SD07	SD08
				Sample Date	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020
ChemName	Units	EQL	ANZG (2018) Default Guideline Values for toxicants in sediment (DGV)	ANZG (2018) Default Guideline Values for toxicants in sediment (DGV-high)									
Metals													
Arsenic	mg/kg	1	20[#1]	70[#1]	22.5	31.1	15.2	17.3	14.2	29	25.8	26	27
Cadmium	mg/kg	0.1	1.5[#1]	10[#1]	0.7	2.8	0.9	1.1	0.9	1.8	1.4	1.3	1.4
Chromium (III+VI)	mg/kg	1	80[#1]	370[#1]	86.2	505	124	180	121	295	224	289	272
Copper	mg/kg	1	65[#1]	270[#1]	55.8	166	86.5	79.1	82.5	98.4	74.9	84.9	82
Lead	mg/kg	1	50[#1]	220[#1]	161	310	173	208	168	473	366	521	297
Mercury	mg/kg	0.01	0.15[#1]	1[#1]	0.56	1.33	0.45	0.48	0.95	0.72	0.58	0.59	0.57
Nickel	mg/kg	1	21	52	9.2	27	16.6	18.5	16	21.2	16.9	17	17.1
Zinc	mg/kg	1	200	410	319	960	483	488	443	566	448	458	475
Soil Properties													
Moisture Content	%	0.1			40	57.6	42.5	44	39.2	51.1	42.3	47.2	41.8
Particle Size Analysis													
Sand (>75 µm)	%	1			50	-	-	30	33	30	35	-	30
Fines (<75 µm)	%	1			45	-	-	68	66	68	61	-	66
Particle Sizing													
Cobbles (>6cm)	%	1			<1	-	-	<1	<1	<1	<1	-	<1
Gravel (>2mm)	%	1			5	-	-	2	1	2	4	-	4
+1180µm	%	1			7	-	-	2	2	3	4	-	5
+19.0mm	%	1			<1	-	-	<1	<1	<1	<1	-	<1
+37.5mm	%	1			<1	-	-	<1	<1	<1	<1	-	<1
+75.0mm	%	1			<1	-	-	<1	<1	<1	<1	-	<1
+75µm	%	1			55	-	-	32	34	32	39	-	34
+150µm	%	1			42	-	-	17	24	16	20	-	19
+2.36mm	%	1			4	-	-	1	<1	2	3	-	3
+4.75mm	%	1			2	-	-	<1	<1	<1	<1	-	<1
+9.5mm	%	1			<1	-	-	<1	<1	<1	<1	-	<1
+300µm	%	1			23	-	-	4	4	5	7	-	8
+425µm	%	1			15	-	-	3	3	4	6	-	7
+600µm	%	1			10	-	-	3	2	4	5	-	6
Inorganics													
Total Organic Carbon	%	0.02			3.45	3.64	-	2.47	2.42	2.87	2.66	2.43	2.46
TRH - NEPM 2013 Fractions													
TRH >C6 - C10	mg/kg	3			<3	<3	<3	<3	<3	<3	<3	<3	<3
TRH >C10 - C16	mg/kg	3			59	214	79	80	51	151	82	155	114
TRH >C16 - C34	mg/kg	3			819	2240	1350	1250	913	1820	1260	1800	1480
TRH >C34 - C40	mg/kg	5			195	636	435	406	324	539	440	603	470
TRH >C10 - C40 (Sum of total)	mg/kg	3			1070	3090	1860	1740	1290	2510	1780	2560	2060
TRH >C6 - C10 less BTEX (F1)	mg/kg	3			<3	<3	<3	<3	<3	<3	<3	<3	<3
TRH >C10 - C16 less Naphthalene (F2)	mg/kg	3			59	214	79	80	51	151	82	155	114
TPH - NEPM 1999 Fractions													
TPH C6 - C9	mg/kg	3			<3	<3	<3	<3	<3	<3	<3	<3	<3
TPH C10 - C14	mg/kg	3			29	100	34	35	<16[#1]	60	37	65	48
TPH C15 - C28	mg/kg	3			569	1500	834	781	550	1210	770	1150	954
TPH C29-C36	mg/kg	5			358	1090	727	659	510	892	692	953	760
TPH C10 - C36 (Sum of total)	mg/kg	3	280	550	956	2690	1600	1480	1060	2160	1500	2170	1760
BTEXN													
Benzene	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	mg/kg	0.01			<0.2 - 2.85	<0.2 - 0.27	<0.2 - 0.09	<0.2 - 0.22	<0.2 - 0.11	<0.2 - 0.1	<0.2 - 0.13	<0.2 - 0.06	<0.2 - 0.09
Toluene	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total BTEX	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Xylene (m & p)	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Xylene (o)	mg/kg	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Xylene Total	mg/kg	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

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Table C - Sediment Analytical Results
Rhodes Planned Precinct Additional Investigation

					Location ID	SD01	SD02	SD03	SD03	SD04	SD05	SD06	SD07	SD08
					Field ID	SD01	SD02	SD_QC01	SD03	SD04	SD05	SD06	SD07	SD08
					Sample Date	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020
ChemName	Units	EQL	ANZG (2018) Default Guideline Values for toxicants in sediment (DGV)	ANZG (2018) Default Guideline Values for toxicants in sediment (DGV-high)										
PAHs														
Benzo[b+j]fluoranthene	mg/kg	0.01				16.5	2.35	1.01	2.2	1.26	1.83	1.57	0.96	1.26
Benzo(a)pyrene TEQ calc (zero)	mg/kg	0.01				21.6	2.64	1.47	2.27	1.77	1.67	1.62	1.17	1.25
Benzo(a)pyrene TEQ calc(half)	mg/kg	0.01				21.6	2.64	1.47	2.27	1.77	1.67	1.62	1.17	1.25
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	0.01				21.6	2.64	1.47	2.27	1.77	1.67	1.62	1.17	1.25
2-methylnaphthalene	mg/kg	0.01				1.12	0.16	0.05	0.1	0.06	<0.05[#1]	0.06	0.03	<0.02[#1]
3-methylcholanthrene	mg/kg	0.01				<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.02[#1]	<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]
7,12-dimethylbenz(a)anthracene	mg/kg	0.01				<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.02[#1]	<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]
Acenaphthene	mg/kg	0.01				1.27	<0.05[#1]	0.04	<0.02[#1]	0.05	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]
Acenaphthylene	mg/kg	0.01				2.54	0.48	0.18	0.37	0.2	0.22	0.24	0.09	0.16
Anthracene	mg/kg	0.01				6.52	0.4	0.16	0.29	0.17	0.23	0.21	0.12	0.16
Benz(a)anthracene	mg/kg	0.01				14.7	1.29	0.57	1.12	0.66	0.81	0.73	0.42	0.56
Benzo(a) pyrene	mg/kg	0.01				15.4	1.63	1	1.39	1.22	1.03	1.03	0.84	0.76
Benzo(g,h,i)perylene	mg/kg	0.01				6.62	1.51	0.9	1.29	1.12	0.94	0.89	0.65	0.73
Benzo(k)fluoranthene	mg/kg	0.01				5.68	0.75	0.46	0.64	0.49	0.63	0.55	0.36	0.49
Chrysene	mg/kg	0.01				15	1.43	0.58	1.26	0.68	0.81	0.78	0.43	0.63
Dibenz(a,h)anthracene	mg/kg	0.01				1.71	0.41	0.19	0.34	0.22	0.2	0.2	0.1	0.18
Fluoranthene	mg/kg	0.01				35.7	0.94	0.91	1.64	1.02	1.18	1.09	0.87	0.87
Fluorene	mg/kg	0.01				4.55	<0.05[#1]	<0.02[#1]	<0.02[#1]	<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.01				5.85	1.34	0.62	1.21	0.74	0.95	0.87	0.44	0.66
Phenanthrene	mg/kg	0.01				26.6	0.53	0.39	0.75	0.43	0.5	0.46	0.32	0.34
Pyrene	mg/kg	0.01				37.6	2.74	1.07	1.95	1.18	1.81	1.3	1.24	1.06
PAHs (Sum of total)	mg/kg	0.01	100[#2]	500[#2]		211	18.6	9.1	16.5	10.7	12.6	11.3	7.63	8.89
Polychlorinated Biphenyls														
Arochlor 1016	mg/kg	0.005				<0.0156[#1]	<0.25[#1]	<0.0156[#1]	<0.125[#1]	<0.0156[#1]	<0.0312[#1]	<0.0156[#1]	<0.0156[#1]	<0.0156[#1]
Arochlor 1221	mg/kg	0.005				<0.0156[#1]	<0.25[#1]	<0.0156[#1]	<0.125[#1]	<0.0156[#1]	<0.0312[#1]	<0.0156[#1]	<0.0156[#1]	<0.0156[#1]
Arochlor 1232	mg/kg	0.005				<0.0156[#1]	<0.25[#1]	<0.0156[#1]	<0.125[#1]	<0.0156[#1]	<0.0312[#1]	<0.0156[#1]	<0.0156[#1]	<0.0156[#1]
Arochlor 1242	mg/kg	0.005				<0.0156[#1]	<0.25[#1]	<0.0156[#1]	<0.125[#1]	<0.0156[#1]	<0.0312[#1]	<0.0156[#1]	<0.0156[#1]	<0.0156[#1]
Arochlor 1248	mg/kg	0.005				<0.0156[#1]	<0.25[#1]	<0.0156[#1]	<0.125[#1]	<0.0156[#1]	<0.0312[#1]	<0.0156[#1]	<0.0156[#1]	<0.0156[#1]
Arochlor 1254	mg/kg	0.005				<0.0156[#1]	0.413	<0.0156[#1]	<0.125[#1]	<0.0156[#1]	<0.0312[#1]	<0.0156[#1]	<0.0156[#1]	<0.0156[#1]
Arochlor 1260	mg/kg	0.005				<0.0156[#1]	<0.25[#1]	<0.0156[#1]	<0.125[#1]	<0.0156[#1]	<0.0312[#1]	<0.0156[#1]	<0.0156[#1]	<0.0156[#1]
PCBs (Sum of total)	mg/kg	0.005	34[#3]	280[#3]		<0.0156[#1]	0.413	<0.0156[#1]	<0.125[#1]	<0.0156[#1]	<0.0312[#1]	<0.0156[#1]	<0.0156[#1]	<0.0156[#1]
Semi Volatile Organic Compounds (SVOCs)														
2-(acetylamino) fluorene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(e)pyrene	mg/kg	0.01				7.08	1.34	0.45	0.98	0.55	0.86	0.63	0.47	0.59
Coronene	mg/kg	0.01				0.55	0.39	0.2	0.28	0.29	0.21	0.2	0.06	0.1
Hexachlorophene	mg/kg	0.01				<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.02[#1]	<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]
Perylene	mg/kg	0.01				3.39	0.65	0.23	0.45	0.27	0.33	0.34	0.17	0.25
Organotins														
Dibutyltin	µg/kg	1				<1	<1	3	3	5	2	1	<1	<1
Monobutyltin	µg/kg	1				<1	<1	<1	<1	<1	<1	<1	<1	<1
Tributyltin as SN	µg/kg	0.5	9000[#4]	70000[#4]		<0.5	3.7	1.8	<0.5	0.7	0.5	<0.5	<0.5	<0.5
Ph														
2,3,4,6-tetrachlorophenol	mg/kg	0.01				<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.02[#1]	<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]
2,4,5-trichlorophenol	mg/kg	0.01				<0.02[#1]	0.15	<0.02[#1]	<0.02[#1]	<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]
2,4,6-trichlorophenol	mg/kg	0.01				<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.02[#1]	<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]
2,4-dichlorophenol	mg/kg	0.01				<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.02[#1]	<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]
2,4-dimethylphenol	mg/kg	0.01				0.64	<0.05[#1]	<0.02[#1]	<0.02[#1]	<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]
2,6-dichlorophenol	mg/kg	0.01				<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.02[#1]	<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]
2-chlorophenol	mg/kg	0.01				<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.02[#1]	<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]
2-methylphenol	mg/kg	0.01				0.38	<0.05[#1]	<0.02[#1]	<0.02[#1]	<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]
2-nitrophenol	mg/kg	0.01				<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.02[#1]	<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]
3-Methylphenol	mg/kg	0.01				0.42	<0.05[#1]	<0.02[#1]	<0.02[#1]	<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]
4-chloro-3-methylphenol	mg/kg	0.01				<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.02[#1]	<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]
4-methylphenol	mg/kg	0.01				0.43	<0.05[#1]	<0.02[#1]	<0.02[#1]	<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]
4-nitrophenol	mg/kg	0.01				<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.02[#1]	<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]
Pentachlorophenol	mg/kg	0.01				<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.02[#1]	<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]
Phenol	mg/kg	0.01				0.28	<0.05[#1]	<0.02[#1]	<0.02[#1]	<0.02[#1]	<0.05[#1]	<0.02[#1]	<0.01	<0.02[#1]

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Table C - Sediment Analytical Results
Rhodes Planned Precinct Additional Investigation

					Location ID	SD01	SD02	SD03	SD03	SD04	SD05	SD06	SD07	SD08
					Field ID	SD01	SD02	SD_QC01	SD03	SD04	SD05	SD06	SD07	SD08
					Sample Date	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020
			ANZG (2018) Default Guideline Values for toxicants in sediment (DGV)	ANZG (2018) Default Guideline Values for toxicants in sediment (DGV-high)										
ChemName	Units	EQL												
Dioxins & Furans														
1,2,3,4,6,7,8-Heptachlorooxanthrene	pg/g	1.25				1340	33,200	16,700	13,000	12,500	14,200	25,400	33,800	53,500
1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/g	1.25				422	1880	1030	718	848	974	1500	1480	2030
1,2,3,4,7,8,9-Heptachlorodibenzofuran	pg/g	1.25				17.8	313	130	89.4	93.9	99.1	198	220	223
1,2,3,4,7,8-Hexachlorooxanthrene	pg/g	1.25				7.9	86.7	45	29.2	29.5	34.6	45.9	47.6	68.3
1,2,3,4,7,8-Hexachlorodibenzofuran	pg/g	1.25				41.8	443	165	131	153	159	351	281	365
1,2,3,6,7,8-Hexachlorooxanthrene	pg/g	1.25				61.5	1120	630	466	442	527	947	1040	1670
1,2,3,6,7,8-Hexachlorodibenzofuran	pg/g	1.25				7.7	97.5	34.8	30.5	35	36.5	87.3	49.4	68.2
1,2,3,7,8,9-Hexachlorodibenzofuran	pg/g	1.25				<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.4	<2.4	<2.5
1,2,3,7,8-Pentachlorooxanthrene	pg/g	1.25				30.3	125	49.3	39	53.2	61.6	99.7	66.9	109
1,2,3,7,8-Pentachlorodibenzofuran	pg/g	1.25				4.8	37.6	15.4	10.8	15	15.8	28.4	21.5	32.2
2,3,4,6,7,8-Hexachlorodibenzofuran	pg/g	1.25				11.1	94	44.1	31.4	36	40.5	73.7	63.8	66.3
2,3,4,7,8-Pentachlorodibenzofuran	pg/g	1.25				14.6	101	52.1	25.7	54.3	47.1	133	97.2	105
2,3,7,8-Tetrachlorodibenzofuran	pg/g	0.25				20.4	69.1	10.8	12.3	12.6	16.1	28	20.3	18.1
1,2,3,4,6,7,8,9-Octachlorooxanthrene	pg/g	5				26,900	295,000	280,000	235,000	202,000	220,000	334,000	373,000	478,000
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	pg/g	2.5				1970	7660	4170	3160	4160	3360	5600	6230	7970
PCDDs and PCDFs														
1234678-HpCDD I-TEF	pg/g	1.25				0.01		0.01	0.01	0.01	0.01	0.01	0.01	0.01
1234678-HpCDD I-TEQ1 (zero)	pg/g	1.25				13.4	332	167	130	125	142	254	338	535
1234678-HpCDD I-TEQ2 (0.5 LOR)	pg/g	1.25				13.4	332	167	130	125	142	254	338	535
1234678-HpCDD WHO-TEQ2 (0.5 LOR)	pg/g	1.25				13.4	332	167	130	125	142	254	338	535
1234678-HpCDD I-TEQ3 (LOR)	pg/g	1.25				13.4	332	167	130	125	142	254	338	535
1234678-HpCDD WHO-TEQ1 (zero)	pg/g	1.25				13.4	332	167	130	125	142	254	338	535
1234678-HpCDD WHO-TEQ3 (LOR)	pg/g	1.25				13.4	332	167	130	125	142	254	338	535
1234678-HpCDD LOR pg/g	pg/g	1.25				2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.5
1234678-HpCDD WHO-TEF	pg/g	1.25				0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1234678-HpCDF I-TEF	pg/g	1.25				0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1234678-HpCDF I-TEQ2 (0.5 LOR)	pg/g	1.25				4.22	18.8	10.3	7.18	8.48	9.74	15	14.8	20.3
1234678-HpCDF I-TEQ3 (LOR)	pg/g	1.25				4.22	18.8	10.3	7.18	8.48	9.74	15	14.8	20.3
1234678-HpCDF WHO-TEQ3 (LOR)	pg/g	1.25				4.22	18.8	10.3	7.18	8.48	9.74	15	14.8	20.3
1234678-HpCDF I-TEQ1 (zero)	pg/g	1.25				4.22	18.8	10.3	7.18	8.48	9.74	15	14.8	20.3
1234678-HpCDF LOR pg/g	pg/g	1.25				2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.5
1234678-HpCDF WHO-TEF	pg/g	1.25				0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1234678-HpCDF WHO-TEQ2 (0.5 LOR)	pg/g	1.25				4.22	18.8	10.3	7.18	8.48	9.74	15	14.8	20.3
1234678-HpCDF WHO-TEQ1 (zero)	pg/g	1.25				4.22	18.8	10.3	7.18	8.48	9.74	15	14.8	20.3
1234789-HpCDF I-TEF	pg/g	1.25				0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1234789-HpCDF I-TEQ2 (0.5 LOR)	pg/g	1.25				0.18	3.13	1.3	0.89	0.94	0.99	1.98	2.2	2.23
1234789-HpCDF I-TEQ3 (LOR)	pg/g	1.25				0.18	3.13	1.3	0.89	0.94	0.99	1.98	2.2	2.23
1234789-HpCDF WHO-TEQ3 (LOR)	pg/g	1.25				0.18	3.13	1.3	0.89	0.94	0.99	1.98	2.2	2.23
1234789-HpCDF I-TEQ1 (zero)	pg/g	1.25				0.18	3.13	1.3	0.89	0.94	0.99	1.98	2.2	2.23
1234789-HpCDF LOR pg/g	pg/g	1.25				2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.5
1234789-HpCDF WHO-TEF	pg/g	1.25				0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1234789-HpCDF WHO-TEQ2 (0.5 LOR)	pg/g	1.25				0.18	3.13	1.3	0.89	0.94	0.99	1.98	2.2	2.23
1234789-HpCDF WHO-TEQ1 (zero)	pg/g	1.25				0.18	3.13	1.3	0.89	0.94	0.99	1.98	2.2	2.23
123478-HxCDD I-TEF	pg/g	1.25				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123478-HxCDD I-TEQ1 (zero)	pg/g	1.25				0.79	8.67	4.5	2.92	2.95	3.46	4.59	4.76	6.83
123478-HxCDD I-TEQ2 (0.5 LOR)	pg/g	1.25				0.79	8.67	4.5	2.92	2.95	3.46	4.59	4.76	6.83
123478-HxCDD I-TEQ3 (LOR)	pg/g	1.25				0.79	8.67	4.5	2.92	2.95	3.46	4.59	4.76	6.83
123478-HxCDD WHO-TEQ3 (LOR)	pg/g	1.25				0.79	8.67	4.5	2.92	2.95	3.46	4.59	4.76	6.83
123478-HxCDD LOR pg/g	pg/g	1.25				2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.5
123478-HxCDD WHO-TEQ1 (zero)	pg/g	1.25				0.79	8.67	4.5	2.92	2.95	3.46	4.59	4.76	6.83
123478-HxCDD WHO-TEQ2 (0.5 LOR)	pg/g	1.25				0.79	8.67	4.5	2.92	2.95	3.46	4.59	4.76	6.83
123478-HxCDD WHO-TEF	pg/g	1.25				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123478-HxCDF I-TEF	pg/g	1.25				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123478-HxCDF I-TEQ1 (zero)	pg/g	1.25				4.18	44.3	16.5	13.1	15.3	15.9	35.1	28.1	36.5
123478-HxCDF I-TEQ2 (0.5 LOR)	pg/g	1.25				4.18	44.3	16.5	13.1	15.3	15.9	35.1	28.1	36.5
123478-HxCDF I-TEQ3 (LOR)	pg/g	1.25				4.18	44.3	16.5	13.1	15.3	15.9	35.1	28.1	36.5
123478-HxCDF WHO-TEQ3 (LOR)	pg/g	1.25				4.18	44.3	16.5	13.1	15.3	15.9	35.1	28.1	36.5

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Table C - Sediment Analytical Results
Rhodes Planned Precinct Additional Investigation

					Location ID	SD01	SD02	SD03	SD03	SD04	SD05	SD06	SD07	SD08
					Field ID	SD01	SD02	SD_QC01	SD03	SD04	SD05	SD06	SD07	SD08
					Sample Date	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020
			ANZG (2018) Default Guideline Values for toxicants in sediment (DGV)	ANZG (2018) Default Guideline Values for toxicants in sediment (DGV-high)										
ChemName	Units	EQL												
123478-HxCDF LOR pg/g	pg/g	1.25			2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.5
123478-HxCDF WHO-TEQ1 (zero)	pg/g	1.25			4.18	44.3	16.5	13.1	15.3	15.9	35.1	28.1	36.5
123478-HxCDF WHO-TEQ2 (0.5 LOR)	pg/g	1.25			4.18	44.3	16.5	13.1	15.3	15.9	35.1	28.1	36.5
123478-HxCDF WHO-TEF	pg/g	1.25			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123678-HxCDD I-TEF	pg/g	1.25			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123678-HxCDD I-TEQ1 (zero)	pg/g	1.25			6.15	112	63	46.6	44.2	52.7	94.7	104	167
123678-HxCDD I-TEQ2 (0.5 LOR)	pg/g	1.25			6.15	112	63	46.6	44.2	52.7	94.7	104	167
123678-HxCDD I-TEQ3 (LOR)	pg/g	1.25			6.15	112	63	46.6	44.2	52.7	94.7	104	167
123678-HxCDD WHO-TEQ3 (LOR)	pg/g	1.25			6.15	112	63	46.6	44.2	52.7	94.7	104	167
123678-HxCDD LOR pg/g	pg/g	1.25			2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.5
123678-HxCDD WHO-TEQ1 (zero)	pg/g	1.25			6.15	112	63	46.6	44.2	52.7	94.7	104	167
123678-HxCDD WHO-TEQ2 (0.5 LOR)	pg/g	1.25			6.15	112	63	46.6	44.2	52.7	94.7	104	167
1,2,3,7,8,9-Hexachlorooxanthrene	pg/g	1.25			23.9	311	146	119	105	140	184	192	296
123678-HxCDD WHO-TEF	pg/g	1.25			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123678-HxCDF I-TEF	pg/g	1.25			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123678-HxCDF I-TEQ1 (zero)	pg/g	1.25			0.77	9.75	3.48	3.05	3.5	3.65	8.73	4.94	6.82
123678-HxCDF I-TEQ2 (0.5 LOR)	pg/g	1.25			0.77	9.75	3.48	3.05	3.5	3.65	8.73	4.94	6.82
123678-HxCDF I-TEQ3 (LOR)	pg/g	1.25			0.77	9.75	3.48	3.05	3.5	3.65	8.73	4.94	6.82
123678-HxCDF WHO-TEQ3 (LOR)	pg/g	1.25			0.77	9.75	3.48	3.05	3.5	3.65	8.73	4.94	6.82
123789-HxCDD I-TEF	pg/g	1.25			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123789-HxCDD I-TEQ1 (zero)	pg/g	1.25			2.39	31.1	14.6	11.9	10.5	14	18.4	19.2	29.6
123789-HxCDD I-TEQ2 (0.5 LOR)	pg/g	1.25			2.39	31.1	14.6	11.9	10.5	14	18.4	19.2	29.6
123678-HxCDF LOR pg/g	pg/g	1.25			2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.5
123678-HxCDF WHO-TEQ1 (zero)	pg/g	1.25			0.77	9.75	3.48	3.05	3.5	3.65	8.73	4.94	6.82
123678-HxCDF WHO-TEQ2 (0.5 LOR)	pg/g	1.25			0.77	9.75	3.48	3.05	3.5	3.65	8.73	4.94	6.82
123789-HxCDD I-TEQ3 (LOR)	pg/g	1.25			2.39	31.1	14.6	11.9	10.5	14	18.4	19.2	29.6
123678-HxCDF WHO-TEQ2 (0.5 LOR)	pg/g	1.25			0.77	9.75	3.48	3.05	3.5	3.65	8.73	4.94	6.82
123789-HxCDD I-TEQ3 (LOR)	pg/g	1.25			2.39	31.1	14.6	11.9	10.5	14	18.4	19.2	29.6
123789-HxCDD LOR pg/g	pg/g	1.25			2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.5
123789-HxCDD WHO-TEQ1 (zero)	pg/g	1.25			2.39	31.1	14.6	11.9	10.5	14	18.4	19.2	29.6
123678-HxCDF WHO-TEF	pg/g	1.25			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123789-HxCDD WHO-TEF	pg/g	1.25			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123789-HxCDD WHO-TEQ2 (0.5 LOR)	pg/g	1.25			2.39	31.1	14.6	11.9	10.5	14	18.4	19.2	29.6
123789-HxCDD WHO-TEQ3 (LOR)	pg/g	1.25			2.39	31.1	14.6	11.9	10.5	14	18.4	19.2	29.6
2,3,7,8-Tetrachlorooxanthrene	pg/g	0.25			60.7	2360	226	147	173	207	260	180	222
123789-HxCDF I-TEF	pg/g	1.25			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
123789-HxCDF I-TEQ1 (zero)	pg/g	1.25			0	0	0	0	0	0	0	0	0
123789-HxCDF I-TEQ2 (0.5 LOR)	pg/g	1.25			0.12	0.12	0.12	0.13	0.12	0.12	0.12	0.12	0.12
123789-HxCDF I-TEQ3 (LOR)	pg/g	1.25			0.25	0.25	0.25	0.25	0.25	0.25	0.24	0.24	0.25
123789-HxCDF WHO-TEQ3 (LOR)	pg/g	1.25			0.25	0.25	0.25	0.25	0.25	0.25	0.24	0.24	0.25
123789-HxCDF LOR pg/g	pg/g	1.25			2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.5
123789-HxCDF WHO-TEQ1 (zero)	pg/g	1.25			0	0	0	0	0	0	0	0	0
123789-HxCDF WHO-TEQ2 (0.5 LOR)	pg/g	1.25			0.12	0.12	0.12	0.13	0.12	0.12	0.12	0.12	0.12
123789-HxCDF WHO-TEF	pg/g	1.25			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
12378-PeCDD I-TEF	pg/g	1.25			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
12378-PeCDD I-TEQ1 (zero)	pg/g	1.25			15.15	62.5	24.65	19.5	26.6	30.8	49.85	33.45	54.5
12378-PeCDD I-TEQ2 (0.5 LOR)	pg/g	1.25			15.15	62.5	24.65	19.5	26.6	30.8	49.85	33.45	54.5
12378-PeCDD I-TEQ3 (LOR)	pg/g	1.25			15.15	62.5	24.65	19.5	26.6	30.8	49.85	33.45	54.5
12378-PeCDD WHO-TEQ2 (0.5 LOR)	pg/g	1.25			30.3	125	49.3	39	53.2	61.6	99.7	66.9	109
12378-PeCDD WHO-TEQ3 (LOR)	pg/g	1.25			30.3	125	49.3	39	53.2	61.6	99.7	66.9	109
12378-PeCDD LOR pg/g	pg/g	1.25			2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.5
12378-PeCDD WHO-TEQ1 (zero)	pg/g	1.25			30.3	125	49.3	39	53.2	61.6	99.7	66.9	109
12378-PeCDD WHO-TEF	pg/g	1.25			1	1	1	1	1	1	1	1	1
12378-PeCDF I-TEF	pg/g	1.25			0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
12378-PeCDF I-TEQ1 (zero)	pg/g	1.25			0.24	1.88	0.77	0.54	0.75	0.79	1.42	1.08	1.61
12378-PeCDF I-TEQ2 (0.5 LOR)	pg/g	1.25			0.24	1.88	0.77	0.54	0.75	0.79	1.42	1.08	1.61
12378-PeCDF I-TEQ3 (LOR)	pg/g	1.25			0.24	1.88	0.77	0.54	0.75	0.79	1.42	1.08	1.61
12378-PeCDF LOR pg/g	pg/g	1.25			2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.5
12378-PeCDF WHO-TEF	pg/g	1.25			0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
12378-PeCDF WHO-TEQ2 (0.5 LOR)	pg/g	1.25			0.14	1.13	0.46	0.32	0.45	0.47	0.85	0.65	0.97

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Table C - Sediment Analytical Results
Rhodes Planned Precinct Additional Investigation

				Location ID	SD01	SD02	SD03	SD03	SD04	SD05	SD06	SD07	SD08
				Field ID	SD01	SD02	SD_QC01	SD03	SD04	SD05	SD06	SD07	SD08
				Sample Date	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020
			ANZG (2018) Default Guideline Values for toxicants in sediment (DGV)	ANZG (2018) Default Guideline Values for toxicants in sediment (DGV-high)									
ChemName	Units	EQL											
12378-PeCDF WHO-TEQ3 (LOR)	pg/g	1.25			0.14	1.13	0.46	0.32	0.45	0.47	0.85	0.65	0.97
12378-PeCDF WHO-TEQ1 (zero)	pg/g	1.25			0.14	1.13	0.46	0.32	0.45	0.47	0.85	0.65	0.97
234678-HxCDF I-TEF	pg/g	1.25			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
234678-HxCDF I-TEQ1 (zero)	pg/g	1.25			1.11	9.4	4.41	3.14	3.6	4.05	7.37	6.38	6.63
234678-HxCDF I-TEQ2 (0.5 LOR)	pg/g	1.25			1.11	9.4	4.41	3.14	3.6	4.05	7.37	6.38	6.63
234678-HxCDF I-TEQ3 (LOR)	pg/g	1.25			1.11	9.4	4.41	3.14	3.6	4.05	7.37	6.38	6.63
234678-HxCDF WHO-TEQ3 (LOR)	pg/g	1.25			1.11	9.4	4.41	3.14	3.6	4.05	7.37	6.38	6.63
234678-HxCDF LOR pg/g	pg/g	1.25			2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.5
234678-HxCDF WHO-TEQ1 (zero)	pg/g	1.25			1.11	9.4	4.41	3.14	3.6	4.05	7.37	6.38	6.63
234678-HxCDF WHO-TEQ2 (0.5 LOR)	pg/g	1.25			1.11	9.4	4.41	3.14	3.6	4.05	7.37	6.38	6.63
234678-HxCDF WHO-TEF	pg/g	1.25			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
23478-PeCDF I-TEF	pg/g	1.25			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
23478-PeCDF I-TEQ1 (zero)	pg/g	1.25			7.3	50.5	26.05	12.85	27.15	23.55	66.5	48.6	52.5
23478-PeCDF I-TEQ2 (0.5 LOR)	pg/g	1.25			7.3	50.5	26.05	12.85	27.15	23.55	66.5	48.6	52.5
23478-PeCDF I-TEQ3 (LOR)	pg/g	1.25			7.3	50.5	26.05	12.85	27.15	23.55	66.5	48.6	52.5
2378-TCDD I-TEF	pg/g	0.25			1	1	1	1	1	1	1	1	1
2378-TCDD I-TEQ1 (zero)	pg/g	0.25			60.7	2360	226	147	173	207	260	180	222
2378-TCDD I-TEQ2 (0.5 LOR)	pg/g	0.25			60.7	2360	226	147	173	207	260	180	222
2378-TCDD I-TEQ3 (LOR)	pg/g	0.25			60.7	2360	226	147	173	207	260	180	222
2378-TCDD WHO-TEQ3 (LOR)	pg/g	0.25			60.7	2360	226	147	173	207	260	180	222
23478-PeCDF LOR pg/g	pg/g	1.25			2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.5
23478-PeCDF WHO-TEQ1 (zero)	pg/g	1.25			4.38	30.3	15.63	7.71	16.29	14.13	39.9	29.16	31.5
23478-PeCDF WHO-TEQ2 (0.5 LOR)	pg/g	1.25			4.38	30.3	15.63	7.71	16.29	14.13	39.9	29.16	31.5
2378-TCDD LOR pg/g	pg/g	0.25			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
2378-TCDD WHO-TEQ1 (zero)	pg/g	0.25			60.7	2360	226	147	173	207	260	180	222
2378-TCDD WHO-TEQ2 (0.5 LOR)	pg/g	0.25			60.7	2360	226	147	173	207	260	180	222
23478-PeCDF WHO-TEF	pg/g	1.25			0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
23478-PeCDF WHO-TEQ3 (LOR)	pg/g	1.25			4.38	30.3	15.63	7.71	16.29	14.13	39.9	29.16	31.5
2378-TCDD WHO-TEF	pg/g	0.25			1	1	1	1	1	1	1	1	1
2378-TCDF I-TEF	pg/g	0.25			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
2378-TCDF I-TEQ1 (zero)	pg/g	0.25			2.04	6.91	1.08	1.23	1.26	1.61	2.8	2.03	1.81
2378-TCDF I-TEQ2 (0.5 LOR)	pg/g	0.25			2.04	6.91	1.08	1.23	1.26	1.61	2.8	2.03	1.81
2378-TCDF WHO-TEQ2 (0.5 LOR)	pg/g	0.25			2.04	6.91	1.08	1.23	1.26	1.61	2.8	2.03	1.81
2378-TCDF I-TEQ3 (LOR)	pg/g	0.25			2.04	6.91	1.08	1.23	1.26	1.61	2.8	2.03	1.81
2378-TCDF WHO-TEQ1 (zero)	pg/g	0.25			2.04	6.91	1.08	1.23	1.26	1.61	2.8	2.03	1.81
2378-TCDF WHO-TEQ3 (LOR)	pg/g	0.25			2.04	6.91	1.08	1.23	1.26	1.61	2.8	2.03	1.81
2378-TCDF LOR pg/g	pg/g	0.25			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
2378-TCDF WHO-TEF	pg/g	0.25			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Hexa-Dioxins	pg/g	1.25			947	7730	4540	3090	3990	4120	5790	6190	9230
Hexa-Dioxins LOR4 pg/g	pg/g	1.25			17.5	17.3	17.4	17.5	19.6	17.4	14.7	17.1	17.4
Hexa-Dioxins No. of Peaks	pg/g	1.25			7	7	7	7	8	7	6	7	7
Hexa-Furans	pg/g	1.25			678	2830	1360	1070	1470	1400	2570	2180	2650
Hexa-Furans LOR4 pg/g	pg/g	1.25			20	22.3	22.4	27.5	27	29.8	26.9	26.9	24.8
Hexa-Furans No. of Peaks	pg/g	1.25			8	9	9	11	11	12	11	11	10
Octa-Dioxin	pg/g	5			26,900	295,000	280,000	235,000	202,000	220,000	334,000	373,000	478,000
Octa-Dioxin LOR4 pg/g	pg/g	5			10	9.9	9.9	10	9.8	9.9	9.8	9.8	9.9
Octa-Dioxin No. of Peaks	pg/g	5			1	1	1	1	1	1	1	1	1
Octa-Furan	pg/g	2.5			1970	7660	4170	3160	4160	3360	5600	6230	7970
Octa-Furan LOR4 pg/g	pg/g	2.5			5	4.9	5	5	4.9	5	4.9	4.9	5
Octa-Furan No. of Peaks	pg/g	2.5			1	1	1	1	1	1	1	1	1
Penta-Dioxins	pg/g	1.25			412	1690	885	630	858	903	1400	1140	1270
Penta-Dioxins LOR4 pg/g	pg/g	1.25			22.5	22.3	19.9	22.5	22.1	22.4	22	22	22.3
Penta-Dioxins No. of Peaks	pg/g	1.25			9	9	8	9	9	9	9	9	9
Penta-Furans	pg/g	1.25			405	1610	779	512	879	906	1730	1290	1380
Penta-Furans LOR4 pg/g	pg/g	1.25			22.5	22.3	27.3	30	39.3	29.8	29.4	36.7	27.3
Penta-Furans No. of Peaks	pg/g	1.25			9	9	11	12	16	12	12	15	11
Hepta-Dioxins	pg/g	1.25			2970	57,600	29,400	22,400	22,500	25,400	42,600	53,800	85,300
Hepta-Dioxins LOR4 pg/g	pg/g	1.25			5	4.9	5	5	4.9	5	4.9	4.9	5

Jacobs

Table C - Sediment Analytical Results
Rhodes Planned Precinct Additional Investigation

				Location ID	SD01	SD02	SD03	SD03	SD04	SD05	SD06	SD07	SD08
				Field ID	SD01	SD02	SD_QC01	SD03	SD04	SD05	SD06	SD07	SD08
				Sample Date	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020	16/07/2020
			ANZG (2018) Default Guideline Values for toxicants in sediment (DGV)	ANZG (2018) Default Guideline Values for toxicants in sediment (DGV-high)									
ChemName	Units	EQL											
Hepta-Furans	pg/g	1.25			1250	6800	3620	2470	2960	3230	6230	5190	7730
Hepta-Furans LOR4 pg/g	pg/g	1.25			10	9.9	9.9	10	9.8	9.9	9.8	9.8	9.9
Hepta-Dioxins No. of Peaks	pg/g	1.25			2	2	2	2	2	2	2	2	2
Hepta-Furans No. of Peaks	pg/g	1.25			4	4	4	4	4	4	4	4	4
OCDD I-TEF	pg/g	5			0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
OCDD WHO-TEF	pg/g	5			0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
OCDD I-TEQ1 (zero)	pg/g	5			26.9	295	280	235	202	220	334	373	478
OCDD I-TEQ2 (0.5 LOR)	pg/g	5			26.9	295	280	235	202	220	334	373	478
OCDD LOR pg/g	pg/g	5			10	9.9	9.9	10	9.8	9.9	9.8	9.8	9.9
OCDD WHO-TEQ1 (zero)	pg/g	5			8.07	88.5	84	70.5	60.6	66	100.2	111.9	143.4
OCDD WHO-TEQ2 (0.5 LOR)	pg/g	5			8.07	88.5	84	70.5	60.6	66	100.2	111.9	143.4
OCDD I-TEQ3 (LOR)	pg/g	5			26.9	295	280	235	202	220	334	373	478
OCDD WHO-TEQ3 (LOR)	pg/g	5			8.07	88.5	84	70.5	60.6	66	100.2	111.9	143.4
OCDF I-TEF	pg/g	2.5			0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
OCDF WHO-TEF	pg/g	2.5			0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003
OCDF I-TEQ1 (zero)	pg/g	2.5			1.97	7.66	4.17	3.16	4.16	3.36	5.6	6.23	7.97
OCDF I-TEQ2 (0.5 LOR)	pg/g	2.5			1.97	7.66	4.17	3.16	4.16	3.36	5.6	6.23	7.97
OCDF WHO-TEQ1 (zero)	pg/g	2.5			0.59	2.3	1.25	0.95	1.25	1.01	1.68	1.87	2.39
OCDF WHO-TEQ2 (0.5 LOR)	pg/g	2.5			0.59	2.3	1.25	0.95	1.25	1.01	1.68	1.87	2.39
OCDF I-TEQ3 (LOR)	pg/g	2.5			1.97	7.66	4.17	3.16	4.16	3.36	5.6	6.23	7.97
OCDF WHO-TEQ3 (LOR)	pg/g	2.5			0.59	2.3	1.25	0.95	1.25	1.01	1.68	1.87	2.39
OCDF LOR pg/g	pg/g	2.5			5	4.9	5	5	4.9	5	4.9	4.9	5
Total TEQ	-				1	1	1	1	1	1	1	1	1
Total TEQ I-TEQ1 (zero)	pg/g	0			147.49	3353.6	847.81	638.06	649.39	733.6	1160.04	1166.77	1629.3
Total TEQ I-TEQ2 (0.5 LOR)	pg/g	0			147.61	3353.72	847.93	638.19	649.51	733.73	1160.16	1166.89	1629.42
Total TEQ I-TEQ3 (LOR)	pg/g	0			147.74	3353.85	848.06	638.31	649.63	733.85	1160.28	1167.01	1629.55
Total TEQ WHO-TEQ3 (LOR)	pg/g	0			139.66	3183.53	663.06	485.75	520.76	598.56	945.25	915.13	1322.23
Total TEQ WHO-TEQ1 (zero)	pg/g	0			139.41	3183.29	662.81	485.5	520.52	598.31	945	914.88	1321.98
Total TEQ WHO-TEQ2 (0.5 LOR)	pg/g	0			139.54	3183.41	662.94	485.62	520.64	598.44	945.12	915.01	1322.1
Tetra-Furans	pg/g	0.25			501	2090	650	433	628	635	1300	973	1210
Tetra-Furans LOR4 pg/g	pg/g	0.25			6.5	7.9	8.4	8	11.8	8.4	8.3	9.3	11.9
Tetra-Furans No. of Peaks	pg/g	0.25			13	16	17	16	24	17	17	19	24
Tetra-Dioxins	pg/g	0.25			254	3660	655	501	690	640	887	742	806
Tetra-Dioxins LOR4 pg/g	pg/g	0.25			7.5	6.4	6	5	6.4	6	5.9	4.9	5.5
Tetra-Dioxins No. of Peaks	pg/g	0.25			15	13	12	10	13	12	12	10	11

Field ID	SD03	SD_QC01	**RPD**	SD_QC02	**RPD**	BH21_1.3	QC101_200818	**RPD**	QC201_200818	**RPD**
Location Code	SD03	SD03		SD03		BH21	BH21		BH21	
Sampled Date	16/07/2020	16/07/2020		16/07/2020		18/08/2020	18/08/2020		18/08/2020	
Lab Report No.	EB2090071/ ES2024630	EB2090071/ ES2024630		732623		EB2090082/ ES2029204	EB2090082/ ES2029204		739600	
Sample Type	Normal	Field_D		Interlab_D		Normal	Field_D		Interlab_D	

ChemName	Units	EQL										
Polychlorinated Biphenyls												
Arochlor 1016	mg/kg	0.005 : 0.1 (Interlab)	<0.125	<0.0156	0	<0.1	0					
Arochlor 1221	mg/kg	0.005 : 0.1 (Interlab)	<0.125	<0.0156	0	<0.1	0					
Arochlor 1232	mg/kg	0.005 : 0.1 (Interlab)	<0.125	<0.0156	0	<0.1	0					
Arochlor 1242	mg/kg	0.005 : 0.1 (Interlab)	<0.125	<0.0156	0	<0.1	0					
Arochlor 1248	mg/kg	0.005 : 0.1 (Interlab)	<0.125	<0.0156	0	<0.1	0					
Arochlor 1254	mg/kg	0.005 : 0.1 (Interlab)	<0.125	<0.0156	0	<0.1	0					
Arochlor 1260	mg/kg	0.005 : 0.1 (Interlab)	<0.125	<0.0156	0	<0.1	0					
PCBs (Sum of total)	mg/kg	0.1 : 0.5 (Interlab)						<0.1	<0.1	0	<0.5	0
PCBs (Sum of total)	mg/kg	0.005 : 0.1 (Interlab)	<0.125	<0.0156	0	<0.1	0					
Metals												
Arsenic	mg/kg	5 : 2 (Interlab)						<5	<5	0	5.1	2
Arsenic	mg/kg	1 : 2 (Interlab)	17.3	15.2	13	22	24					
Cadmium	mg/kg	1 : 0.4 (Interlab)						<1	<1	0	<0.4	0
Cadmium	mg/kg	0.1 : 1 (Interlab)	1.1	0.9	20	1.4	24					
Chromium (III+VI)	mg/kg	2 : 5 (Interlab)						10	9	11	18	57
Chromium (III+VI)	mg/kg	1 : 5 (Interlab)	**180**	**124**	**37**	220	20					
Copper	mg/kg	5						77	68	12	56	32
Copper	mg/kg	1 : 5 (Interlab)	79.1	86.5	9	**110**	**33**					
Lead	mg/kg	5						88	128	37	97	10
Lead	mg/kg	1 : 5 (Interlab)	208	173	18	260	22					
Mercury	mg/kg	0.1						0.2	0.2	0	0.2	0
Mercury	mg/kg	0.01 : 0.1 (Interlab)	0.48	0.45	6	0.6	22					
Nickel	mg/kg	2 : 5 (Interlab)						3	3	0	6.5	74
Nickel	mg/kg	1 : 5 (Interlab)	18.5	16.6	11	24	26					
Zinc	mg/kg	5						133	146	9	140	5
Zinc	mg/kg	1 : 5 (Interlab)	488	483	1	590	19					
Physiochemical parameters												
Moisture Content	%	1						10.9	13.5	21		
Moisture Content	%	0.1	44	42.5	3							
TRH - NEPM 2013 Fractions												
TRH >C6 - C10	mg/kg	3 : 20 (Interlab)	<3	<3	0	<20	0					
TRH >C6 - C10	mg/kg	10 : 20 (Interlab)						<10	<10	0	<20	0
TRH >C10 - C16	mg/kg	50						<50	<50	0	<50	0
TRH >C10 - C16	mg/kg	3 : 50 (Interlab)	80	79	1	<50	46					
TRH >C16 - C34	mg/kg	3 : 100 (Interlab)	1250	1350	8	**<100**	**170**					
TRH >C16 - C34	mg/kg	100						<100	<100	0	<100	0
TRH >C34 - C40	mg/kg	5 : 100 (Interlab)	406	435	7	**<100**	**121**					
TRH >C34 - C40	mg/kg	100						<100	<100	0	<100	0
TRH >C10 - C40 (Sum of total)	mg/kg	50 : 100 (Interlab)						<50	<50	0	<100	0
TRH >C10 - C40 (Sum of total)	mg/kg	3 : 100 (Interlab)	1740	1860	7	**<100**	**178**					
TRH >C6 - C10 less BTEX (F1)	mg/kg	3 : 20 (Interlab)	<3	<3	0	<20	0					
TRH >C6 - C10 less BTEX (F1)	mg/kg	10 : 20 (Interlab)						<10	<10	0	<20	0
TRH >C10 - C16 less Naphthalene (F2)	mg/kg	50						<50	<50	0	<50	0
TRH >C10 - C16 less Naphthalene (F2)	mg/kg	3 : 50 (Interlab)	80	79	1	<50	46					
TPH - NEPM 1999 Fractions												
TPH C6 - C9	mg/kg	3 : 20 (Interlab)	<3	<3	0	<20	0					
TPH C6 - C9	mg/kg	10 : 20 (Interlab)						<10	<10	0	<20	0
TPH C10 - C14	mg/kg	50 : 20 (Interlab)						<50	<50	0	<20	0
TPH C10 - C14	mg/kg	3 : 20 (Interlab)	35	34	3	**<20**	**55**					
TPH C15 - C28	mg/kg	3 : 50 (Interlab)	781	834	7	**<50**	**176**					
TPH C15 - C28	mg/kg	100 : 50 (Interlab)						<100	<100	0	<50	0
TPH C29-C36	mg/kg	5 : 50 (Interlab)	659	727	10	**<50**	**172**					
TPH C29-C36	mg/kg	100 : 50 (Interlab)						<100	<100	0	<50	0
TPH C10 - C36 (Sum of total)	mg/kg	50						<50	<50	0	<50	0
TPH C10 - C36 (Sum of total)	mg/kg	3 : 50 (Interlab)	1480	1600	8	**<50**	**187**					

Field ID	SD03	SD_QC01	RPD	SD_QC02	RPD	BH21_1.3	QC101_200818	RPD	QC201_200818	RPD
Location Code	SD03	SD03		SD03		BH21	BH21		BH21	
Sampled Date	16/07/2020	16/07/2020		16/07/2020		18/08/2020	18/08/2020		18/08/2020	
Lab Report No.	EB2090071/ ES2024630	EB2090071/ ES2024630		732623		EB2090082/ ES2029204	EB2090082/ ES2029204		739600	
Sample Type	Normal	Field_D		Interlab_D		Normal	Field_D		Interlab_D	

ChemName	Units	EQL										
BTEXN												
Benzene	mg/kg	0.2 : 0.1 (Interlab)	<0.2	<0.2	0	<0.1	0	<0.2	<0.2	0	<0.1	0
Ethylbenzene	mg/kg	0.5 : 0.1 (Interlab)						<0.5	<0.5	0	<0.1	0
Ethylbenzene	mg/kg	0.2 : 0.1 (Interlab)	<0.2	<0.2	0	<0.1	0					
Naphthalene	mg/kg	1 : 0.5 (Interlab)						<1	<1	0	<0.5	0
Naphthalene	mg/kg	0.5						<0.5	<0.5	0	<0.5	0
Naphthalene	mg/kg	0.2 : 0.5 (Interlab)	<0.2	<0.2	0	<0.005	0					
Naphthalene	mg/kg	0.01 : 0.5 (Interlab)	**0.22**	**0.09**	**84**	**<0.005**	**191**					
Toluene	mg/kg	0.5 : 0.1 (Interlab)						<0.5	<0.5	0	<0.1	0
Toluene	mg/kg	0.2 : 0.1 (Interlab)	<0.2	<0.2	0	<0.1	0	<0.5	<0.5	0	<0.1	0
Xylene (m & p)	mg/kg	0.5 : 0.2 (Interlab)						<0.5	<0.5	0	<0.2	0
Xylene (m & p)	mg/kg	0.2	<0.2	<0.2	0	<0.2	0					
Xylene (o)	mg/kg	0.5 : 0.1 (Interlab)						<0.5	<0.5	0	<0.1	0
Xylene (o)	mg/kg	0.2 : 0.1 (Interlab)	<0.2	<0.2	0	<0.1	0					
Xylene Total	mg/kg	0.5 : 0.3 (Interlab)	<0.5	<0.5	0	<0.3	0	<0.5	<0.5	0	<0.3	0
Total BTEX	mg/kg	0.2	<0.2	<0.2	0			<0.2	<0.2	0		
Polycyclic aromatic hydrocarbons (PAHs)												
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5						<0.5	<0.5	0	<0.5	0
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.01	**2.27**	**1.47**	**43**							
Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5						0.6	0.6	0	0.6	0
Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.01	**2.27**	**1.47**	**43**							
Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5						1.2	1.2	0	1.2	0
Benzo(a)pyrene TEQ (LOR)	mg/kg	0.01	**2.27**	**1.47**	**43**							
2-methylnaphthalene	mg/kg	0.01	0.1	0.05	67							
3-methylcholanthrene	mg/kg	0.01	<0.02	<0.02	0							
7,12-dimethylbenz(a)anthracene	mg/kg	0.01	<0.02	<0.02	0							
Acenaphthene	mg/kg	0.5						<0.5	<0.5	0	<0.5	0
Acenaphthene	mg/kg	0.01 : 0.005 (Interlab)	<0.02	0.04	67	<0.005	0					
Acenaphthylene	mg/kg	0.5						<0.5	<0.5	0	<0.5	0
Acenaphthylene	mg/kg	0.01 : 0.005 (Interlab)	**0.37**	**0.18**	**69**	**<0.005**	**195**					
Anthracene	mg/kg	0.5						<0.5	<0.5	0	<0.5	0
Anthracene	mg/kg	0.01 : 0.005 (Interlab)	**0.29**	**0.16**	**58**	**<0.005**	**193**					
Benz(a)anthracene	mg/kg	0.5						<0.5	<0.5	0	<0.5	0
Benz(a)anthracene	mg/kg	0.01 : 0.005 (Interlab)	**1.12**	**0.57**	**65**	**<0.05**	**183**					
Benzo(k)fluoranthene	mg/kg	0.5						<0.5	<0.5	0	<0.5	0
Benzo(k)fluoranthene	mg/kg	0.01 : 0.005 (Interlab)	**0.64**	**0.46**	**33**	**0.026**	**184**					
Benzo(b+j)fluoranthene	mg/kg	0.5						<0.5	0.6	18	<0.5	0
Benzo(b+j)fluoranthene	mg/kg	0.01 : 0.005 (Interlab)	**2.2**	**1.01**	**74**	**0.033**	**194**					
Benzo(g,h,i)perylene	mg/kg	0.5						<0.5	<0.5	0	<0.5	0
Benzo(g,h,i)perylene	mg/kg	0.01 : 0.005 (Interlab)	**1.29**	**0.9**	**36**	**<0.005**	**198**					
Benzo(a) pyrene	mg/kg	0.5						<0.5	<0.5	0	<0.5	0
Benzo(a) pyrene	mg/kg	0.01 : 0.005 (Interlab)	**1.39**	**1**	**33**	**<0.005**	**199**					
Benzo(e)pyrene	mg/kg	0.01	**0.98**	**0.45**	**74**							
Chrysene	mg/kg	0.5						<0.5	0.5	0	<0.5	0
Chrysene	mg/kg	0.01 : 0.005 (Interlab)	**1.26**	**0.58**	**74**	**<0.05**	**185**					
Coronene	mg/kg	0.01	0.28	0.2	33							
Dibenz(a,h)anthracene	mg/kg	0.5						<0.5	<0.5	0	<0.5	0
Dibenz(a,h)anthracene	mg/kg	0.01 : 0.005 (Interlab)	**0.34**	**0.19**	**57**	**<0.005**	**194**					
Fluoranthene	mg/kg	0.5						<0.5	0.9	57	<0.5	0
Fluoranthene	mg/kg	0.01 : 0.005 (Interlab)	**1.64**	**0.91**	**57**	**<0.005**	**199**					
Fluorene	mg/kg	0.5						<0.5	<0.5	0	<0.5	0
Fluorene	mg/kg	0.01 : 0.005 (Interlab)	<0.02	<0.02	0	<0.005	0					
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5						<0.5	<0.5	0	<0.5	0
Indeno(1,2,3-c,d)pyrene	mg/kg	0.01 : 0.005 (Interlab)	**1.21**	**0.62**	**64**	**<0.005**	**198**					
Perylene	mg/kg	0.01	**0.45**	**0.23**	**65**							
Phenanthrene	mg/kg	0.5						<0.5	<0.5	0	<0.5	0

Field ID	SD03	SD_QC01	**RPD**	SD_QC02	**RPD**	BH21_1.3	QC101_200818	**RPD**	QC201_200818	**RPD**
Location Code	SD03	SD03		SD03		BH21	BH21		BH21	
Sampled Date	16/07/2020	16/07/2020		16/07/2020		18/08/2020	18/08/2020		18/08/2020	
Lab Report No.	EB2090071/ ES2024630	EB2090071/ ES2024630		732623		EB2090082/ ES2029204	EB2090082/ ES2029204		739600	
Sample Type	Normal	Field_D		Interlab_D		Normal	Field_D		Interlab_D	

ChemName	**Units**	**EQL**										
Phenanthrene	mg/kg	0.01 : 0.005 (Interlab)	**0.75**	**0.39**	**63**	**<0.005**	**197**					
Pyrene	mg/kg	0.5						<0.5	0.9	57	<0.5	0
Pyrene	mg/kg	0.01 : 0.005 (Interlab)	**1.95**	**1.07**	**58**	**0.038**	**192**					
PAHs (Sum of total)	mg/kg	0.5						**<0.5**	**2.9**	**141**	<0.5	0
PAHs (Sum of total)	mg/kg	0.01 : 0.005 (Interlab)	**16.5**	**9.1**	**58**	**0.097**	**198**					
Semi Volatile Organic Compounds (SVOCs)												
3- & 4-Methylphenol	µg/kg	1000 : 400 (Interlab)						<1000	<1000	0	<400	0
2-(acetylamino) fluorene	mg/kg	0.1	<0.1	<0.1	0							
Hexachlorophene	mg/kg	0.01	<0.02	<0.02	0							
Organotins												
Dibutyltin	µg/kg	1	3	3	0							
Monobutyltin	µg/kg	1	<1	<1	0							
Tributyltin as SN	µg/kg	0.5	**<0.5**	**1.8**	**113**							
Dioxins & Furans												
1,2,3,4,6,7,8-Heptachlorooxanthrene	pg/g	1.25	13000	16700	25			**235**	**168**	**33**	**390**	**50**
1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/g	1.25	**718**	**1030**	**36**			30.5	27.4	11	43	34
1,2,3,4,7,8,9-Heptachlorodibenzofuran	pg/g	1.25	**89.4**	**130**	**37**			<2.5	<2.5	0	<5	0
1,2,3,4,7,8-Hexachlorooxanthrene	pg/g	1.25	**29.2**	**45**	**43**			5.2	3.3	45	<5	4
1,2,3,4,7,8-Hexachlorodibenzofuran	pg/g	1.25	131	165	23			3.4	<2.5	31	<5	0
1,2,3,6,7,8-Hexachlorooxanthrene	pg/g	1.25	466	630	30			6.6	6.2	6	11	50
1,2,3,6,7,8-Hexachlorodibenzofuran	pg/g	1.25	30.5	34.8	13			3.5	<2.5	33	<5	0
1,2,3,7,8,9-Hexachlorodibenzofuran	pg/g	1.25	<2.5	<2.5	0			<2.5	<2.5	0	<5	0
1,2,3,7,8-Pentachlorooxanthrene	pg/g	1.25	39	49.3	23			2.7	3.2	17	<5	0
1,2,3,7,8-Pentachlorodibenzofuran	pg/g	1.25	10.8	15.4	35			2.6	<2.5	4	<5	0
2,3,4,6,7,8-Hexachlorodibenzofuran	pg/g	1.25	**31.4**	**44.1**	**34**			2.7	<2.5	8	<5	0
2,3,4,7,8-Pentachlorodibenzofuran	pg/g	1.25	**25.7**	**52.1**	**68**			3	2.6	14	<5	0
2,3,7,8-Tetrachlorodibenzofuran	pg/g	0.25	12.3	10.8	13			2.2	1.2	59	2.8	24
1,2,3,4,6,7,8,9-Octachlorooxanthrene	pg/g	5	235000	280000	17			**11500**	**8060**	**35**	8800	27
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	pg/g	2.5	3160	4170	28			63.1	62.4	1	**130**	**69**
Dioxins I-TEF												
1234678-HpCDD I-TEF	pg/g	1.25	0.01	0.01	0			0.01	0.01	0		
1234678-HpCDF I-TEF	pg/g	1.25	0.01	0.01	0			0.01	0.01	0		
1234789-HpCDF I-TEF	pg/g	1.25	0.01	0.01	0			0.01	0.01	0		
123478-HxCDD I-TEF	pg/g	1.25	0.1	0.1	0			0.1	0.1	0		
123478-HxCDF I-TEF	pg/g	1.25	0.1	0.1	0			0.1	0.1	0		
123678-HxCDD I-TEF	pg/g	1.25	0.1	0.1	0			0.1	0.1	0		
123678-HxCDF I-TEF	pg/g	1.25	0.1	0.1	0			0.1	0.1	0		
123789-HxCDD I-TEF	pg/g	1.25	0.1	0.1	0			0.1	0.1	0		
123789-HxCDF I-TEF	pg/g	1.25	0.1	0.1	0			0.1	0.1	0		
12378-PeCDD I-TEF	pg/g	1.25	0.5	0.5	0			0.5	0.5	0		
12378-PeCDF I-TEF	pg/g	1.25	0.05	0.05	0			0.05	0.05	0		
23478-PeCDF I-TEF	pg/g	1.25	0.5	0.5	0			0.5	0.5	0		
2378-TCDD I-TEF	pg/g	0.25	1	1	0			1	1	0		
OCDD I-TEF	pg/g	5	0.001	0.001	0			0.001	0.001	0		
OCDF I-TEF	pg/g	2.5	0.001	0.001	0			0.001	0.001	0		
Dioxins I-TEQ 0.5xLOR												
1234678-HpCDD I-TEQ2 (0.5 LOR)	pg/g	1.25	130	167	25			2.35	1.68	33		
1234678-HpCDF I-TEQ2 (0.5 LOR)	pg/g	1.25	7.18	10.3	36			0.31	0.27	14		
1234789-HpCDF I-TEQ2 (0.5 LOR)	pg/g	1.25	0.89	1.3	37			0.01	0.01	0		
123478-HxCDD I-TEQ2 (0.5 LOR)	pg/g	1.25	2.92	4.5	43			0.52	0.33	45		
123478-HxCDF I-TEQ2 (0.5 LOR)	pg/g	1.25	13.1	16.5	23			0.34	0.12	96		
123678-HxCDD I-TEQ2 (0.5 LOR)	pg/g	1.25	46.6	63	30			0.66	0.62	6		
123678-HxCDF I-TEQ2 (0.5 LOR)	pg/g	1.25	3.05	3.48	13			0.35	0.12	98		
123789-HxCDD I-TEQ2 (0.5 LOR)	pg/g	1.25	11.9	14.6	20			0.43	0.47	9		
123789-HxCDF I-TEQ2 (0.5 LOR)	pg/g	1.25	0.13	0.12	8			0.12	0.12	0		
12378-PeCDD I-TEQ2 (0.5 LOR)	pg/g	1.25	19.5	24.65	23			1.35	1.62	18		

Field ID	SD03	SD_QC01	**RPD**	SD_QC02	**RPD**	BH21_1.3	QC101_200818	**RPD**	QC201_200818	**RPD**
Location Code	SD03	SD03		SD03		BH21	BH21		BH21	
Sampled Date	16/07/2020	16/07/2020		16/07/2020		18/08/2020	18/08/2020		18/08/2020	
Lab Report No.	EB2090071/ ES2024630	EB2090071/ ES2024630		732623		EB2090082/ ES2029204	EB2090082/ ES2029204		739600	
Sample Type	Normal	Field_D		Interlab_D		Normal	Field_D		Interlab_D	
ChemName	**Units**	**EQL**								
12378-PeCDF I-TEQ2 (0.5 LOR)	pg/g	1.25	0.54	0.77	35			0.13	0.06	74		
23478-PeCDF I-TEQ2 (0.5 LOR)	pg/g	1.25	**12.85**	**26.05**	**68**			1.5	1.32	13		
2378-TCDD I-TEQ2 (0.5 LOR)	pg/g	0.25	**147**	**226**	**42**			**0.25**	**1.14**	**128**		
OCDD I-TEQ2 (0.5 LOR)	pg/g	5	235	280	17			11.5	8.06	35		
OCDF I-TEQ2 (0.5 LOR)	pg/g	2.5	3.16	4.17	28			0.06	0.06	0		
Total TEQ I-TEQ2 (0.5 LOR)	pg/g	0	638.19	847.93	28			20.36	16.25	22		
Dioxins I-TEQ 0xLOR												
1234678-HpCDD I-TEQ1 (zero)	pg/g	1.25	130	167	25			2.35	1.68	33		
1234678-HpCDF I-TEQ1 (zero)	pg/g	1.25	7.18	10.3	36			0.31	0.27	14		
1234789-HpCDF I-TEQ1 (zero)	pg/g	1.25	0.89	1.3	37			0	0	0		
123478-HxCDD I-TEQ1 (zero)	pg/g	1.25	2.92	4.5	43			0.52	0.33	45		
123478-HxCDF I-TEQ1 (zero)	pg/g	1.25	13.1	16.5	23			0.34	0	200		
123678-HxCDD I-TEQ1 (zero)	pg/g	1.25	46.6	63	30			0.66	0.62	6		
123678-HxCDF I-TEQ1 (zero)	pg/g	1.25	3.05	3.48	13			0.35	0	200		
123789-HxCDD I-TEQ1 (zero)	pg/g	1.25	11.9	14.6	20			0.43	0.47	9		
123789-HxCDF I-TEQ1 (zero)	pg/g	1.25	0	0	0			0	0	0		
12378-PeCDD I-TEQ1 (zero)	pg/g	1.25	19.5	24.65	23			1.35	1.62	18		
12378-PeCDF I-TEQ1 (zero)	pg/g	1.25	0.54	0.77	35			0.13	0	200		
23478-PeCDF I-TEQ1 (zero)	pg/g	1.25	**12.85**	**26.05**	**68**			1.5	1.32	13		
2378-TCDD I-TEQ1 (zero)	pg/g	0.25	**147**	**226**	**42**			**0**	**1.14**	**200**		
OCDD I-TEQ1 (zero)	pg/g	5	235	280	17			11.5	8.06	35		
OCDF I-TEQ1 (zero)	pg/g	2.5	3.16	4.17	28			0.06	0.06	0		
Total TEQ I-TEQ1 (zero)	pg/g	0	638.06	847.81	28			19.98	15.68	24		
Dioxins I-TEQ 1xLOR												
1234678-HpCDD I-TEQ3 (LOR)	pg/g	1.25	130	167	25			2.35	1.68	33		
1234678-HpCDF I-TEQ3 (LOR)	pg/g	1.25	7.18	10.3	36			0.31	0.27	14		
1234789-HpCDF I-TEQ3 (LOR)	pg/g	1.25	0.89	1.3	37			0.02	0.02	0		
123478-HxCDD I-TEQ3 (LOR)	pg/g	1.25	2.92	4.5	43			0.52	0.33	45		
123478-HxCDF I-TEQ3 (LOR)	pg/g	1.25	13.1	16.5	23			0.34	0.25	31		
123678-HxCDD I-TEQ3 (LOR)	pg/g	1.25	46.6	63	30			0.66	0.62	6		
123678-HxCDF I-TEQ3 (LOR)	pg/g	1.25	3.05	3.48	13			0.35	0.25	33		
123789-HxCDD I-TEQ3 (LOR)	pg/g	1.25	11.9	14.6	20			0.43	0.47	9		
123789-HxCDF I-TEQ3 (LOR)	pg/g	1.25	0.25	0.25	0			0.25	0.25	0		
12378-PeCDD I-TEQ3 (LOR)	pg/g	1.25	19.5	24.65	23			1.35	1.62	18		
12378-PeCDF I-TEQ3 (LOR)	pg/g	1.25	0.54	0.77	35			0.13	0.12	8		
23478-PeCDF I-TEQ3 (LOR)	pg/g	1.25	**12.85**	**26.05**	**68**			1.5	1.32	13		
2378-TCDD I-TEQ3 (LOR)	pg/g	0.25	**147**	**226**	**42**			0.49	1.14	80		
OCDD I-TEQ3 (LOR)	pg/g	5	235	280	17			11.5	8.06	35		
OCDF I-TEQ3 (LOR)	pg/g	2.5	3.16	4.17	28			0.06	0.06	0		
Total TEQ I-TEQ3 (LOR)	pg/g	0	638.31	848.06	28			20.74	16.81	21		
Dioxins LOR												
1234678-HpCDD LOR	pg/g	1.25	2.5	2.5	0			2.5	2.5	0		
1234678-HpCDF LOR	pg/g	1.25	2.5	2.5	0			2.5	2.5	0		
1234789-HpCDF LOR	pg/g	1.25	2.5	2.5	0			2.5	2.5	0		
123478-HxCDD LOR	pg/g	1.25	2.5	2.5	0			2.5	2.5	0		
123478-HxCDF LOR	pg/g	1.25	2.5	2.5	0			2.5	2.5	0		
123678-HxCDD LOR	pg/g	1.25	2.5	2.5	0			2.5	2.5	0		
123678-HxCDF LOR	pg/g	1.25	2.5	2.5	0			2.5	2.5	0		
123789-HxCDD LOR	pg/g	1.25	2.5	2.5	0			2.5	2.5	0		
123789-HxCDF LOR	pg/g	1.25	2.5	2.5	0			2.5	2.5	0		
12378-PeCDD LOR	pg/g	1.25	2.5	2.5	0			2.5	2.5	0		
12378-PeCDF LOR	pg/g	1.25	2.5	2.5	0			2.5	2.5	0		
23478-PeCDF LOR	pg/g	1.25	2.5	2.5	0			2.5	2.5	0		
2378-TCDD LOR	pg/g	0.25	0.5	0.5	0			0.5	0.5	0		
OCDD LOR	pg/g	5	10	9.9	1			9.8	9.8	0		
OCDF LOR	pg/g	2.5	5	5	0			4.9	4.9	0		

Field ID	SD03	SD_QC01	RPD	SD_QC02	RPD	BH21_1.3	QC101_200818	RPD	QC201_200818	RPD
Location Code	SD03	SD03		SD03		BH21	BH21		BH21	
Sampled Date	16/07/2020	16/07/2020		16/07/2020		18/08/2020	18/08/2020		18/08/2020	
Lab Report No.	EB2090071/ ES2024630	EB2090071/ ES2024630		732623		EB2090082/ ES2029204	EB2090082/ ES2029204		739600	
Sample Type	Normal	Field_D		Interlab_D		Normal	Field_D		Interlab_D	

ChemName	Units	EQL										
Dioxins Total												
Hexa-Dioxins	pg/g	1.25	**3090**	**4540**	**38**			**210**	**128**	**49**		
Hexa-Furans	pg/g	1.25	1070	1360	24			**47.6**	**35.1**	**30**		
Octa-Dioxin	pg/g	5	235000	280000	17			**11500**	**8060**	**35**		
Octa-Furan	pg/g	2.5	3160	4170	28			63.1	62.4	1		
Penta-Dioxins	pg/g	1.25	**630**	**885**	**34**			95.5	72.8	27		
Penta-Furans	pg/g	1.25	**512**	**779**	**41**			45.5	40.1	13		
Hepta-Dioxins	pg/g	1.25	22400	29400	27			**500**	**337**	**39**		
Hepta-Furans	pg/g	1.25	**2470**	**3620**	**38**			75.9	71.4	6		
Total TEQ	-	0 pg/g	1	1	0			1	1	0		
Tetra-Furans	pg/g	0.25	**433**	**650**	**40**			**69.4**	**40.8**	**52**		
Tetra-Dioxins	pg/g	0.25	501	655	27			**83.7**	**40.2**	**70**		
Dioxins Total LOR												
Hexa-Dioxins LOR	pg/g	1.25	17.5	17.4	1			27	22.1	20		
Hexa-Furans LOR	pg/g	1.25	27.5	22.4	20			22.1	22.1	0		
Octa-Dioxin LOR	pg/g	5	10	9.9	1			9.8	9.8	0		
Octa-Furan LOR	pg/g	2.5	5	5	0			4.9	4.9	0		
Penta-Dioxins LOR	pg/g	1.25	22.5	19.9	12			17.2	19.7	14		
Penta-Furans LOR	pg/g	1.25	30	27.3	9			27	27	0		
Hepta-Dioxins LOR	pg/g	1.25	5	5	0			4.9	4.9	0		
Hepta-Furans LOR	pg/g	1.25	10	9.9	1			9.8	9.8	0		
Tetra-Furans LOR	pg/g	0.25	8	8.4	5			8.4	8.8	5		
Tetra-Dioxins LOR	pg/g	0.25	5	6	18			5.4	4.9	10		
Dioxins Total Peaks												
Hexa-Dioxins No. of Peaks	pg/g	1.25	7	7	0			11	9	20		
Hexa-Furans No. of Peaks	pg/g	1.25	11	9	20			9	9	0		
Octa-Dioxin No. of Peaks	pg/g	5	1	1	0			1	1	0		
Octa-Furan No. of Peaks	pg/g	2.5	1	1	0			1	1	0		
Penta-Dioxins No. of Peaks	pg/g	1.25	9	8	12			7	8	13		
Penta-Furans No. of Peaks	pg/g	1.25	12	11	9			11	11	0		
Hepta-Dioxins No. of Peaks	pg/g	1.25	2	2	0			2	2	0		
Hepta-Furans No. of Peaks	pg/g	1.25	4	4	0			4	4	0		
Tetra-Furans No. of Peaks	pg/g	0.25	16	17	6			17	18	6		
Tetra-Dioxins No. of Peaks	pg/g	0.25	10	12	18			11	10	10		
Dioxins WHO-TEF												
1234678-HpCDD WHO-TEF	pg/g	1.25	0.01	0.01	0			0.01	0.01	0		
1234678-HpCDF WHO-TEF	pg/g	1.25	0.01	0.01	0			0.01	0.01	0		
1234789-HpCDF WHO-TEF	pg/g	1.25	0.01	0.01	0			0.01	0.01	0		
123478-HxCDD WHO-TEF	pg/g	1.25	0.1	0.1	0			0.1	0.1	0		
123478-HxCDF WHO-TEF	pg/g	1.25	0.1	0.1	0			0.1	0.1	0		
123678-HxCDD WHO-TEF	pg/g	1.25	0.1	0.1	0			0.1	0.1	0		
123678-HxCDF WHO-TEF	pg/g	1.25	0.1	0.1	0			0.1	0.1	0		
123789-HxCDD WHO-TEF	pg/g	1.25	0.1	0.1	0			0.1	0.1	0		
123789-HxCDF WHO-TEF	pg/g	1.25	0.1	0.1	0			0.1	0.1	0		
12378-PeCDD WHO-TEF	pg/g	1.25	1	1	0			1	1	0		
12378-PeCDF WHO-TEF	pg/g	1.25	0.03	0.03	0			0.03	0.03	0		
23478-PeCDF WHO-TEF	pg/g	1.25	0.3	0.3	0			0.3	0.3	0		
2378-TCDD WHO-TEF	pg/g	0.25	1	1	0			1	1	0		
OCDD WHO-TEF	pg/g	5	0.0003	0.0003	0			0.0003	0.0003	0		
OCDF WHO-TEF	pg/g	2.5	0.0003	0.0003	0			0.0003	0.0003	0		
Dioxins WHO-TEQ 0.5xLOR												
1234678-HpCDF WHO-TEQ2 (0.5 LOR)	pg/g	1.25	7.18	10.3	36			0.31	0.27	14		
1234789-HpCDF WHO-TEQ2 (0.5 LOR)	pg/g	1.25	0.89	1.3	37			0.01	0.01	0		
123478-HxCDD WHO-TEQ2 (0.5 LOR)	pg/g	1.25	2.92	4.5	43			0.52	0.33	45		
123478-HxCDF WHO-TEQ2 (0.5 LOR)	pg/g	1.25	13.1	16.5	23			0.34	0.12	96		
123678-HxCDD WHO-TEQ2 (0.5 LOR)	pg/g	1.25	46.6	63	30			0.66	0.62	6		

Field ID	SD03	SD_QC01	**RPD**	SD_QC02	**RPD**	BH21_1.3	QC101_200818	**RPD**	QC201_200818	**RPD**
Location Code	SD03	SD03		SD03		BH21	BH21		BH21	
Sampled Date	16/07/2020	16/07/2020		16/07/2020		18/08/2020	18/08/2020		18/08/2020	
Lab Report No.	EB2090071/ ES2024630	EB2090071/ ES2024630		732623		EB2090082/ ES2029204	EB2090082/ ES2029204		739600	
Sample Type	Normal	Field_D		Interlab_D		Normal	Field_D		Interlab_D	
ChemName	**Units**	**EQL**								
123678-HxCDF WHO-TEQ2 (0.5 LOR)	pg/g	1.25	3.05	3.48	13			0.35	0.12	98		
123789-HxCDD WHO-TEQ2 (0.5 LOR)	pg/g	1.25	11.9	14.6	20			0.43	0.47	9		
123789-HxCDF WHO-TEQ2 (0.5 LOR)	pg/g	1.25	0.13	0.12	8			0.12	0.12	0		
12378-PeCDD WHO-TEQ2 (0.5 LOR)	pg/g	1.25	39	49.3	23			2.69	3.23	18		
12378-PeCDF WHO-TEQ2 (0.5 LOR)	pg/g	1.25	0.32	0.46	36			0.08	0.04	67		
23478-PeCDF WHO-TEQ2 (0.5 LOR)	pg/g	1.25	**7.71**	**15.63**	**68**			0.9	0.79	13		
2378-TCDD WHO-TEQ2 (0.5 LOR)	pg/g	0.25	**147**	**226**	**42**			**0.25**	**1.14**	**128**		
OCDD WHO-TEQ2 (0.5 LOR)	pg/g	5	70.5	84	17			3.45	2.42	35		
OCDF WHO-TEQ2 (0.5 LOR)	pg/g	2.5	0.95	1.25	27			0.02	0.02	0		
Total TEQ WHO-TEQ2 (0.5 LOR)	pg/g	0	**485.62**	**662.94**	**31**			12.95	11.63	11		
Dioxins WHO-TEQ 0xLOR												
1234678-HpCDD WHO-TEQ1 (zero)	pg/g	1.25	130	167	25			2.35	1.68	33		
1234678-HpCDF WHO-TEQ1 (zero)	pg/g	1.25	7.18	10.3	36			0.31	0.27	14		
1234789-HpCDF WHO-TEQ1 (zero)	pg/g	1.25	0.89	1.3	37			0	0	0		
123478-HxCDD WHO-TEQ1 (zero)	pg/g	1.25	2.92	4.5	43			0.52	0.33	45		
123478-HxCDF WHO-TEQ1 (zero)	pg/g	1.25	13.1	16.5	23			0.34	0	200		
123678-HxCDD WHO-TEQ1 (zero)	pg/g	1.25	46.6	63	30			0.66	0.62	6		
123678-HxCDF WHO-TEQ1 (zero)	pg/g	1.25	3.05	3.48	13			0.35	0	200		
123789-HxCDD WHO-TEQ1 (zero)	pg/g	1.25	11.9	14.6	20			0.43	0.47	9		
123789-HxCDF WHO-TEQ1 (zero)	pg/g	1.25	0	0	0			0	0	0		
12378-PeCDD WHO-TEQ1 (zero)	pg/g	1.25	39	49.3	23			2.69	3.23	18		
12378-PeCDF WHO-TEQ1 (zero)	pg/g	1.25	0.32	0.46	36			0.08	0	200		
23478-PeCDF WHO-TEQ1 (zero)	pg/g	1.25	**7.71**	**15.63**	**68**			0.9	0.79	13		
2378-TCDD WHO-TEQ1 (zero)	pg/g	0.25	**147**	**226**	**42**			**0**	**1.14**	**200**		
OCDD WHO-TEQ1 (zero)	pg/g	5	70.5	84	17			3.45	2.42	35		
OCDF WHO-TEQ1 (zero)	pg/g	2.5	0.95	1.25	27			0.02	0.02	0		
Total TEQ WHO-TEQ1 (zero)	pg/g	0	**485.5**	**662.81**	**31**			12.57	11.09	13		
Dioxins WHO-TEQ 1xLOR												
1234678-HpCDD WHO-TEQ3 (LOR)	pg/g	1.25	130	167	25			2.35	1.68	33		
1234678-HpCDF WHO-TEQ3 (LOR)	pg/g	1.25	7.18	10.3	36			0.31	0.27	14		
1234789-HpCDF WHO-TEQ3 (LOR)	pg/g	1.25	0.89	1.3	37			0.02	0.02	0		
123478-HxCDD WHO-TEQ3 (LOR)	pg/g	1.25	2.92	4.5	43			0.52	0.33	45		
123478-HxCDF WHO-TEQ3 (LOR)	pg/g	1.25	13.1	16.5	23			0.34	0.25	31		
123678-HxCDD WHO-TEQ3 (LOR)	pg/g	1.25	46.6	63	30			0.66	0.62	6		
123678-HxCDF WHO-TEQ3 (LOR)	pg/g	1.25	3.05	3.48	13			0.35	0.25	33		
123789-HxCDD WHO-TEQ3 (LOR)	pg/g	1.25	11.9	14.6	20			0.43	0.47	9		
123789-HxCDF WHO-TEQ3 (LOR)	pg/g	1.25	0.25	0.25	0			0.25	0.25	0		
12378-PeCDD WHO-TEQ3 (LOR)	pg/g	1.25	39	49.3	23			2.69	3.23	18		
12378-PeCDF WHO-TEQ3 (LOR)	pg/g	1.25	0.32	0.46	36			0.08	0.07	13		
2378-TCDD WHO-TEQ3 (LOR)	pg/g	0.25	**147**	**226**	**42**			0.49	1.14	80		
23478-PeCDF WHO-TEQ3 (LOR)	pg/g	1.25	**7.71**	**15.63**	**68**			0.9	0.79	13		
OCDD WHO-TEQ3 (LOR)	pg/g	5	70.5	84	17			3.45	2.42	35		
OCDF WHO-TEQ3 (LOR)	pg/g	2.5	0.95	1.25	27			0.02	0.02	0		
Total TEQ WHO-TEQ3 (LOR)	pg/g	0	**485.75**	**663.06**	**31**			13.34	12.17	9		
PCDDs and PCDFs												
1234678-HpCDD WHO-TEQ2 (0.5 LOR)	pg/g	1.25	130	167	25			2.35	1.68	33		
1,2,3,7,8,9-Hexachlorooxanthrene	pg/g	1.25	119	146	20			4.3	4.7	9	5.6	26
2,3,7,8-Tetrachlorooxanthrene	pg/g	0.25	**147**	**226**	**42**			<0.5	1.1	75	<1	0
234678-HxCDF I-TEF	pg/g	1.25	0.1	0.1	0			0.1	0.1	0		
234678-HxCDF I-TEQ1 (zero)	pg/g	1.25	3.14	4.41	34			0.27	0	200		
234678-HxCDF I-TEQ2 (0.5 LOR)	pg/g	1.25	3.14	4.41	34			0.27	0.12	77		
234678-HxCDF I-TEQ3 (LOR)	pg/g	1.25	3.14	4.41	34			0.27	0.25	8		
234678-HxCDF WHO-TEQ3 (LOR)	pg/g	1.25	3.14	4.41	34			0.27	0.25	8		
234678-HxCDF LOR pg/g	pg/g	1.25	2.5	2.5	0			2.5	2.5	0		
234678-HxCDF WHO-TEQ1 (zero)	pg/g	1.25	3.14	4.41	34			0.27	0	200		
234678-HxCDF WHO-TEQ2 (0.5 LOR)	pg/g	1.25	3.14	4.41	34			0.27	0.12	77		

Field ID	SD03	SD_QC01	**RPD**	SD_QC02	**RPD**	BH21_1.3	QC101_200818	**RPD**	QC201_200818	**RPD**
Location Code	SD03	SD03		SD03		BH21	BH21		BH21	
Sampled Date	16/07/2020	16/07/2020		16/07/2020		18/08/2020	18/08/2020		18/08/2020	
Lab Report No.	EB2090071/ ES2024630	EB2090071/ ES2024630		732623		EB2090082/ ES2029204	EB2090082/ ES2029204		739600	
Sample Type	Normal	Field_D		Interlab_D		Normal	Field_D		Interlab_D	
ChemName	**Units**	**EQL**									
234678-HxCDF WHO-TEF	pg/g	1.25	0.1	0.1	0			0.1	0.1	0		
2378-TCDF I-TEF	pg/g	0.25	0.1	0.1	0			0.1	0.1	0		
2378-TCDF I-TEQ1 (zero)	pg/g	0.25	1.23	1.08	13			0.22	0.12	59		
2378-TCDF I-TEQ2 (0.5 LOR)	pg/g	0.25	1.23	1.08	13			0.22	0.12	59		
2378-TCDF WHO-TEQ2 (0.5 LOR)	pg/g	0.25	1.23	1.08	13			0.22	0.12	59		
2378-TCDF I-TEQ3 (LOR)	pg/g	0.25	1.23	1.08	13			0.22	0.12	59		
2378-TCDF WHO-TEQ1 (zero)	pg/g	0.25	1.23	1.08	13			0.22	0.12	59		
2378-TCDF WHO-TEQ3 (LOR)	pg/g	0.25	1.23	1.08	13			0.22	0.12	59		
2378-TCDF LOR pg/g	pg/g	0.25	0.5	0.5	0			0.5	0.5	0		
2378-TCDF WHO-TEF	pg/g	0.25	0.1	0.1	0			0.1	0.1	0		
Phenols												
2,3,4,6-tetrachlorophenol	mg/kg	0.01	<0.02	<0.02	0							
2,4,5-trichlorophenol	mg/kg	0.5 : 1 (Interlab)						<0.5	<0.5	0	<1	0
2,4,5-trichlorophenol	mg/kg	0.01 : 1 (Interlab)	<0.02	<0.02	0	<1	0					
2,4,6-trichlorophenol	mg/kg	0.5 : 1 (Interlab)						<0.5	<0.5	0	<1	0
2,4,6-trichlorophenol	mg/kg	0.01 : 1 (Interlab)	<0.02	<0.02	0	<1	0					
2,4-dichlorophenol	mg/kg	0.5						<0.5	<0.5	0	<0.5	0
2,4-dichlorophenol	mg/kg	0.01 : 0.5 (Interlab)	<0.02	<0.02	0	<0.5	0					
2,4-dimethylphenol	mg/kg	0.5						<0.5	<0.5	0	<0.5	0
2,4-dimethylphenol	mg/kg	0.01 : 0.5 (Interlab)	<0.02	<0.02	0	<0.5	0					
2,6-dichlorophenol	mg/kg	0.5						<0.5	<0.5	0	<0.5	0
2,6-dichlorophenol	mg/kg	0.01 : 0.5 (Interlab)	<0.02	<0.02	0	<0.5	0					
2-chlorophenol	mg/kg	0.5						<0.5	<0.5	0	<0.5	0
2-chlorophenol	mg/kg	0.01 : 0.5 (Interlab)	<0.02	<0.02	0	<0.5	0					
2-methylphenol	mg/kg	0.5 : 0.2 (Interlab)						<0.5	<0.5	0	<0.2	0
2-methylphenol	mg/kg	0.01 : 0.2 (Interlab)	<0.02	<0.02	0	<0.2	0					
2-nitrophenol	mg/kg	0.5 : 1 (Interlab)						<0.5	<0.5	0	<1	0
2-nitrophenol	mg/kg	0.01 : 1 (Interlab)	<0.02	<0.02	0	<1	0					
3-Methylphenol	mg/kg	0.01	<0.02	<0.02	0							
4-chloro-3-methylphenol	mg/kg	0.5 : 1 (Interlab)						<0.5	<0.5	0	<1	0
4-chloro-3-methylphenol	mg/kg	0.01 : 1 (Interlab)	<0.02	<0.02	0	<1	0					
4-methylphenol	mg/kg	0.01	<0.02	<0.02	0							
4-nitrophenol	mg/kg	0.01 : 5 (Interlab)	<0.02	<0.02	0	<5	0					
Pentachlorophenol	mg/kg	2 : 1 (Interlab)						<2	<2	0	<1	0
Pentachlorophenol	mg/kg	0.01 : 1 (Interlab)	<0.02	<0.02	0	<1	0					
Phenol	mg/kg	0.5						<0.5	<0.5	0	<0.5	0
Phenol	mg/kg	0.01 : 0.5 (Interlab)	<0.02	<0.02	0	<0.5	0					
Asbestos												
Organic Fibre	g/kg	0.1						0	0	0		
Synthetic Mineral Fibre	g/kg	0.1						0	0	0		
Sample Weight	g	0.01						46.2	48.5	5		
Description	Comment							1	1	0		
Approved Identifier	Comment							1	1	0		
Asbestos (Trace)	Fibres	5						0	0	0		
Asbestos Type	Comment	--						1	1	0		

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

		Field ID	MW09	QC101_200825	RPD	MW09	QC201_200825	RPD
		Location Code	MW09	MW09		MW09	MW09	
		Sampled Date	25/08/2020	25/08/2020		25/08/2020	25/08/2020	
		Lab Report No.	ES2029842	ES2029842		ES2029842	740238	
		Sample Type	Normal	Field_D		Normal	Interlab_D	
ChemName	**Units**	**EQL**						
Metals								
Arsenic (Filtered)	µg/l	1	<10	<10	0	<10	<1	0
Cadmium (Filtered)	µg/l	0.1 : 0.2 (Interlab)	<1	<1	0	<1	0.2	0
Chromium (III+VI) (Filtered)	µg/l	1	<10	<10	0	<10	<1	0
Copper (Filtered)	µg/l	1	<10	<10	0	<10	1	0
Lead (Filtered)	µg/l	1	<10	<10	0	<10	<1	0
Mercury (Filtered)	µg/l	0.1	<0.1	<0.1	0	<0.1	<0.1	0
Nickel (Filtered)	µg/l	1	<10	<10	0	<10	1	0
Zinc (Filtered)	µg/l	5	<50	<50	0	<50	7	0
TRH - NEPM 2013 Fractions								
TRH >C6 - C10	µg/L	20	<20	<20	0	<20	<20	0
TRH >C10 - C16	µg/L	100 : 50 (Interlab)	<100	<100	0	<100	130	26
TRH >C16 - C34	µg/L	100	<100	<100	0	<100	<100	0
TRH >C34 - C40	µg/L	100	<100	<100	0	<100	<100	0
TRH >C10 - C40 (Sum of total)	µg/L	100	<100	<100	0	<100	130	26
TRH >C6 - C10 less BTEX (F1)	µg/L	20	<20	<20	0	<20	<20	0
TRH >C10 - C16 less Naphthalene (F2)	µg/L	100 : 50 (Interlab)	<100	<100	0	<100	130	26
TPH - NEPM 1999 Fractions								
TPH C6 - C9	µg/L	20	<20	<20	0	<20	<20	0
TPH C10 - C14	µg/L	50	<50	<50	0	<50	70	33
TPH C15 - C28	µg/L	100	<100	<100	0	<100	<100	0
TPH C29-C36	µg/L	50 : 100 (Interlab)	<50	<50	0	<50	<100	0
TPH C10 - C36 (Sum of total)	µg/L	50 : 100 (Interlab)	<50	<50	0	<50	<100	0
BTEXN								
Benzene	µg/L	1	<1	<1	0	<1	<1	0
Benzene	µg/L	1	<1	<1	0	<1	<1	0
Ethylbenzene	µg/L	2 : 1 (Interlab)	<2	<2	0	<2	<1	0
Ethylbenzene	µg/L	2 : 1 (Interlab)	<2	<2	0	<2	<1	0
Naphthalene	µg/L	5 : 10 (Interlab)	<5	<5	0	<5	<1	0
Naphthalene	µg/L	5 : 10 (Interlab)	<5	<5	0	<5	<1	0
Naphthalene	µg/L	1 : 10 (Interlab)	<1	<1	0	<1	<1	0
Toluene	µg/L	2 : 1 (Interlab)	<2	<2	0	<2	<1	0
Toluene	µg/L	2 : 1 (Interlab)	<2	<2	0	<2	<1	0
Xylene (m & p)	µg/L	2	<2	<2	0	<2	<2	0
Xylene (m & p)	µg/L	2	<2	<2	0	<2	<2	0
Xylene (o)	µg/L	2 : 1 (Interlab)	<2	<2	0	<2	<1	0
Xylene (o)	µg/L	2 : 1 (Interlab)	<2	<2	0	<2	<1	0
Xylene Total	µg/L	2 : 3 (Interlab)	<2	<2	0	<2	<3	0
Total BTEX	µg/L	1	<1	<1	0	<1		
Polycyclic aromatic hydrocarbons (PAHs)								
Acenaphthene	µg/L	1	<1	<1	0	<1	<1	0
Acenaphthylene	µg/L	1	<1	<1	0	<1	<1	0
Anthracene	µg/L	1	<1	<1	0	<1	<1	0
Benz(a)anthracene	µg/L	1	<1	<1	0	<1	<1	0
Benzo(k)fluoranthene	µg/L	1	<1	<1	0	<1	<1	0
Benzo(b+j)fluoranthene	µg/L	1	<1	<1	0	<1	<1	0
Benzo(g,h,i)perylene	µg/L	1	<1	<1	0	<1	<1	0
Benzo(a) pyrene	µg/L	0.5 : 1 (Interlab)	<0.5	<0.5	0	<0.5	<1	0
Chrysene	µg/L	1	<1	<1	0	<1	<1	0
Dibenz(a,h)anthracene	µg/L	1	<1	<1	0	<1	<1	0
Fluoranthene	µg/L	1	<1	<1	0	<1	<1	0
Fluorene	µg/L	1	<1	<1	0	<1	<1	0
Indeno(1,2,3-c,d)pyrene	µg/L	1	<1	<1	0	<1	<1	0
Phenanthrene	µg/L	1	<1	<1	0	<1	<1	0
Pyrene	µg/L	1	<1	<1	0	<1	<1	0
PAHs (Sum of total)	µg/L	0.5 : 1 (Interlab)	<0.5	<0.5	0	<0.5	<1	0
Monocyclic Aromatic Hydrocarbons (MAHs)								
1,2,4-trimethylbenzene	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
1,3,5-trimethylbenzene	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
Isopropylbenzene	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
n-butylbenzene	µg/L	5	<5	<5	0	<5		
n-propylbenzene	µg/L	5	<5	<5	0	<5		
p-isopropyltoluene	µg/L	5	<5	<5	0	<5		
sec-butylbenzene	µg/L	5	<5	<5	0	<5		
tert-butylbenzene	µg/L	5	<5	<5	0	<5		
Chlorinated Hydrocarbons								
1,1,1,2-tetrachloroethane	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
1,1,1-trichloroethane	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
1,1,2,2-tetrachloroethane	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
1,1,2-trichloroethane	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
1,1-dichloroethane	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
1,1-dichloroethene	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
1,2,3-trichloropropane	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
1,2-dibromo-3-chloropropane	µg/L	5	<5	<5	0	<5		
1,2-dichloroethane	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
1,2-dichloropropane	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
1,3-dichloropropane	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
2,2-dichloropropane	µg/L	5	<5	<5	0	<5		
Bromodichloromethane	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
Bromoform	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
Carbon tetrachloride	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
Chlorodibromomethane	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
Chloroethane	µg/L	50 : 1 (Interlab)	<50	<50	0	<50	<1	0
Chloroform	µg/L	5	<5	<5	0	<5	<5	0
Chloromethane	µg/L	50 : 1 (Interlab)	<50	<50	0	<50	<1	0
cis-1,2-dichloroethene	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
cis-1,3-dichloropropene	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
Dibromomethane	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0

		Field ID	MW09	QC101_200825	RPD	MW09	QC201_200825	RPD
		Location Code	MW09	MW09		MW09	MW09	
		Sampled Date	25/08/2020	25/08/2020		25/08/2020	25/08/2020	
		Lab Report No.	ES2029842	ES2029842		ES2029842	740238	
		Sample Type	Normal	Field_D		Normal	Interlab_D	
ChemName	**Units**	**EQL**						
Hexachlorobutadiene	µg/L	5	<5	<5	0	<5		
Trichloroethene (TCE)	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
Tetrachloroethene (PCE)	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
trans-1,2-dichloroethene	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
trans-1,3-dichloropropene	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
Vinyl chloride	µg/L	50 : 1 (Interlab)	<50	<50	0	<50	<1	0
Volatile Organic Compounds (VOCs)								
1,1-dichloropropene	µg/L	5	<5	<5	0	<5		
cis-1,4-Dichloro-2-butene	µg/L	5	<5	<5	0	<5		
Pentachloroethane	µg/L	5	<5	<5	0	<5		
Styrene	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
trans-1,4-Dichloro-2-butene	µg/L	5	<5	<5	0	<5		
Semi Volatile Organic Compounds (SVOCs)								
3- & 4-Methylphenol	µg/L	2 : 6 (Interlab)	<2	<2	0	<2	<6	0
Halogenated Benzenes								
1,2,3-trichlorobenzene	µg/L	5	<5	<5	0	<5		
1,2,4-trichlorobenzene	µg/L	5	<5	<5	0	<5		
1,2-dichlorobenzene	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
1,3-dichlorobenzene	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
1,4-dichlorobenzene	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
2-chlorotoluene	µg/L	5	<5	<5	0	<5		
4-chlorotoluene	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
Bromobenzene	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
Chlorobenzene	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
Halogenated Hydrocarbons								
1,2-dibromoethane	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
Bromomethane	µg/L	50 : 1 (Interlab)	<50	<50	0	<50	<1	0
Dichlorodifluoromethane	µg/L	50 : 1 (Interlab)	<50	<50	0	<50	<1	0
Iodomethane	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
Trichlorofluoromethane	µg/L	50 : 1 (Interlab)	<50	<50	0	<50	<1	0
Phenols								
2,4,5-trichlorophenol	µg/L	1 : 10 (Interlab)	<1	<1	0	<1	<10	0
2,4,6-trichlorophenol	µg/L	1 : 10 (Interlab)	<1	<1	0	<1	<10	0
2,4-dichlorophenol	µg/L	1 : 3 (Interlab)	<1	<1	0	<1	<3	0
2,4-dimethylphenol	µg/L	1 : 3 (Interlab)	<1	<1	0	<1	<3	0
2,6-dichlorophenol	µg/L	1 : 3 (Interlab)	<1	<1	0	<1	<3	0
2-chlorophenol	µg/L	1 : 3 (Interlab)	<1	<1	0	<1	<3	0
2-methylphenol	µg/L	1 : 3 (Interlab)	<1	<1	0	<1	<3	0
2-nitrophenol	µg/L	1 : 10 (Interlab)	<1	<1	0	<1	<10	0
4-chloro-3-methylphenol	µg/L	1 : 10 (Interlab)	<1	<1	0	<1	<10	0
Pentachlorophenol	µg/L	2 : 10 (Interlab)	<2	<2	0	<2	<10	0
Phenol	µg/L	1 : 3 (Interlab)	<1	<1	0	<1	<3	0
Solvents								
Methyl Ethyl Ketone	µg/L	50 : 1 (Interlab)	<50	<50	0	<50	<1	0
2-hexanone (MBK)	µg/L	50	<50	<50	0	<50		
4-Methyl-2-pentanone	µg/L	50 : 1 (Interlab)	<50	<50	0	<50	<1	0
Carbon disulfide	µg/L	5 : 1 (Interlab)	<5	<5	0	<5	<1	0
Vinyl acetate	µg/L	50	<50	<50	0	<50		

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

		Field ID	MW13	QC101_210520	RPD	MW13	QC201_210520	RPD
		Location Code	MW13	MW13		MW13	MW13	
		Date	20/05/2021	20/05/2021		20/05/2021	20/05/2021	
		Lab Report No.	ES2119196	ES2119196		ES2119196	797983	
		Sample Type	Normal	Field_D		Normal	Interlab_D	
ChemName	**Unit**	**EQL**						
Per- and Poly-fluoroalkyl Substances (PFAS)								
Perfluorooctanesulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorooctanoic acid (PFOA)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0
Perfluorooctanesulfonamide (PFOSA)	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.05	0
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoro-n-pentanoic acid (PFPeA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoropropanesulfonic acid (PFPrS)	µg/L	0.01	-	-	-	-	<0.01	-
Perfluorononanesulfonic acid (PFNS)	µg/L	0.01	-	-	-	-	<0.01	-
Perfluorononanoic acid (PFNA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorohexanoic acid (PFHxA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorohexanesulfonic acid (PFHxS)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroheptanoic acid (PFHpA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorododecanoic acid (PFDoDA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanoic acid (PFDA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutanesulfonic acid (PFBS)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorotetradecanoic aicd (PFTeDA)	µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01	0
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.01	<0.02	<0.02	0	<0.02	<0.01	0
Perfluorobutanoic acid (PFBA)	µg/L	0.05	<0.1	<0.1	0	<0.1	<0.05	0
N-ethyl perfluorooctane sulfonamido acetic acid	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.05	0
N-ethyl perfluorooctane sulfonamide	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
N-methyl perfluorooctanesulfonamido ethanol	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
N-ethyl perfluorooctanesulfonamido ethanol	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
N-methyl perfluorooctane sulfonamido acetic acid	µg/L	0.02	<0.02	<0.02	0	<0.02	<0.05	0
Sum (PFHxS + PFOS)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.01	0
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	µg/L	0.01	-	-	-	-	<0.01	-
Sum of PFAS	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.1	0
Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	0	<0.01	<0.05	0
Sum of US EPA PFAS (PFOS + PFOA)*	µg/L	0.01	-	-	-	-	<0.01	-
(n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01	0
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05	<0.05	<0.05	0	<0.05	<0.05	0
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01	0
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.01	<0.05	<0.05	0	<0.05	<0.01	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.

**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 80 (1 - 10 x EQL); 50 (10 - 30 x EQL); 30 (> 30 x EQL))

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

		Field ID	SD_R01	QC301_200819	QC302_200819	QC301_200825	SD_TB01	QC501_200817	QC501_200825
		Sampled Date	16/07/2020	18/08/2020	18/08/2020	25/08/2020	16/07/2020	17/08/2020	25/08/2020
		Lab Report No.	EB2090071 / ES2024630	ES2029204	ES2029204	ES2029842	ES2024630	ES2029204	ES2029842
		Matrix Type	Water	Water	Water	Water	Soil	Soil	Water
		Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Trip_B	Trip_B	Trip_B
ChemName	**Units**	**EQL**							
Polychlorinated Biphenyls									
PCBs (Sum of total)	µg/L	1	<1	-	-	-	-	-	-
Metals									
Arsenic	µg/L	1	<1	<1	<1	<1	-	-	-
Cadmium	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	-	-	-
Chromium (III+VI)	µg/L	1	**4**	<1	<1	<1	-	-	-
Copper	µg/L	1	<1	<1	<1	<1	-	-	-
Lead	µg/L	1	<1	<1	<1	<1	-	-	-
Mercury	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	-	-	-
Nickel	µg/L	1	<1	<1	<1	<1	-	-	-
Zinc	µg/L	5	**6**	<5	<5	<5	-	-	-
TRH - NEPM 2013 Fractions						-			
TRH >C6 - C10	µg/L	20	<20	<20	<20	<20	-	-	<20
TRH >C6 - C10	mg/kg	10	-	-	-	-	<10	<10	-
TRH >C10 - C16	µg/L	100	<100	<100	<100	<100	-	-	-
TRH >C16 - C34	µg/L	100	<100	<100	<100	<100	-	-	-
TRH >C34 - C40	µg/L	100	<100	<100	<100	<100	-	-	-
TRH >C10 - C40 (Sum of total)	µg/L	100	<100	<100	<100	<100	-	-	-
TRH >C6 - C10 less BTEX (F1)	µg/L	20	<20	<20	<20	<20	-	-	<20
TRH >C6 - C10 less BTEX (F1)	mg/kg	10	-	-	-	-	<10	<10	-
TRH >C10 - C16 less Naphthalene (F2)	µg/L	100	<100	<100	<100	<100	-	-	-
TPH - NEPM 1999 Fractions									
TPH C6 - C9	µg/L	20	<20	<20	<20	<20	-	-	<20
TPH C6 - C9	mg/kg	10	-	-	-	-	<10	<10	-
TPH C10 - C14	µg/L	50	<50	<50	<50	<50	-	-	-
TPH C15 - C28	µg/L	100	<100	<100	<100	<100	-	-	-
TPH C29-C36	µg/L	50	<50	<50	<50	<50	-	-	-
TPH C10 - C36 (Sum of total)	µg/L	50	<50	<50	<50	<50	-	-	-
BTEXN									
Benzene	µg/L	1	<1	<1	<1	<1	-	-	<1
Benzene	mg/kg	0.2	-	-	-	-	<0.2	<0.2	-
Ethylbenzene	µg/L	2	<2	<2	<2	<2	-	-	<2
Ethylbenzene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	-
Naphthalene	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	<5
Naphthalene	mg/kg	1	-	-	-	-	<1	<1	-
Toluene	µg/L	2	<2	<2	<2	<2	-	-	<2
Toluene	mg/kg	0.5	-	-	-	-	<0.5	<0.5	-
Xylene (m & p)	µg/L	2	<2	<2	<2	<2	-	-	<2
Xylene (m & p)	mg/kg	0.5	-	-	-	-	<0.5	<0.5	-
Xylene (o)	µg/L	2	<2	<2	<2	<2	-	-	<2
Xylene (o)	mg/kg	0.5	-	-	-	-	<0.5	<0.5	-
Xylene Total	µg/L	2	<2	<2	<2	<2	-	-	<2
Xylene Total	mg/kg	0.5	-	-	-	-	<0.5	<0.5	-
Total BTEX	µg/L	1	<1	<1	<1	<1	-	-	<1
Total BTEX	mg/kg	0.2	-	-	-	-	<0.2	<0.2	-
Polycyclic aromatic hydrocarbons (PAHs)									
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	-	-	-
Acenaphthene	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-

		Field ID	SD_R01	QC301_200819	QC302_200819	QC301_200825	SD_TB01	QC501_200817	QC501_200825
		Sampled Date	16/07/2020	18/08/2020	18/08/2020	25/08/2020	16/07/2020	17/08/2020	25/08/2020
		Lab Report No.	EB2090071 / ES2024630	ES2029204	ES2029204	ES2029842	ES2024630	ES2029204	ES2029842
		Matrix Type	Water	Water	Water	Water	Soil	Soil	Water
		Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Trip_B	Trip_B	Trip_B
ChemName	**Units**	**EQL**							
Acenaphthylene	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
Anthracene	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
Benz(a)anthracene	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
Benzo(k)fluoranthene	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
Benzo(b+j)fluoranthene	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
Benzo(g,h,i)perylene	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
Benzo(a) pyrene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	-	-	-
Chrysene	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
Dibenz(a,h)anthracene	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
Fluoranthene	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
Fluorene	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
Indeno(1,2,3-c,d)pyrene	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
Phenanthrene	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
Pyrene	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
PAHs (Sum of total)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	-	-	-
Monocyclic Aromatic Hydrocarbons (MAHs)									
1,2,4-trimethylbenzene	µg/L	5	-	<5	<5	<5	-	-	-
1,3,5-trimethylbenzene	µg/L	5	-	<5	<5	<5	-	-	-
Isopropylbenzene	µg/L	5	-	<5	<5	<5	-	-	-
n-butylbenzene	µg/L	5	-	<5	<5	<5	-	-	-
n-propylbenzene	µg/L	5	-	<5	<5	<5	-	-	-
p-isopropyltoluene	µg/L	5	-	<5	<5	<5	-	-	-
sec-butylbenzene	µg/L	5	-	<5	<5	<5	-	-	-
tert-butylbenzene	µg/L	5	-	<5	<5	<5	-	-	-
Chlorinated Hydrocarbons									
1,1,1,2-tetrachloroethane	µg/L	5	-	<5	<5	<5	-	-	-
1,1,1-trichloroethane	µg/L	5	-	<5	<5	<5	-	-	-
1,1,2,2-tetrachloroethane	µg/L	5	-	<5	<5	<5	-	-	-
1,1,2-trichloroethane	µg/L	5	-	<5	<5	<5	-	-	-
1,1-dichloroethane	µg/L	5	-	<5	<5	<5	-	-	-
1,1-dichloroethene	µg/L	5	-	<5	<5	<5	-	-	-
1,2,3-trichloropropane	µg/L	5	-	<5	<5	<5	-	-	-
1,2-dibromo-3-chloropropane	µg/L	5	-	<5	<5	<5	-	-	-
1,2-dichloroethane	µg/L	5	-	<5	<5	<5	-	-	-
1,2-dichloropropane	µg/L	5	-	<5	<5	<5	-	-	-
1,3-dichloropropane	µg/L	5	-	<5	<5	<5	-	-	-
2,2-dichloropropane	µg/L	5	-	<5	<5	<5	-	-	-
Bromodichloromethane	µg/L	5	-	<5	<5	<5	-	-	-
Bromoform	µg/L	5	-	<5	<5	<5	-	-	-
Carbon tetrachloride	µg/L	5	-	<5	<5	<5	-	-	-
Chlorodibromomethane	µg/L	5	-	<5	<5	<5	-	-	-
Chloroethane	µg/L	50	-	<50	<50	<50	-	-	-
Chloroform	µg/L	5	-	<5	<5	<5	-	-	-
Chloromethane	µg/L	50	-	<50	<50	<50	-	-	-
cis-1,2-dichloroethene	µg/L	5	-	<5	<5	<5	-	-	-
cis-1,3-dichloropropene	µg/L	5	-	<5	<5	<5	-	-	-
Dibromomethane	µg/L	5	-	<5	<5	<5	-	-	-
Hexachlorobutadiene	µg/L	5	-	<5	<5	<5	-	-	-

		Field ID	SD_R01	QC301_200819	QC302_200819	QC301_200825	SD_TB01	QC501_200817	QC501_200825
		Sampled Date	16/07/2020	18/08/2020	18/08/2020	25/08/2020	16/07/2020	17/08/2020	25/08/2020
		Lab Report No.	EB2090071 / ES2024630	ES2029204	ES2029204	ES2029842	ES2024630	ES2029204	ES2029842
		Matrix Type	Water	Water	Water	Water	Soil	Soil	Water
		Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Trip_B	Trip_B	Trip_B
ChemName	**Units**	**EQL**							
Trichloroethene (TCE)	µg/L	5	-	<5	<5	<5	-	-	-
Tetrachloroethene (PCE)	µg/L	5	-	<5	<5	<5	-	-	-
trans-1,2-dichloroethene	µg/L	5	-	<5	<5	<5	-	-	-
trans-1,3-dichloropropene	µg/L	5	-	<5	<5	<5	-	-	-
Vinyl chloride	µg/L	50	-	<50	<50	<50	-	-	-
Volatile Organic Compounds (VOCs)									
1,1-dichloropropene	µg/L	5	-	<5	<5	<5	-	-	-
cis-1,4-Dichloro-2-butene	µg/L	5	-	<5	<5	<5	-	-	-
Pentachloroethane	µg/L	5	-	<5	<5	<5	-	-	-
Styrene	µg/L	5	-	<5	<5	<5	-	-	-
trans-1,4-Dichloro-2-butene	µg/L	5	-	<5	<5	<5	-	-	-
Semi Volatile Organic Compounds (SVOCs)									
3- & 4-Methylphenol	µg/L	2	<2.0	<2.0	<2.0	<2.0	-	-	-
Halogenated Benzenes									
1,2,3-trichlorobenzene	µg/L	5	-	<5	<5	<5	-	-	-
1,2,4-trichlorobenzene	µg/L	5	-	<5	<5	<5	-	-	-
1,2-dichlorobenzene	µg/L	5	-	<5	<5	<5	-	-	-
1,3-dichlorobenzene	µg/L	5	-	<5	<5	<5	-	-	-
1,4-dichlorobenzene	µg/L	5	-	<5	<5	<5	-	-	-
2-chlorotoluene	µg/L	5	-	<5	<5	<5	-	-	-
4-chlorotoluene	µg/L	5	-	<5	<5	<5	-	-	-
Bromobenzene	µg/L	5	-	<5	<5	<5	-	-	-
Chlorobenzene	µg/L	5	-	<5	<5	<5	-	-	-
Halogenated Hydrocarbons									
1,2-dibromoethane	µg/L	5	-	<5	<5	<5	-	-	-
Bromomethane	µg/L	50	-	<50	<50	<50	-	-	-
Dichlorodifluoromethane	µg/L	50	-	<50	<50	<50	-	-	-
Iodomethane	µg/L	5	-	<5	<5	<5	-	-	-
Trichlorofluoromethane	µg/L	50	-	<50	<50	<50	-	-	-
Phenols									
2,4,5-trichlorophenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
2,4,6-trichlorophenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
2,4-dichlorophenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
2,4-dimethylphenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
2,6-dichlorophenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
2-chlorophenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
2-methylphenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
2-nitrophenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
4-chloro-3-methylphenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
Pentachlorophenol	µg/L	2	<2.0	<2.0	<2.0	<2.0	-	-	-
Phenol	µg/L	1	<1.0	<1.0	<1.0	<1.0	-	-	-
Solvents									
Methyl Ethyl Ketone	µg/L	50	-	<50	<50	<50	-	-	-
2-hexanone (MBK)	µg/L	50	-	<50	<50	<50	-	-	-
4-Methyl-2-pentanone	µg/L	50	-	<50	<50	<50	-	-	-
Carbon disulfide	µg/L	5	-	<5	<5	<5	-	-	-
Vinyl acetate	µg/L	50	-	<50	<50	<50	-	-	-
Organotins									

		Field ID	SD_R01	QC301_200819	QC302_200819	QC301_200825	SD_TB01	QC501_200817	QC501_200825
		Sampled Date	16/07/2020	18/08/2020	18/08/2020	25/08/2020	16/07/2020	17/08/2020	25/08/2020
		Lab Report No.	EB2090071 / ES2024630	ES2029204	ES2029204	ES2029842	ES2024630	ES2029204	ES2029842
		Matrix Type	Water	Water	Water	Water	Soil	Soil	Water
		Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Trip_B	Trip_B	Trip_B
ChemName	**Units**	**EQL**							
Tributyltin as SN	ngSn/L		<2	-	-	-	-	-	-
Dioxins & Furans									
1,2,3,4,6,7,8-Heptachlorooxanthrene	pg/L	46.3	<46.3	<46.3	<46.3	-	-	-	-
1,2,3,4,6,7,8-Heptachlorodibenzofuran	pg/L	46.3	<46.3	<46.3	<46.3	-	-	-	-
1,2,3,4,7,8,9-Heptachlorodibenzofuran	pg/L	46.3	<46.3	<46.3	<46.3	-	-	-	-
1,2,3,4,7,8-Hexachlorooxanthrene	pg/L	46.3	<46.3	<46.3	<46.3	-	-	-	-
1,2,3,4,7,8-Hexachlorodibenzofuran	pg/L	46.3	<46.3	<46.3	<46.3	-	-	-	-
1,2,3,6,7,8-Hexachlorooxanthrene	pg/L	46.3	<46.3	<46.3	<46.3	-	-	-	-
1,2,3,6,7,8-Hexachlorodibenzofuran	pg/L	46.3	<46.3	<46.3	<46.3	-	-	-	-
1,2,3,7,8,9-Hexachlorodibenzofuran	pg/L	46.3	<46.3	<46.3	<46.3	-	-	-	-
1,2,3,7,8-Pentachlorooxanthrene	pg/L	46.3	<46.3	<46.3	<46.3	-	-	-	-
1,2,3,7,8-Pentachlorodibenzofuran	pg/L	46.3	<46.3	<46.3	<46.3	-	-	-	-
2,3,4,6,7,8-Hexachlorodibenzofuran	pg/L	46.3	<46.3	<46.3	<46.3	-	-	-	-
2,3,4,7,8-Pentachlorodibenzofuran	pg/L	46.3	<46.3	<46.3	<46.3	-	-	-	-
2,3,7,8-Tetrachlorodibenzofuran	pg/L	9.3	<9.3	<9.3	<9.3	-	-	-	-
1,2,3,4,6,7,8,9-Octachlorooxanthrene	pg/L	185.2	<185.2	<185.2	<185.2	-	-	-	-
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	pg/L	92.6	<92.6	<92.6	<92.6	-	-	-	-
Dioxins I-TEF									
1234678-HpCDD I-TEF	pg/L	<0.01	<0.01	<0.01	<0.01	-	-	-	-
1234678-HpCDF I-TEF	pg/L	<0.01	<0.01	<0.01	<0.01	-	-	-	-
1234789-HpCDF I-TEF	pg/L	<0.01	<0.01	<0.01	<0.01	-	-	-	-
123478-HxCDD I-TEF	pg/L	<0.1	<0.1	<0.1	<0.1	-	-	-	-
123478-HxCDF I-TEF	pg/L	<0.1	<0.1	<0.1	<0.1	-	-	-	-
123678-HxCDD I-TEF	pg/L	<0.1	<0.1	<0.1	<0.1	-	-	-	-
123678-HxCDF I-TEF	pg/L	<0.1	<0.1	<0.1	<0.1	-	-	-	-
123789-HxCDD I-TEF	pg/L	<0.1	<0.1	<0.1	<0.1	-	-	-	-
123789-HxCDF I-TEF	pg/L	<0.1	<0.1	<0.1	<0.1	-	-	-	-
12378-PeCDD I-TEF	pg/L	<0.5	<0.5	<0.5	<0.5	-	-	-	-
12378-PeCDF I-TEF	pg/L	<0.05	<0.05	<0.05	<0.05	-	-	-	-
23478-PeCDF I-TEF	pg/L	<0.5	<0.5	<0.5	<0.5	-	-	-	-
2378-TCDD I-TEF	pg/L	<1	<1	<1	<1	-	-	-	-
OCDD I-TEF	pg/L	<0.001	<0.001	<0.001	<0.001	-	-	-	-
OCDF I-TEF	pg/L	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Dioxins I-TEQ 0.5xLOR									
1234678-HpCDD I-TEQ2 (0.5 LOR)	pg/L	0.23	<0.23	<0.23	<0.23	-	-	-	-
1234678-HpCDF I-TEQ2 (0.5 LOR)	pg/L	0.23	<0.23	<0.23	<0.23	-	-	-	-
1234789-HpCDF I-TEQ2 (0.5 LOR)	pg/L	0.23	<0.23	<0.23	<0.23	-	-	-	-
123478-HxCDD I-TEQ2 (0.5 LOR)	pg/L	2.31	<2.31	<2.31	<2.31	-	-	-	-
123478-HxCDF I-TEQ2 (0.5 LOR)	pg/L	2.31	<2.31	<2.31	<2.31	-	-	-	-
123678-HxCDD I-TEQ2 (0.5 LOR)	pg/L	2.31	<2.31	<2.31	<2.31	-	-	-	-
123678-HxCDF I-TEQ2 (0.5 LOR)	pg/L	2.31	<2.31	<2.31	<2.31	-	-	-	-
123789-HxCDD I-TEQ2 (0.5 LOR)	pg/L	2.31	<2.31	<2.31	<2.31	-	-	-	-
123789-HxCDF I-TEQ2 (0.5 LOR)	pg/L	2.31	<2.31	<2.31	<2.31	-	-	-	-
12378-PeCDD I-TEQ2 (0.5 LOR)	pg/L	11.57	<11.57	<11.57	<11.57	-	-	-	-
12378-PeCDF I-TEQ2 (0.5 LOR)	pg/L	1.16	<1.16	<1.16	<1.16	-	-	-	-
23478-PeCDF I-TEQ2 (0.5 LOR)	pg/L	11.57	<11.57	<11.57	<11.57	-	-	-	-
2378-TCDD I-TEQ2 (0.5 LOR)	pg/L	4.63	<4.63	<4.63	<4.63	-	-	-	-
OCDD I-TEQ2 (0.5 LOR)	pg/L	0.09	<0.09	<0.09	<0.09	-	-	-	-

		Field ID	SD_R01	QC301_200819	QC302_200819	QC301_200825	SD_TB01	QC501_200817	QC501_200825
		Sampled Date	16/07/2020	18/08/2020	18/08/2020	25/08/2020	16/07/2020	17/08/2020	25/08/2020
		Lab Report No.	EB2090071 / ES2024630	ES2029204	ES2029204	ES2029842	ES2024630	ES2029204	ES2029842
		Matrix Type	Water	Water	Water	Water	Soil	Soil	Water
		Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Trip_B	Trip_B	Trip_B
ChemName	**Units**	**EQL**							
OCDF I-TEQ2 (0.5 LOR)	pg/L	0.05	<0.05	<0.05	<0.05	-	-	-	-
Total TEQ I-TEQ2 (0.5 LOR)	pg/L	46.44	<46.44	<46.44	<46.44	-	-	-	-
Dioxins I-TEQ 0xLOR									
1234678-HpCDD I-TEQ1 (zero)	pg/L	0.00	<0.00	<0.00	<0.00	-	-	-	-
1234678-HpCDF I-TEQ1 (zero)	pg/L	0.00	<0.00	<0.00	<0.00	-	-	-	-
1234789-HpCDF I-TEQ1 (zero)	pg/L	0.00	<0.00	<0.00	<0.00	-	-	-	-
123478-HxCDD I-TEQ1 (zero)	pg/L	0.00	<0.00	<0.00	<0.00	-	-	-	-
123478-HxCDF I-TEQ1 (zero)	pg/L	0.00	<0.00	<0.00	<0.00	-	-	-	-
123678-HxCDD I-TEQ1 (zero)	pg/L	0.00	<0.00	<0.00	<0.00	-	-	-	-
123678-HxCDF I-TEQ1 (zero)	pg/L	0.00	<0.00	<0.00	<0.00	-	-	-	-
123789-HxCDD I-TEQ1 (zero)	pg/L	0.00	<0.00	<0.00	<0.00	-	-	-	-
123789-HxCDF I-TEQ1 (zero)	pg/L	0.00	<0.00	<0.00	<0.00	-	-	-	-
12378-PeCDD I-TEQ1 (zero)	pg/L	0.00	<0.00	<0.00	<0.00	-	-	-	-
12378-PeCDF I-TEQ1 (zero)	pg/L	0.00	<0.00	<0.00	<0.00	-	-	-	-
23478-PeCDF I-TEQ1 (zero)	pg/L	0.00	<0.00	<0.00	<0.00	-	-	-	-
2378-TCDD I-TEQ1 (zero)	pg/L	0.00	<0.00	<0.00	<0.00	-	-	-	-
OCDD I-TEQ1 (zero)	pg/L	0.00	<0.00	<0.00	<0.00	-	-	-	-
OCDF I-TEQ1 (zero)	pg/L	0.00	<0.00	<0.00	<0.00	-	-	-	-
Total TEQ I-TEQ1 (zero)	pg/L	0.00	<0.00	<0.00	<0.00	-	-	-	-
Dioxins I-TEQ 1xLOR									
1234678-HpCDD I-TEQ3 (LOR)	pg/L	0.46	<0.46	<0.46	<0.46	-	-	-	-
1234678-HpCDF I-TEQ3 (LOR)	pg/L	0.46	<0.46	<0.46	<0.46	-	-	-	-
1234789-HpCDF I-TEQ3 (LOR)	pg/L	0.46	<0.46	<0.46	<0.46	-	-	-	-
123478-HxCDD I-TEQ3 (LOR)	pg/L	4.63	<4.63	<4.63	<4.63	-	-	-	-
123478-HxCDF I-TEQ3 (LOR)	pg/L	4.63	<4.63	<4.63	<4.63	-	-	-	-
123678-HxCDD I-TEQ3 (LOR)	pg/L	4.63	<4.63	<4.63	<4.63	-	-	-	-
123678-HxCDF I-TEQ3 (LOR)	pg/L	4.63	<4.63	<4.63	<4.63	-	-	-	-
123789-HxCDD I-TEQ3 (LOR)	pg/L	4.63	<4.63	<4.63	<4.63	-	-	-	-
123789-HxCDF I-TEQ3 (LOR)	pg/L	4.63	<4.63	<4.63	<4.63	-	-	-	-
12378-PeCDD I-TEQ3 (LOR)	pg/L	23.15	<23.15	<23.15	<23.15	-	-	-	-
12378-PeCDF I-TEQ3 (LOR)	pg/L	2.31	<2.31	<2.31	<2.31	-	-	-	-
23478-PeCDF I-TEQ3 (LOR)	pg/L	23.15	<23.15	<23.15	<23.15	-	-	-	-
2378-TCDD I-TEQ3 (LOR)	pg/L	9.26	<9.26	<9.26	<9.26	-	-	-	-
OCDD I-TEQ3 (LOR)	pg/L	0.19	<0.19	<0.19	<0.19	-	-	-	-
OCDF I-TEQ3 (LOR)	pg/L	0.09	<0.09	<0.09	<0.09	-	-	-	-
Total TEQ I-TEQ3 (LOR)	pg/L	92.87	<92.87	<92.87	<92.87	-	-	-	-
Dioxins Total									
Hexa-Dioxins	pg/L	46.30	<46.3	<46.3	<46.3	-	-	-	-
Hexa-Furans	pg/L	46.3	<46.3	<46.3	<46.3	-	-	-	-
Octa-Dioxin	pg/L	185.2	<185.2	<185.2	<185.2	-	-	-	-
Octa-Furan	pg/L	92.6	<92.6	<92.6	<92.6	-	-	-	-
Penta-Dioxins	pg/L	46.3	<46.3	<46.3	<46.3	-	-	-	-
Penta-Furans	pg/L	46.3	<46.3	<46.3	<46.3	-	-	-	-
Hepta-Dioxins	pg/L	92.6	<92.6	<92.6	<92.6	-	-	-	-
Hepta-Furans	pg/L	46.3	<46.3	<46.3	<46.3	-	-	-	-
Total TEQ	-	1	<1	<1	<1	-	-	-	-
Tetra-Furans	pg/L	9.3	<9.3	<9.3	<9.3	-	-	-	-
Tetra-Dioxins	pg/L	9.3	<9.3	<9.3	<9.3	-	-	-	-

		Field ID	SD_R01	QC301_200819	QC302_200819	QC301_200825	SD_TB01	QC501_200817	QC501_200825
		Sampled Date	16/07/2020	18/08/2020	18/08/2020	25/08/2020	16/07/2020	17/08/2020	25/08/2020
		Lab Report No.	EB2090071 / ES2024630	ES2029204	ES2029204	ES2029842	ES2024630	ES2029204	ES2029842
		Matrix Type	Water	Water	Water	Water	Soil	Soil	Water
		Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Trip_B	Trip_B	Trip_B
ChemName	**Units**	**EQL**							
Dioxins WHO-TEF				<0.01					
1234678-HpCDD WHO-TEF	pg/L	0.01	<0.01	<0.01	<0.01	-	-	-	-
1234678-HpCDF WHO-TEF	pg/L	0.01	<0.01	<0.01	<0.01	-	-	-	-
1234789-HpCDF WHO-TEF	pg/L	0.01	<0.01	<0.1	<0.01	-	-	-	-
123478-HxCDD WHO-TEF	pg/L	0.1	<0.1	<0.1	<0.1	-	-	-	-
123478-HxCDF WHO-TEF	pg/L	0.1	<0.1	<0.1	<0.1	-	-	-	-
123678-HxCDD WHO-TEF	pg/L	0.1	<0.1	<0.1	<0.1	-	-	-	-
123678-HxCDF WHO-TEF	pg/L	0.1	<0.1	<0.1	<0.1	-	-	-	-
123789-HxCDD WHO-TEF	pg/L	0.1	<0.1	<0.1	<0.1	-	-	-	-
123789-HxCDF WHO-TEF	pg/L	0.1	<0.1	<1	<0.1	-	-	-	-
12378-PeCDD WHO-TEF	pg/L	1	<1	<0.03	<1	-	-	-	-
12378-PeCDF WHO-TEF	pg/L	0.03	<0.03	<0.3	<0.03	-	-	-	-
23478-PeCDF WHO-TEF	pg/L	0.3	<0.3	<1	<0.3	-	-	-	-
2378-TCDD WHO-TEF	pg/L	1	<1	<0.0003	<1	-	-	-	-
OCDD WHO-TEF	pg/L	0.0003	<0.0003	<0.0003	<0.0003	-	-	-	-
OCDF WHO-TEF	pg/L	0.0003	<0.0003	0.0003	<0.0003	-	-	-	-
Dioxins WHO-TEQ 0.5xLOR									
1234678-HpCDF WHO-TEQ2 (0.5 LOR)	pg/L	0.23	<0.23	<0.23	<0.23	-	-	-	-
1234789-HpCDF WHO-TEQ2 (0.5 LOR)	pg/L	0.23	<0.23	<0.23	<0.23	-	-	-	-
123478-HxCDD WHO-TEQ2 (0.5 LOR)	pg/L	2.31	<2.31	<2.31	<2.31	-	-	-	-
123478-HxCDF WHO-TEQ2 (0.5 LOR)	pg/L	2.31	<2.31	<2.31	<2.31	-	-	-	-
123678-HxCDD WHO-TEQ2 (0.5 LOR)	pg/L	2.31	<2.31	<2.31	<2.31	-	-	-	-
123678-HxCDF WHO-TEQ2 (0.5 LOR)	pg/L	2.31	<2.31	<2.31	<2.31	-	-	-	-
123789-HxCDD WHO-TEQ2 (0.5 LOR)	pg/L	2.31	<2.31	<2.31	<2.31	-	-	-	-
123789-HxCDF WHO-TEQ2 (0.5 LOR)	pg/L	2.31	<2.31	<2.31	<2.31	-	-	-	-
12378-PeCDD WHO-TEQ2 (0.5 LOR)	pg/L	23.15	<23.15	<23.15	<23.15	-	-	-	-
12378-PeCDF WHO-TEQ2 (0.5 LOR)	pg/L	0.69	<0.69	<0.69	<0.69	-	-	-	-
23478-PeCDF WHO-TEQ2 (0.5 LOR)	pg/L	6.94	<6.94	<6.94	<6.94	-	-	-	-
2378-TCDD WHO-TEQ2 (0.5 LOR)	pg/L	4.63	<4.63	<4.63	<4.63	-	-	-	-
OCDD WHO-TEQ2 (0.5 LOR)	pg/L	0.03	<0.03	<0.03	<0.03	-	-	-	-
OCDF WHO-TEQ2 (0.5 LOR)	pg/L	0.01	<0.01	<0.01	<0.01	-	-	-	-
Total TEQ WHO-TEQ2 (0.5 LOR)	pg/L	52.82	<52.82	<52.82	<52.82	-	-	-	-
PCDDs and PCDFs									
1234678-HpCDD WHO-TEQ2 (0.5 LOR)	pg/L	0.23	<0.23	<0.23	<0.23	-	-	-	-
1,2,3,7,8,9-Hexachlorooxanthrene	pg/L	46.3	<46.3	<46.3	<46.3	-	-	-	-
2,3,7,8-Tetrachlorooxanthrene	pg/L	9.3	<9.3	<9.3	<9.3	-	-	-	-
234678-HxCDF I-TEF	pg/L	0.1	<0.1	<0.1	<0.1	-	-	-	-
234678-HxCDF I-TEQ1 (zero)	pg/L	0	<0	<0	<0	-	-	-	-
234678-HxCDF I-TEQ2 (0.5 LOR)	pg/L	2.31	<2.31	<2.31	<2.31	-	-	-	-
234678-HxCDF I-TEQ3 (LOR)	pg/L	4.63	<4.63	<4.63	<4.63	-	-	-	-
234678-HxCDF WHO-TEQ3 (LOR)	pg/L	4.63	<4.63	<4.63	<4.63	-	-	-	-
234678-HxCDF WHO-TEQ1 (zero)	pg/L	0	<0	<0	<0	-	-	-	-
234678-HxCDF WHO-TEQ2 (0.5 LOR)	pg/L	2.31	<2.31	<2.31	<2.31	-	-	-	-
234678-HxCDF WHO-TEF	pg/L	0.1	<0.1	<0.1	<0.1	-	-	-	-
2378-TCDF I-TEF	pg/L	0.1	<0.1	<0.1	<0.1	-	-	-	-
2378-TCDF I-TEQ1 (zero)	pg/L	0	<0	<0	<0	-	-	-	-
2378-TCDF I-TEQ2 (0.5 LOR)	pg/L	0.46	<0.46	<0.46	<0.46	-	-	-	-
2378-TCDF WHO-TEQ2 (0.5 LOR)	pg/L	0.46	<0.46	<0.46	<0.46	-	-	-	-

		Field ID	SD_R01	QC301_200819	QC302_200819	QC301_200825	SD_TB01	QC501_200817	QC501_200825
		Sampled Date	16/07/2020	18/08/2020	18/08/2020	25/08/2020	16/07/2020	17/08/2020	25/08/2020
		Lab Report No.	EB2090071 / ES2024630	ES2029204	ES2029204	ES2029842	ES2024630	ES2029204	ES2029842
		Matrix Type	Water	Water	Water	Water	Soil	Soil	Water
		Sample Type	Rinsate	Rinsate	Rinsate	Rinsate	Trip_B	Trip_B	Trip_B
ChemName	**Units**	**EQL**							
2378-TCDF I-TEQ3 (LOR)	pg/L	0.93	<0.93	<0.93	<0.93	-	-	-	-
2378-TCDF WHO-TEQ1 (zero)	pg/L	0	<0	<0	<0	-	-	-	-
2378-TCDF WHO-TEQ3 (LOR)	pg/L	0.93	<0.93	<0.93	<0.93	-	-	-	-
2378-TCDF WHO-TEF	pg/L	0.1	<0.1	<0.1	<0.1	-	-	-	-
Dioxins WHO-TEQ 0xLOR									
1234678-HpCDD WHO-TEQ1 (zero)	pg/L	0.00	0.00	0	0	-	-	-	-
1234678-HpCDF WHO-TEQ1 (zero)	pg/L	0.00	0.00	0	0	-	-	-	-
1234789-HpCDF WHO-TEQ1 (zero)	pg/L	0.00	0.00	0	0	-	-	-	-
123478-HxCDD WHO-TEQ1 (zero)	pg/L	0.00	0.00	0	0	-	-	-	-
123478-HxCDF WHO-TEQ1 (zero)	pg/L	0.00	0.00	0	0	-	-	-	-
123678-HxCDD WHO-TEQ1 (zero)	pg/L	0.00	0.00	0	0	-	-	-	-
123678-HxCDF WHO-TEQ1 (zero)	pg/L	0.00	0.00	0	0	-	-	-	-
123789-HxCDD WHO-TEQ1 (zero)	pg/L	0.00	0.00	0	0	-	-	-	-
123789-HxCDF WHO-TEQ1 (zero)	pg/L	0.00	0.00	0	0	-	-	-	-
12378-PeCDD WHO-TEQ1 (zero)	pg/L	0.00	0.00	0	0	-	-	-	-
12378-PeCDF WHO-TEQ1 (zero)	pg/L	0.00	0.00	0	0	-	-	-	-
23478-PeCDF WHO-TEQ1 (zero)	pg/L	0.00	0.00	0	0	-	-	-	-
2378-TCDD WHO-TEQ1 (zero)	pg/L	0.00	0.00	0	0	-	-	-	-
OCDD WHO-TEQ1 (zero)	pg/L	0	0.00	0	0	-	-	-	-
OCDF WHO-TEQ1 (zero)	pg/L	0.0	0.00	0	0	-	-	-	-
Total TEQ WHO-TEQ1 (zero)	pg/L	0	0.00	0	0	-	-	-	-
Dioxins WHO-TEQ 1xLOR									
1234678-HpCDD WHO-TEQ3 (LOR)	pg/L	0.46	<0.46	<0.46	<0.46	-	-	-	-
1234678-HpCDF WHO-TEQ3 (LOR)	pg/L	0.46	<0.46	<0.46	<0.46	-	-	-	-
1234789-HpCDF WHO-TEQ3 (LOR)	pg/L	0.46	<0.46	<0.46	<0.46	-	-	-	-
123478-HxCDD WHO-TEQ3 (LOR)	pg/L	4.63	<4.63	<4.63	<4.63	-	-	-	-
123478-HxCDF WHO-TEQ3 (LOR)	pg/L	4.63	<4.63	<4.63	<4.63	-	-	-	-
123678-HxCDD WHO-TEQ3 (LOR)	pg/L	4.63	<4.63	<4.63	<4.63	-	-	-	-
123678-HxCDF WHO-TEQ3 (LOR)	pg/L	4.63	<4.63	<4.63	<4.63	-	-	-	-
123789-HxCDD WHO-TEQ3 (LOR)	pg/L	4.63	<4.63	<4.63	<4.63	-	-	-	-
123789-HxCDF WHO-TEQ3 (LOR)	pg/L	4.63	<4.63	<4.63	<4.63	-	-	-	-
12378-PeCDD WHO-TEQ3 (LOR)	pg/L	46.30	<46.30	<46.30	<46.30	-	-	-	-
12378-PeCDF WHO-TEQ3 (LOR)	pg/L	1.39	<1.39	<1.39	<1.39	-	-	-	-
2378-TCDD WHO-TEQ3 (LOR)	pg/L	9.26	<9.26	<9.26	<9.26	-	-	-	-
23478-PeCDF WHO-TEQ3 (LOR)	pg/L	13.89	<13.89	<13.89	<13.89	-	-	-	-
OCDD WHO-TEQ3 (LOR)	pg/L	0.06	<0.06	<0.06	<0.06	-	-	-	-
OCDF WHO-TEQ3 (LOR)	pg/L	0.03	<0.03	<0.03	<0.03	-	-	-	-
Total TEQ WHO-TEQ3 (LOR)	pg/L	105.64	<105.64	<105.64	<105.64	-	-	-	-

		Field ID	QC301_210517	QC302_210520	QC303_210520	QC501_210521
		Sample Date	17-May-21	20-May-21	21-May-21	21-May-21
		Lab Report No.	ES2119196	ES2119196	ES2119196	ES2119196
		Matrix Type	Water	Water	Water	Water
		Sample Type	Rinsate	Rinsate	Rinsate	Trip_B
ChemName	**Unit**	**EQL**				
Per- and Poly-fluoroalkyl Substances (PFAS)						
Perfluorooctanesulfonic acid (PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanoic acid (PFOA)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
Perfluorooctanesulfonamide (PFOSA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluoropentane sulfonic acid (PFPeS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluoro-n-pentanoic acid (PFPeA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorononanoic acid (PFNA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanesulfonic acid (PFHxS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorododecanoic acid (PFDoDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanoic acid (PFDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptane sulfonic acid (PFHpS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanesulfonic acid (PFBS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorodecanesulfonic acid (PFDS)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorotetradecanoic aicd (PFTeDA)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroundecanoic acid (PFUnDA)	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Perfluorobutanoic acid (PFBA)	µg/L	0.1	<0.1	<0.1	<0.1	<0.1
N-ethyl perfluorooctane sulfonamido acetic acid	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
N-ethyl perfluorooctane sulfonamide	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
N-methyl perfluorooctanesulfonamido ethanol	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
N-ethyl perfluorooctanesulfonamido ethanol	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
N-Methyl perfluorooctane sulfonamide	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
N-methyl perfluorooctane sulfonamido acetic acid	µg/L	0.02	<0.02	<0.02	<0.02	<0.02
Sum (PFHxS + PFOS)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
Sum of PFAS (WA DER List)	µg/L	0.01	<0.01	<0.01	<0.01	<0.01
(n:2) Fluorotelomer Sulfonic Acids						
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	µg/L	0.05	<0.05	<0.05	<0.05	<0.05

Field ID	SD_TS01	QC601_200817	QC601_200825
Sampled Date	16/07/2020	17/08/2020	25/08/2020
Lab Report No.	ES2024630	ES2029204	ES2029842
Matrix Type	Soil	Soil	Water

ChemName	Units	EQL	Trip Spike Result	Trip Spike Control	Spike Recovery %	Trip Spike Result	Trip Spike Control	Spike Recovery %	Trip Spike Result	Spike Recovery %
Total Petroleum Hydrocarbons										
C6 - C9 Fraction	mg/kg	0.2	59	65	90	<10	<10	100	-	-
Total Recoverable Hydrocarbons - NEPM 2013 Fractions										
C6 - C10 Fraction	mg/kg	10	71	88	80	<10	<10	100	-	-
C6 - C10 Fraction minus BTEX (F1)	mg/kg	10	26	41	63	<10	<10	100	-	-
BTEXN										
Benzene	mg/kg	0.5	0.3	0.4	75	<0.2	<0.2	100	-	-
	µg/L	1	-	-	-	-	-	-	19	95
Ethylbenzene	mg/kg	0.5	3.1	3.1	100	<0.5	<0.5	100	-	-
	µg/L	2	-	-	-	-	-	-	15	75
meta- & para-Xylene	mg/kg	0.5	15.6	16.2	96	<0.5	<0.5	100	-	-
	µg/L	2	-	-	-	-	-	-	15	75
Naphthalene	mg/kg	1	<1	<1	100	<1	<1	100	-	-
	µg/L	5	-	-	-	-	-	-	18	90
ortho-Xylene	mg/kg	0.5	6.3	6.7	94	<0.5	<0.5	100	-	-
	µg/L	2	-	-	-	-	-	-	16	80
Toluene	mg/kg	0.5	19.8	20.6	96	<0.5	<0.5	100	-	-
	µg/L	2	-	-	-	-	-	-	16	80
Total Xylenes	mg/kg	0.5	21.9	22.9	95	<0.5	<0.5	100	-	-
	µg/L	1	-	-	-	-	-	-	31	77.5
Sum of BTEX	mg/kg	1	45.1	47	95	<0.2	<0.2	100	-	-
	µg/L	1	-	-	-	-	-	-	81	81

Appendix H. Laboratory Certificates

WORKORDER No:

ALS Environmental — CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ ADELAIDE ☐ BRISBANE ☐ CHINCHILLA ☐ DARWIN ☐ EMERALD ☐ GLADSTONE ☐ MACKAY ☐ MELBOURNE ☐ MUDGEE ☐ NEWCASTLE ☐ NOWRA ☐ PERTH ☐ ROMA ☑ SYDNEY ☐ TOWNSVILLE ☐ WOLLONGONG

CLIENT: Jacobs
OFFICE: North Sydney
PROJECT: Rhodes Planned Precinct - Sediment Sampling
PURCHASE ORDER NUMBER: IS355800
PROJECT MANAGER: Kyle McLean — CONTACT PH: 0402 536 798
SAMPLER: Blair Cummings — SAMPLER MOBILE: 0408 427 609

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☑ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: SY/224/20

COC SEQUENCE NUMBER (Circle)
COC: (1) 2 3 4 5 6 7
OF: (1) 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? (Yes) No N/A
Free ice / frozen ice bricks present upon receipt? (Yes) No N/A
Random Sample Temperature on Receipt: °C
Other comment: 3-7

EDD FORMAT (or default):
addresses are listed): Kyle.McLean@jacobs.com, Blair.Cummings@jacobs.com
addresses are listed): and" Robert.Gauthier@jacobs.com
E OR DISPOSAL:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
B. Cummings	Sep M.		Sofia/ALS
DATE/TIME: 16/07/20 1700	DATE/TIME: 16/07/2020 1705	DATE/TIME:	DATE/TIME: 16/7/20 1845

Environmental Division Sydney
Work Order Reference
ES2024630

Telephone : + 61-2-8784 8555

	ILS / WATER (W)	DATE/ TIME	MATRIX	CONTAINER INFORMATION: TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price). Where Metals are required, specify Total (unfiltered bottle required) or dissolved (field filtered bottle required).	Additional Information
1	SD01	16/07/20	Sediment		3		
2	SD02						
3	SD03						
4	SD04						
5	SD05						
6	SD06						
7	SD07						
8	SD08				3		
9	SD_QC01				2		
	SD_QC02				1		Please forward to Eurofins
10	SD_R01		W		7		
11	SD_TS01		Sediment		1		
12	SD_TB01	16/07/20	Sediment	TOTAL	1		
13							

Subcon / Forward Lab / Split WO
Lab / Analysis: Split WO into
Organised By / Date:
Relinquished By / Date: Brisby
Courier: Newcastle
WO No: Eurofins
Attach By PO / Internal Sheet:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; LI = Lugols Iodine Preserved; STT = Sterile Sodium Thiosulfate Preserved; Z = Zinc Acetate Preserved Bottle; E = Ed TA Preserved Bottles; ST = Sterile Bottle. Soil Container Codes: ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

23342

ENFM (203/2) Template.ES EW

#AU04_Enviro_Sample_NSW

From: Andrew Black
Sent: Friday, 17 July 2020 4:47 PM
To: #AU04_Enviro_Sample_NSW
Subject: FW: Jacobs

Follow Up Flag: Follow up
Flag Status: Flagged

Here you go Suzanne. Please log in the LL codes for the PAHs, Phenols and PCBs.

Andrew Black
Phone: +61 410 220 750
Email: AndrewBlack@eurofins.com

From: Cummings, Blair <Blair.Cummings@jacobs.com>
Sent: Friday, 17 July 2020 4:43 PM
To: Andrew Black <AndrewBlack@eurofins.com>; McLean, Kyle <Kyle.McLean@jacobs.com>
Subject: RE: Jacobs

EXTERNAL EMAIL*

Hi Andrew,

The sample should be analysed for the following, please note NODG LORs are required:

- Total Metals in Sediments (As, Cd, Cr, Cu, Ni, Pb, Zn) (NODG - required LOR)
- Mercury in Sediments (NODG - required LOR)
- TRH Ultra trace in sediments
- TRH(v)/BTEXN in sediments
- PAH/Phenols Ultra trace
- PCBs Ultra trace
- Organotins – Tributyltin (TBT)

Hope this helps.

Regards,

Blair Cummings
Jacobs
Environmental Scientist | Buildings & Infrastructure | Eastern Asia Pacific
+ 61 2 9032 1552
Blair.Cummings@jacobs.com

177 Pacific Highway
North Sydney NSW 2060 Australia
www.jacobs.com

#732623

eurofins | Environment Testing

Melbourne
6 Monterey Road
Dandenong South Vic 3175
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
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16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**Jacobs Group (Australia) P/L NSW**
Contact name:	Kyle McLean
Project name:	RHODES PLANNED PRECINCT - SEDIMENT
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Jul 17, 2020 1:35 PM
Eurofins reference:	**732623**

Sample information

- ☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ☑ All samples have been received as described on the above COC.
- ☑ COC has been completed correctly.
- ☑ Attempt to chill was evident.
- ☑ Appropriately preserved sample containers have been used.
- ☑ All samples were received in good condition.
- ☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ☑ Appropriate sample containers have been used.
- ☒ Split sample sent to requested external lab.
- ☑ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Contact notes

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

Andrew Black on Phone : (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Kyle McLean - kyle.mclean@jacobs.com.

eurofins | Environment Testing

ABN – 50 005 085 521 web : www.eurofins.com.au e.mail : EnviroSales@eurofins.com

Australia

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Dandenong South VIC 3175
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NATA # 1261
Site # 1254 & 14271

Sydney
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Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

New Zealand

Auckland
35 O'Rorke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Company Name: Jacobs Group (Australia) P/L NSW
Address: Level 7, 177 Pacific Highway
North Sydney
NSW 2065

Project Name: RHODES PLANNED PRECINCT - SEDIMENT

Order No.:
Report #: 732623
Phone: 02 9928 2100
Fax: 02 9928 2504

Received: Jul 17, 2020 1:35 PM
Due: Jul 24, 2020
Priority: 5 Day
Contact Name: Kyle McLean

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Tributyltin (TBT)	Metals M8	BTEX and Naphthalene	Moisture Set	Total Recoverable Hydrocarbons	Polycyclic Aromatic Hydrocarbons (Trace level)	Phenols (IWRG 621) - Low level	Polychlorinated Biphenyls (PCB trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217										X			
Brisbane Laboratory - NATA Site # 20794													
Perth Laboratory - NATA Site # 23736													
External Laboratory						X							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**								
1	SD_QC02	Jul 16, 2020		Sediment	S20-Jl30189	X	X	X	X	X	X	X	X
Test Counts						1	1	1	1	1	1	1	1

REPORT OF ANALYSIS

Report No. RN1282261

Client	: EUROFINS MGT	**Job No.**	: EURO26/200720
	6 Monterey Road	**Quote No.**	: QT-02018
	Dandenong South VIC 3175	**Order No.**	: 20-434-965-732623
		Date Received	: 20-JUL-2020
Attention	: ANDREW BLACK	**Sampled By**	: CLIENT
Project Name	:		
Your Client Services Manager	: Tim Reddan	**Phone**	: 03 9644 4854

Lab Reg No.	Sample Ref	Sample Description
N20/016921	SD_QC02	SEDIMENT S20-JI30189

Lab Reg No.		N20/016921				
Date Sampled		16-JUL-2020				
Sample Reference	Units	SD_QC02				Method
Organotins						
Monobutyltin as Sn	ng/g	2.0				NR_35
Dibutyltin as Sn	ng/g	38				NR_35
Tributyltin as Sn	ng/g	1.6				NR_35
Surrogate: Tripropyltin	%REC	60				NR_35
Dates						
Date extracted		20-JUL-2020				
Date analysed		24-JUL-2020				

Luke Baker, Analyst
Organics - NSW
Accreditation No. 198

29-JUL-2020

Lab Reg No.		N20/016921				
Date Sampled		16-JUL-2020				
Sample Reference	Units	SD_QC02				Method
Trace Elements						
Total Solids	%	59.8				NT2_49
Dates						
Date extracted		21-JUL-2020				
Date analysed		23-JUL-2020				

REPORT OF ANALYSIS

Report No. RN1282261

Lab Reg No.		N20/016921				
Date Sampled		16-JUL-2020				
Sample Reference		SD_QC02				
	Units					Method

Pankaj Barai, Analyst
Inorganics - NSW
Accreditation No. 198

29-JUL-2020

All results are expressed on a dry weight basis.

ACCREDITED FOR TECHNICAL COMPETENCE

Accredited for compliance with ISO/IEC 17025 - Testing.
This report shall not be reproduced except in full.
Results relate only to the sample(s) as received and tested.

This Report supersedes reports: *RN1282210*

Measurement Uncertainty is available upon request.
Chemical Accreditation 198: 105 Delhi Road, North Ryde, NSW, 2113

Jacobs Group (Australia) P/L NSW
Level 7, 177 Pacific Highway
North Sydney
NSW 2065

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.

Attention: **Kyle McLean**

Report **732623-S**
Project name RHODES PLANNED PRECINCT - SEDIMENT
Received Date Jul 17, 2020

Client Sample ID			**SD_QC02**
Sample Matrix			**Sediment**
Eurofins Sample No.			**S20-Jl30189**
Date Sampled			**Jul 16, 2020**
Test/Reference	LOR	Unit	
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	90
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100
Total Recoverable Hydrocarbons			
TRH C6-C9	20	mg/kg	< 20
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50
Polychlorinated Biphenyls			
Aroclor-1016	0.1	mg/kg	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1
Total PCB*	0.1	mg/kg	< 0.1
Dibutylchlorendate (surr.)	1	%	56
Tetrachloro-m-xylene (surr.)	1	%	63

Client Sample ID			SD_QC02
Sample Matrix			**Sediment**
Eurofins Sample No.			**S20-JI30189**
Date Sampled			**Jul 16, 2020**
Test/Reference	LOR	Unit	
Phenols (Halogenated)			
2-Chlorophenol	0.5	mg/kg	< 0.5
2.4-Dichlorophenol	0.5	mg/kg	< 0.5
2.4.5-Trichlorophenol	1	mg/kg	< 1
2.4.6-Trichlorophenol	1	mg/kg	< 1
2.6-Dichlorophenol	0.5	mg/kg	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	< 1
Pentachlorophenol	1	mg/kg	< 1
Tetrachlorophenols - Total	10	mg/kg	< 10
Total Halogenated Phenol*	1	mg/kg	< 1
Phenols (non-Halogenated)			
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	< 20
2-Methyl-4.6-dinitrophenol	5	mg/kg	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2
2-Nitrophenol	1	mg/kg	< 1
2.4-Dimethylphenol	0.5	mg/kg	< 0.5
2.4-Dinitrophenol	5	mg/kg	< 5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4
4-Nitrophenol	5	mg/kg	< 5
Dinoseb	20	mg/kg	< 20
Phenol	0.5	mg/kg	< 0.5
Total Non-Halogenated Phenol*	20	mg/kg	< 20
Phenol-d6 (surr.)	1	%	21
Polycyclic Aromatic Hydrocarbons (Trace level)			
Acenaphthene	0.005	mg/kg	< 0.005
Acenaphthylene	0.005	mg/kg	< 0.005
Anthracene	0.005	mg/kg	< 0.005
Benz(a)anthracene	0.005	mg/kg	< 0.05
Benzo(a)pyrene	0.005	mg/kg	< 0.005
Benzo(b&j)fluoranthene	0.005	mg/kg	0.033
Benzo(g.h.i)perylene	0.005	mg/kg	< 0.005
Benzo(k)fluoranthene	0.005	mg/kg	0.026
Chrysene	0.005	mg/kg	< 0.05
Dibenz(a.h)anthracene	0.005	mg/kg	< 0.005
Fluoranthene	0.005	mg/kg	< 0.005
Fluorene	0.005	mg/kg	< 0.005
Indeno(1.2.3-cd)pyrene	0.005	mg/kg	< 0.005
Naphthalene	0.005	mg/kg	< 0.005
Phenanthrene	0.005	mg/kg	< 0.005
Pyrene	0.005	mg/kg	0.038
Total PAH*	0.005	mg/kg	0.097
2-Fluorobiphenyl (surr.)	1	%	62
p-Terphenyl-d14 (surr.)	1	%	62
Heavy Metals			
Arsenic	2	mg/kg	22
Cadmium	1	mg/kg	1.4
Chromium	5	mg/kg	220
Copper	5	mg/kg	110
Lead	5	mg/kg	260
Mercury	0.1	mg/kg	0.6

Client Sample ID			SD_QC02
Sample Matrix			**Sediment**
Eurofins Sample No.			**S20-Jl30189**
Date Sampled			**Jul 16, 2020**
Test/Reference	LOR	Unit	
Heavy Metals			
Nickel	5	mg/kg	24
Zinc	5	mg/kg	590
Tributyltin (TBT)			see attached
% Moisture	1	%	40

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.

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 and Naphthalene			
BTEX	Melbourne	Jul 21, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Jul 21, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Jul 21, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons	Melbourne	Jul 21, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Jul 21, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Polychlorinated Biphenyls	Melbourne	Jul 27, 2020	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8082)			
Polycyclic Aromatic Hydrocarbons (Trace level)	Melbourne	Jul 21, 2020	0 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water (trace)			
Metals M8	Melbourne	Jul 21, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Phenols (IWRG 621)			
Phenols (Halogenated)	Melbourne	Jul 27, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Melbourne	Jul 27, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
% Moisture	Melbourne	Jul 20, 2020	14 Days
- Method: LTM-GEN-7080 Moisture			

eurofins | Environment Testing

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IANZ # 1290

Company Name: Jacobs Group (Australia) P/L NSW
Address: Level 7, 177 Pacific Highway
North Sydney
NSW 2065

Project Name: RHODES PLANNED PRECINCT - SEDIMENT

Order No.:
Report #: 732623
Phone: 02 9928 2100
Fax: 02 9928 2504

Received: Jul 17, 2020 1:35 PM
Due: Jul 24, 2020
Priority: 5 Day
Contact Name: Kyle McLean

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Tributyltin (TBT)	Metals M8	BTEX and Naphthalene	Moisture Set	Total Recoverable Hydrocarbons	Polycyclic Aromatic Hydrocarbons (Trace level)	Phenols (IWRG 621) - Low level	Polychlorinated Biphenyls (PCB trace level)
Melbourne Laboratory - NATA Site # 1254 & 14271							X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217													
Brisbane Laboratory - NATA Site # 20794													
Perth Laboratory - NATA Site # 23736													
External Laboratory						X							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**								
1	SD_QC02	Jul 16, 2020		Sediment	S20-Jl30189	X	X	X	X	X	X	X	X
Test Counts						1	1	1	1	1	1	1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food 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. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

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

Units

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

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands 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	US Department of Defense Quality Systems Manual Version 5.3
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 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

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/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							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/kg	< 20			20	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
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							
Polycyclic Aromatic Hydrocarbons (Trace level)							
Acenaphthene	mg/kg	< 0.005			0.005	Pass	
Acenaphthylene	mg/kg	< 0.005			0.005	Pass	
Anthracene	mg/kg	< 0.005			0.005	Pass	
Benz(a)anthracene	mg/kg	< 0.005			0.005	Pass	
Benzo(a)pyrene	mg/kg	< 0.005			0.005	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.005			0.005	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.005			0.005	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.005			0.005	Pass	
Chrysene	mg/kg	< 0.005			0.005	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.005			0.005	Pass	
Fluoranthene	mg/kg	< 0.005			0.005	Pass	
Fluorene	mg/kg	< 0.005			0.005	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.005			0.005	Pass	
Naphthalene	mg/kg	< 0.005			0.005	Pass	
Phenanthrene	mg/kg	< 0.005			0.005	Pass	
Pyrene	mg/kg	< 0.005			0.005	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 1			1	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							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
BTEX							
Benzene	%	89			70-130	Pass	
Toluene	%	112			70-130	Pass	
Ethylbenzene	%	101			70-130	Pass	
m&p-Xylenes	%	101			70-130	Pass	
Xylenes - Total*	%	102			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	101			70-130	Pass	
TRH C6-C10	%	103			70-130	Pass	
TRH >C10-C16	%	100			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	104			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C10-C14	%	106			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons (Trace level)							
Acenaphthene	%	93			70-130	Pass	
Acenaphthylene	%	89			70-130	Pass	
Anthracene	%	93			70-130	Pass	
Benz(a)anthracene	%	77			70-130	Pass	
Benzo(a)pyrene	%	87			70-130	Pass	
Benzo(b&j)fluoranthene	%	82			70-130	Pass	
Benzo(g.h.i)perylene	%	98			70-130	Pass	
Benzo(k)fluoranthene	%	86			70-130	Pass	
Chrysene	%	84			70-130	Pass	
Dibenz(a.h)anthracene	%	96			70-130	Pass	
Fluoranthene	%	85			70-130	Pass	
Fluorene	%	86			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	92			70-130	Pass	
Naphthalene	%	79			70-130	Pass	
Phenanthrene	%	93			70-130	Pass	
Pyrene	%	87			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	100			80-120	Pass	
Cadmium	%	93			80-120	Pass	
Chromium	%	105			80-120	Pass	
Copper	%	102			80-120	Pass	
Lead	%	108			80-120	Pass	
Mercury	%	103			80-120	Pass	
Nickel	%	99			80-120	Pass	
Zinc	%	101			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
BTEX				Result 1					
Benzene	M20-Jl34710	NCP	%	95			70-130	Pass	
Toluene	M20-Jl34710	NCP	%	122			70-130	Pass	
Ethylbenzene	M20-Jl34710	NCP	%	112			70-130	Pass	
m&p-Xylenes	M20-Jl34710	NCP	%	112			70-130	Pass	
o-Xylene	M20-Jl34710	NCP	%	116			70-130	Pass	
Xylenes - Total*	M20-Jl34710	NCP	%	113			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M20-Jl34710	NCP	%	118			70-130	Pass	
TRH C6-C10	M20-Jl34710	NCP	%	107			70-130	Pass	
TRH >C10-C16	M20-Jl35733	NCP	%	112			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C6-C9	M20-Jl34710	NCP	%	108			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M20-Jl35733	NCP	%	119			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M20-Jl36663	NCP	%	77			75-125	Pass	
Cadmium	M20-Jl36663	NCP	%	92			75-125	Pass	
Chromium	M20-Jl36663	NCP	%	81			75-125	Pass	
Copper	M20-Jl36663	NCP	%	77			75-125	Pass	
Lead	M20-Jl36663	NCP	%	86			75-125	Pass	
Mercury	M20-Jl36663	NCP	%	97			75-125	Pass	
Nickel	M20-Jl36663	NCP	%	77			75-125	Pass	
Zinc	M20-Jl36663	NCP	%	73			75-125	Fail	Q08
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M20-Jl34711	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M20-Jl34711	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M20-Jl34711	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M20-Jl34711	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M20-Jl34711	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	M20-Jl34711	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M20-Jl34711	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M20-Jl34711	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	M20-Jl34446	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M20-Jl34446	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M20-Jl34446	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	M20-Jl34711	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	M20-Jl34446	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M20-Jl34446	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M20-Jl34446	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M20-Jl36479	NCP	mg/kg	4.9	5.2	5.0	30%	Pass	
Cadmium	M20-Jl36479	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M20-Jl36479	NCP	mg/kg	34	34	1.0	30%	Pass	
Copper	M20-Jl36479	NCP	mg/kg	13	11	10	30%	Pass	
Lead	M20-Jl36479	NCP	mg/kg	19	20	6.0	30%	Pass	
Mercury	M20-Jl36479	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M20-Jl36479	NCP	mg/kg	11	11	7.0	30%	Pass	
Zinc	M20-Jl36479	NCP	mg/kg	20	19	9.0	30%	Pass	

Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S20-Jl30189	CP	%	40	40	<1	30%	Pass	

Comments

TBT analysed by; NMI, accreditation number ISO/IEC 17025, report reference RN1282261

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	Yes

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.
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.

Authorised By

Andrew Black	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)



Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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

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Australian Government

National Measurement Institute

QUALITY ASSURANCE REPORT

Client: EUROFINS MGT

NMI QA Report No: EURO26/200720 **Sample Matrix:** Solid

Analyte	Method	LOR	Blank	Sample Duplicates			Recoveries	
				Sample	Duplicate	RPD	LCS	Matrix Spike
		ng/g	ng/g	ng/g	ng/g	%	%	%
Organics Section								
Organotin								
Monobutyltin	NR_35	0.5	<0.5	2.0	2.3	15	63	NA
Dibutyltin	NR_35	0.5	<0.5	38	36	6.0	79	NA
Tributyltin	NR_35	0.5	<0.5	1.6	1.2	26	79	NA
Organotin Surrogate								
Tripropyltin (%Rec)	NR_35	-	-	60	66	9.5	83	NA

Results expressed in percentage (%) or ng/g wherever appropriate.
Acceptable Spike recovery is 30-150% (monobutyltin and Tripropyltin); 40-160% (dibutyltin and tributyltin)
Maximum acceptable RPDs on spikes and duplicates is 60%.
'NA ' = Not Applicable.
RPD= Relative Percentage Difference, LCS = Laboratory Control Spike, LOR = Limit of Reporting.
This report shall not be reproduced except in full.

Signed:

Danny Slee
Organics Manager, NMI-North Ryde

Date: **29/07/2020**

WORKORDER No:

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

☐ ADELAIDE ☐ BRISBANE ☐ CHINCHILLA ☐ DARWIN ☐ EMERALD ☐ GLADSTONE ☐ MACKAY ☐ MELBOURNE ☐ MUDGEE ☐ NEWCASTLE ☐ NOWRA ☐ PERTH ☐ ROMA ☑ SYDNEY ☐ TOWNSVILLE ☐ WOLLONGONG

CLIENT: Jacobs

OFFICE: North Sydney

PROJECT: Rhodes Planned Precinct - Sediment Sampling

PURCHASE ORDER NUMBER: IS355800

PROJECT MANAGER: Kyle McLean

CONTACT PH: 0402 536 798

SAMPLER: Blair Cummings

SAMPLER MOBILE: 0408 427 609

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☑ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: SY/224/20

COC SEQUENCE NUMBER (Circle)
COC: (1) 2 3 4 5 6 7
OF: (1) 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? (Yes) No N/A
Free ice / frozen ice bricks present upon receipt? (Yes) No N/A
Random Sample Temperature on Receipt: °C
Other comment: 3-7

EDD FORMAT (or default):

er addresses are listed): Kyle.McLean@jacobs.com, Blair.Cummings@jacobs.com

er addresses are listed): → and " Robert.Gauthier@jacobs.com

GE OR DISPOSAL:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
B. Cummings	Sep M.		Sophie AS
DATE/TIME: 16/07/20 1700	DATE/TIME: 16/07/2020 1705	DATE/TIME:	DATE/TIME: 16/7/20 1845

REC: Ansaw 21.07.2020 10:00

Environmental Division Brisbane
Work Order
EB2090071
Telephone : +61-7-3243 7222

	AILS WATER (W)	DATE/ TIME	MATRIX	CONTAINER INFORMATION TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or dissolved (field filtered bottle required). EG020-SD Metals; EG035-SD Mercury in Sediments; EP071-SD TRH Ultra Trace in Sediments; EP080-SD TRH(V)/BTEXN; EP132 AB - PAH; EP1316 - PCBs (Ultra trace); EP300B - Dioxins and Furans; EP090 (solids) Organotins; S-18 (NO MOISTURE); TOC; Grain size distribution; W-27; EP090S - Organotins (TBT); EP300B - Dioxins and Furans; PCBs	Additional Information
1	SD01	16/07/20	Sediment		3	X X X X X X X X X X X X	
2	SD02					X X X X X X X X X X	
3	SD03					X X X X X X X X X X X	
4	SD04					X X X X X X X X X X X	
5	SD05					X X X X X X X X X X X	
6	SD06					X X X X X X X X X X X	
7	SD07					X X X X X X X X X X	
8	SD08				3	X X X X X X X X X X X	
9	SD_Q01				2	X X X X X X X X X	
	SD_Q02		Sediment		1	X X X X X X [redacted] X	Please forward to Eurofins
10	SD_R01		W		7	X X X X	
11	SD_TS01		Sediment		1	X	
12	SD_TB01	16/07/20	Sediment	TOTAL	1	X	

Sullivan / Forward Lab / Split WO
Lab / Analysis: Split WO to Brisbane
Organised By / Date: Newcastle
Relinquished By / Date: Eurofins
Connote / Courier:
WO No:
Attach By PO / Internal Sheet:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; LI = Lugols Iodine Preserved; STT = Sterile Sodium Thiosulfate Preserved; Z = Zinc Acetate Preserved Bottle; E = Ed TA Preserved Bottles; ST = Sterile Bottle *Soil Container Codes:* ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

233424

Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **EB2090071**		
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: KYLE MCLEAN	Contact	: Customer Services Brisbane
Address	: 100 CHRISTIE STREET P O BOX 164 ST LEONARDS NSW, AUSTRALIA 2065	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kyle.mclean@jacobs.com	E-mail	: ALSEnviro.Brisbane@alsglobal.com
Telephone	: +61 02 9928 2100	Telephone	: +61 7 3243 7222
Facsimile	: +61 02 9928 2272	Facsimile	: +61 7 3243 7218
Project	: Rhodes Planned Precinct - Sediment	Page	: 1 of 3
Order number	: IS355800		
C-O-C number	: 233424	Quote number	: ----
Site	: ----		
Sampler	: Blair Cummings	QC Level	: NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received	: 21-JUL-2020	Issue Date	: 21-JUL-2020 14:44
Client Requested Due Date	: 04-AUG-2020	Scheduled Reporting Date	: **04-AUG-2020**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 12.0°C - Ice present
No. of coolers/boxes	: 1	No. of samples received	: 10
Security Seal	: Intact.	No. of samples analysed	: 10

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- **Please be advised that remaining analysis listed on the received Chain of Custody shall be reported on ES2024630**
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' etc. suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to John Pickering (Samples.Brisbane@alsglobal.com)
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958),
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - HRMS - Combined Dioxins and Furans (SOILS)
EB2090071-001	16-JUL-2020 00:00	SD01	✓
EB2090071-002	16-JUL-2020 00:00	SD02	✓
EB2090071-003	16-JUL-2020 00:00	SD03	✓
EB2090071-004	16-JUL-2020 00:00	SD04	✓
EB2090071-005	16-JUL-2020 00:00	SD05	✓
EB2090071-006	16-JUL-2020 00:00	SD06	✓
EB2090071-007	16-JUL-2020 00:00	SD07	✓
EB2090071-008	16-JUL-2020 00:00	SD08	✓
EB2090071-009	16-JUL-2020 00:00	SD_QC01	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - HRMS Dioxins and Furans (WATER)
EB2090071-010	16-JUL-2020 00:00	SD_R01	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

BLAIR CUMMINGS

- A4 - AU Sample Receipt Notification - Environmental HT (SRN	Email	blair.cummings@jacobs.com
- AU Certificate of Analysis - DIOXINS/HRMS (DIONA)	Email	blair.cummings@jacobs.com
- AU QC Report - DIOXINS/HRMS (DQCNA)	Email	blair.cummings@jacobs.com
- Chain of Custody (CoC) (COC)	Email	blair.cummings@jacobs.com
- EDI Format - ENMRG (ENMRG)	Email	blair.cummings@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	blair.cummings@jacobs.com

KYLE MCLEAN

- A4 - AU Sample Receipt Notification - Environmental HT (SRN	Email	kyle.mclean@jacobs.com
- A4 - AU Tax Invoice (INV)	Email	kyle.mclean@jacobs.com
- AU Certificate of Analysis - DIOXINS/HRMS (DIONA)	Email	kyle.mclean@jacobs.com
- AU QC Report - DIOXINS/HRMS (DQCNA)	Email	kyle.mclean@jacobs.com
- Chain of Custody (CoC) (COC)	Email	kyle.mclean@jacobs.com
- EDI Format - ENMRG (ENMRG)	Email	kyle.mclean@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	kyle.mclean@jacobs.com

ROBERT GAUTHIER

- A4 - AU Sample Receipt Notification - Environmental HT (SRN	Email	robert.gauthier@jacobs.com
- AU Certificate of Analysis - DIOXINS/HRMS (DIONA)	Email	robert.gauthier@jacobs.com
- AU QC Report - DIOXINS/HRMS (DQCNA)	Email	robert.gauthier@jacobs.com
- Chain of Custody (CoC) (COC)	Email	robert.gauthier@jacobs.com
- EDI Format - ENMRG (ENMRG)	Email	robert.gauthier@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	robert.gauthier@jacobs.com

CERTIFICATE OF ANALYSIS

Client	**JACOBS GROUP (AUSTRALIA) PTY LTD**	**Laboratory :**	Environmental Division Brisbane		
Contact	ROBERT GAUTHIER	**Contact**	CUSTOMER.SERVICES.EB	**Work Order:**	**EB2090071**
Address:	100 CHRISTIE STREET P O BOX 164 ST LEONARDS NSW, AUSTRALIA 2065	**Address:**	2 Byth Street Stafford QLD 4053 Australia		
Project	Rhodes Planned Precinct - Sedim	**Quote #**	----	**Received:**	21 Jul 2020
Order #	IS355800			**Issued**	31 Jul 2020
C-O-C #	233424				
Site	- Not provided -				
E-mail	robert.gauthier@jacobs.com	**E-mail**	ALSEnviro.Brisbane@alsglobal.com	**Number of Samples**	
Phone	9928 2100	**Phone**	+61-7-3243 7222	**Received:**	10
Fax	9928 2272	**Fax**	+61-7-3243 7218	**Analysed:**	10

Notes

LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence

1 I -TEQ(zero) and WHO-TEQ(zero) calculated treating <LOR as zero concentration
2 I -TEQ(0.5 LOR) and WHO-TEQ(0.5 zero) calculated treating <LOR as 0.5 LoR concentration
3 I-TEQ(LOR) and WHO-TEQ(LOR) calculated treating <LOR as LoR concentration
4 Totals LORs are calculated by multiplying the number of peaks by the individual LOR per compound
5 13C12 Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency.

T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran

Work order specific comments

Samples analysed 'as received', results reported on 'dry weight' basis.
Sample SD_R01: Lower than the standard sample volume was available for this sample. The LOR is raised based on the volume available.

ALSE - Excellence in Analytical Testing

NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IED 17025

This document has been digitally signed by those names that appear on this report and are the authorised signatories.
Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Client	: JACOBS GROUP (AUSTRALIA) PTY LTD	**Work Order**	: EB2090071
Project	: Rhodes Planned Precinct - Sediment	**ALS Quote Reference**	: ----

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB2090071001
Client Sample ID: SD01
Qc Lot Number: 4542049
Sample Matrix: SEDIMENT
Date Sampled: 15-Jul-2020
Date Extracted: 29-Jul-2020
Date Analysed: 29-Jul-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	**60.7**	**0.5**	**1**	**60.70**	**60.70**	**60.70**	**1**	**60.70**	**60.70**	**60.70**	**52.8**
12378-PeCDD	**30.3**	**2.5**	**1**	**30.30**	**30.30**	**30.30**	**0.5**	**15.15**	**15.15**	**15.15**	**113.8**
123478-HxCDD	**7.9**	**2.5**	**0.1**	**0.79**	**0.79**	**0.79**	**0.1**	**0.79**	**0.79**	**0.79**	**64.5**
123678-HxCDD	**61.5**	**2.5**	**0.1**	**6.15**	**6.15**	**6.15**	**0.1**	**6.15**	**6.15**	**6.15**	**81.0**
123789-HxCDD	**23.9**	**2.5**	**0.1**	**2.39**	**2.39**	**2.39**	**0.1**	**2.39**	**2.39**	**2.39**	**-**
1234678-HpCDD	**1340.0**	**2.5**	**0.01**	**13.40**	**13.40**	**13.40**	**0.01**	**13.40**	**13.40**	**13.40**	**81.0**
OCDD	**26900.0**	**10.0**	**0.0003**	**8.07**	**8.07**	**8.07**	**0.001**	**26.90**	**26.90**	**26.90**	**94.1**
2378-TCDF	**20.4**	**0.5**	**0.1**	**2.04**	**2.04**	**2.04**	**0.1**	**2.04**	**2.04**	**2.04**	**37.7**
12378-PeCDF	**4.8**	**2.5**	**0.03**	**0.14**	**0.14**	**0.14**	**0.05**	**0.24**	**0.24**	**0.24**	**82.5**
23478-PeCDF	**14.6**	**2.5**	**0.3**	**4.38**	**4.38**	**4.38**	**0.5**	**7.30**	**7.30**	**7.30**	**90.7**
123478-HxCDF	**41.8**	**2.5**	**0.1**	**4.18**	**4.18**	**4.18**	**0.1**	**4.18**	**4.18**	**4.18**	**60.0**
123678-HxCDF	**7.7**	**2.5**	**0.1**	**0.77**	**0.77**	**0.77**	**0.1**	**0.77**	**0.77**	**0.77**	**63.2**
234678-HxCDF	**11.1**	**2.5**	**0.1**	**1.11**	**1.11**	**1.11**	**0.1**	**1.11**	**1.11**	**1.11**	**63.4**
123789-HxCDF	**<2.5**	**2.5**	**0.1**	**0.00**	**0.12**	**0.25**	**0.1**	**0.00**	**0.12**	**0.25**	**73.3**
1234678-HpCDF	**422.0**	**2.5**	**0.01**	**4.22**	**4.22**	**4.22**	**0.01**	**4.22**	**4.22**	**4.22**	**57.7**
1234789-HpCDF	**17.8**	**2.5**	**0.01**	**0.18**	**0.18**	**0.18**	**0.01**	**0.18**	**0.18**	**0.18**	**73.2**
OCDF	**1970.0**	**5.0**	**0.0003**	**0.59**	**0.59**	**0.59**	**0.001**	**1.97**	**1.97**	**1.97**	**-**
Total TEQ	**-**	**-**	**-**	**139.41**	**139.54**	**139.66**	**-**	**147.49**	**147.61**	**147.74**	**-**

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	**254.0**	**7.5**	**15**
Penta-Dioxins	**412.0**	**22.5**	**9**
Hexa-Dioxins	**947.0**	**17.5**	**7**
Hepta-Dioxins	**2970.0**	**5.0**	**2**
Octa-Dioxin	**26900.0**	**10.0**	**1**
Tetra-Furans	**501.0**	**6.5**	**13**
Penta-Furans	**405.0**	**22.5**	**9**
Hexa-Furans	**678.0**	**20.0**	**8**
Hepta-Furans	**1250.0**	**10.0**	**4**
Octa-Furan	**1970.0**	**5.0**	**1**
S **PCDD/Fs**	**36287.0**		

An ALS Limited Company

Client	: JACOBS GROUP (AUSTRALIA) PTY LTD	**Work Order**	: EB2090071
Project	: Rhodes Planned Precinct - Sediment	**ALS Quote Reference**	: ----

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB2090071002
Client Sample ID: SD02
Qc Lot Number: 4542049
Sample Matrix: SEDIMENT
Date Sampled: 15-Jul-2020
Date Extracted: 29-Jul-2020
Date Analysed: 29-Jul-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	2360.0	0.5	1	2360.00	2360.00	2360.00	1	2360.00	2360.00	2360.00	34.6
12378-PeCDD	125.0	2.5	1	125.00	125.00	125.00	0.5	62.50	62.50	62.50	75.4
123478-HxCDD	86.7	2.5	0.1	8.67	8.67	8.67	0.1	8.67	8.67	8.67	43.4
123678-HxCDD	1120.0	2.5	0.1	112.00	112.00	112.00	0.1	112.00	112.00	112.00	51.2
123789-HxCDD	311.0	2.5	0.1	31.10	31.10	31.10	0.1	31.10	31.10	31.10	-
1234678-HpCDD	33200.0	2.5	0.01	332.00	332.00	332.00	0.01	332.00	332.00	332.00	56.0
OCDD	295000.0	9.9	0.0003	88.50	88.50	88.50	0.001	295.00	295.00	295.00	79.3
2378-TCDF	69.1	0.5	0.1	6.91	6.91	6.91	0.1	6.91	6.91	6.91	26.5
12378-PeCDF	37.6	2.5	0.03	1.13	1.13	1.13	0.05	1.88	1.88	1.88	60.9
23478-PeCDF	101.0	2.5	0.3	30.30	30.30	30.30	0.5	50.50	50.50	50.50	55.1
123478-HxCDF	443.0	2.5	0.1	44.30	44.30	44.30	0.1	44.30	44.30	44.30	36.7
123678-HxCDF	97.5	2.5	0.1	9.75	9.75	9.75	0.1	9.75	9.75	9.75	45.1
234678-HxCDF	94.0	2.5	0.1	9.40	9.40	9.40	0.1	9.40	9.40	9.40	42.5
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	51.3
1234678-HpCDF	1880.0	2.5	0.01	18.80	18.80	18.80	0.01	18.80	18.80	18.80	43.4
1234789-HpCDF	313.0	2.5	0.01	3.13	3.13	3.13	0.01	3.13	3.13	3.13	51.3
OCDF	7660.0	4.9	0.0003	2.30	2.30	2.30	0.001	7.66	7.66	7.66	-
Total TEQ	-	-	-	3183.29	3183.41	3183.53	-	3353.60	3353.72	3353.85	-

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	3660.0	6.4	13
Penta-Dioxins	1690.0	22.3	9
Hexa-Dioxins	7730.0	17.3	7
Hepta-Dioxins	57600.0	4.9	2
Octa-Dioxin	295000.0	9.9	1
Tetra-Furans	2090.0	7.9	16
Penta-Furans	1610.0	22.3	9
Hexa-Furans	2830.0	22.3	9
Hepta-Furans	6800.0	9.9	4
Octa-Furan	7660.0	4.9	1
S **PCDD/Fs**	386670.0		

An ALS Limited Company

Client	: JACOBS GROUP (AUSTRALIA) PTY LTD	**Work Order**	: EB2090071
Project	: Rhodes Planned Precinct - Sediment	**ALS Quote Reference**	: ----

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB2090071003
Client Sample ID: SD03
Qc Lot Number: 4542049
Sample Matrix: SEDIMENT
Date Sampled: 15-Jul-2020
Date Extracted: 29-Jul-2020
Date Analysed: 29-Jul-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	147.0	0.5	1	147.00	147.00	147.00	1	147.00	147.00	147.00	83.1
12378-PeCDD	39.0	2.5	1	39.00	39.00	39.00	0.5	19.50	19.50	19.50	104.0
123478-HxCDD	29.2	2.5	0.1	2.92	2.92	2.92	0.1	2.92	2.92	2.92	70.8
123678-HxCDD	466.0	2.5	0.1	46.60	46.60	46.60	0.1	46.60	46.60	46.60	84.1
123789-HxCDD	119.0	2.5	0.1	11.90	11.90	11.90	0.1	11.90	11.90	11.90	-
1234678-HpCDD	13000.0	2.5	0.01	130.00	130.00	130.00	0.01	130.00	130.00	130.00	70.4
OCDD	235000.0	10.0	0.0003	70.50	70.50	70.50	0.001	235.00	235.00	235.00	86.3
2378-TCDF	12.3	0.5	0.1	1.23	1.23	1.23	0.1	1.23	1.23	1.23	52.8
12378-PeCDF	10.8	2.5	0.03	0.32	0.32	0.32	0.05	0.54	0.54	0.54	79.2
23478-PeCDF	25.7	2.5	0.3	7.71	7.71	7.71	0.5	12.85	12.85	12.85	73.7
123478-HxCDF	131.0	2.5	0.1	13.10	13.10	13.10	0.1	13.10	13.10	13.10	55.0
123678-HxCDF	30.5	2.5	0.1	3.05	3.05	3.05	0.1	3.05	3.05	3.05	70.9
234678-HxCDF	31.4	2.5	0.1	3.14	3.14	3.14	0.1	3.14	3.14	3.14	65.4
123789-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	66.8
1234678-HpCDF	718.0	2.5	0.01	7.18	7.18	7.18	0.01	7.18	7.18	7.18	55.9
1234789-HpCDF	89.4	2.5	0.01	0.89	0.89	0.89	0.01	0.89	0.89	0.89	67.8
OCDF	3160.0	5.0	0.0003	0.95	0.95	0.95	0.001	3.16	3.16	3.16	-
Total TEQ	-	-	-	485.50	485.62	485.75	-	638.06	638.19	638.31	-

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	501.0	5.0	10
Penta-Dioxins	630.0	22.5	9
Hexa-Dioxins	3090.0	17.5	7
Hepta-Dioxins	22400.0	5.0	2
Octa-Dioxin	235000.0	10.0	1
Tetra-Furans	433.0	8.0	16
Penta-Furans	512.0	30.0	12
Hexa-Furans	1070.0	27.5	11
Hepta-Furans	2470.0	10.0	4
Octa-Furan	3160.0	5.0	1
S **PCDD/Fs**	269266.0		

An ALS Limited Company

Client	: JACOBS GROUP (AUSTRALIA) PTY LTD	**Work Order**	: EB2090071
Project	: Rhodes Planned Precinct - Sediment	**ALS Quote Reference**	: ----

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB2090071004
Client Sample ID: SD04
Qc Lot Number: 4542049
Sample Matrix: SEDIMENT
Date Sampled: 15-Jul-2020
Date Extracted: 29-Jul-2020
Date Analysed: 29-Jul-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	173.0	0.5	1	173.00	173.00	173.00	1	173.00	173.00	173.00	74.4
12378-PeCDD	53.2	2.5	1	53.20	53.20	53.20	0.5	26.60	26.60	26.60	82.7
123478-HxCDD	29.5	2.5	0.1	2.95	2.95	2.95	0.1	2.95	2.95	2.95	71.6
123678-HxCDD	442.0	2.5	0.1	44.20	44.20	44.20	0.1	44.20	44.20	44.20	95.5
123789-HxCDD	105.0	2.5	0.1	10.50	10.50	10.50	0.1	10.50	10.50	10.50	-
1234678-HpCDD	12500.0	2.5	0.01	125.00	125.00	125.00	0.01	125.00	125.00	125.00	78.0
OCDD	202000.0	9.8	0.0003	60.60	60.60	60.60	0.001	202.00	202.00	202.00	77.0
2378-TCDF	12.6	0.5	0.1	1.26	1.26	1.26	0.1	1.26	1.26	1.26	62.3
12378-PeCDF	15.0	2.5	0.03	0.45	0.45	0.45	0.05	0.75	0.75	0.75	84.5
23478-PeCDF	54.3	2.5	0.3	16.29	16.29	16.29	0.5	27.15	27.15	27.15	78.5
123478-HxCDF	153.0	2.5	0.1	15.30	15.30	15.30	0.1	15.30	15.30	15.30	79.8
123678-HxCDF	35.0	2.5	0.1	3.50	3.50	3.50	0.1	3.50	3.50	3.50	97.4
234678-HxCDF	36.0	2.5	0.1	3.60	3.60	3.60	0.1	3.60	3.60	3.60	86.5
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	74.7
1234678-HpCDF	848.0	2.5	0.01	8.48	8.48	8.48	0.01	8.48	8.48	8.48	79.2
1234789-HpCDF	93.9	2.5	0.01	0.94	0.94	0.94	0.01	0.94	0.94	0.94	81.3
OCDF	4160.0	4.9	0.0003	1.25	1.25	1.25	0.001	4.16	4.16	4.16	-
Total TEQ	-	-	-	520.52	520.64	520.76	-	649.39	649.51	649.63	-

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	690.0	6.4	13
Penta-Dioxins	858.0	22.1	9
Hexa-Dioxins	3990.0	19.6	8
Hepta-Dioxins	22500.0	4.9	2
Octa-Dioxin	202000.0	9.8	1
Tetra-Furans	628.0	11.8	24
Penta-Furans	879.0	39.3	16
Hexa-Furans	1470.0	27.0	11
Hepta-Furans	2960.0	9.8	4
Octa-Furan	4160.0	4.9	1
S **PCDD/Fs**	240135.0		

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ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB2090071005
Client Sample ID: SD05
Qc Lot Number: 4542048
Sample Matrix: SEDIMENT
Date Sampled: 15-Jul-2020
Date Extracted: 29-Jul-2020
Date Analysed: 29-Jul-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	207.0	0.5	1	207.00	207.00	207.00	1	207.00	207.00	207.00	70.3
12378-PeCDD	61.6	2.5	1	61.60	61.60	61.60	0.5	30.80	30.80	30.80	96.7
123478-HxCDD	34.6	2.5	0.1	3.46	3.46	3.46	0.1	3.46	3.46	3.46	71.4
123678-HxCDD	527.0	2.5	0.1	52.70	52.70	52.70	0.1	52.70	52.70	52.70	89.5
123789-HxCDD	140.0	2.5	0.1	14.00	14.00	14.00	0.1	14.00	14.00	14.00	-
1234678-HpCDD	14200.0	2.5	0.01	142.00	142.00	142.00	0.01	142.00	142.00	142.00	91.5
OCDD	220000.0	9.9	0.0003	66.00	66.00	66.00	0.001	220.00	220.00	220.00	133.1
2378-TCDF	16.1	0.5	0.1	1.61	1.61	1.61	0.1	1.61	1.61	1.61	49.9
12378-PeCDF	15.8	2.5	0.03	0.47	0.47	0.47	0.05	0.79	0.79	0.79	96.3
23478-PeCDF	47.1	2.5	0.3	14.13	14.13	14.13	0.5	23.55	23.55	23.55	101.8
123478-HxCDF	159.0	2.5	0.1	15.90	15.90	15.90	0.1	15.90	15.90	15.90	76.8
123678-HxCDF	36.5	2.5	0.1	3.65	3.65	3.65	0.1	3.65	3.65	3.65	87.6
234678-HxCDF	40.5	2.5	0.1	4.05	4.05	4.05	0.1	4.05	4.05	4.05	85.3
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	87.6
1234678-HpCDF	974.0	2.5	0.01	9.74	9.74	9.74	0.01	9.74	9.74	9.74	80.6
1234789-HpCDF	99.1	2.5	0.01	0.99	0.99	0.99	0.01	0.99	0.99	0.99	105.4
OCDF	3360.0	5.0	0.0003	1.01	1.01	1.01	0.001	3.36	3.36	3.36	-
Total TEQ	-	-	-	598.31	598.44	598.56	-	733.60	733.73	733.85	-

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	640.0	6.0	12
Penta-Dioxins	903.0	22.4	9
Hexa-Dioxins	4120.0	17.4	7
Hepta-Dioxins	25400.0	5.0	2
Octa-Dioxin	220000.0	9.9	1
Tetra-Furans	635.0	8.4	17
Penta-Furans	906.0	29.8	12
Hexa-Furans	1400.0	29.8	12
Hepta-Furans	3230.0	9.9	4
Octa-Furan	3360.0	5.0	1
S **PCDD/Fs**	260594.0		

An ALS Limited Company

Client	: JACOBS GROUP (AUSTRALIA) PTY LTD	**Work Order**	: EB2090071
Project	: Rhodes Planned Precinct - Sediment	**ALS Quote Reference**	: ----

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB2090071006
Client Sample ID: SD06
Qc Lot Number: 4542049
Sample Matrix: SEDIMENT
Date Sampled: 15-Jul-2020
Date Extracted: 29-Jul-2020
Date Analysed: 29-Jul-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	260.0	0.5	1	260.00	260.00	260.00	1	260.00	260.00	260.00	72.9
12378-PeCDD	99.7	2.4	1	99.70	99.70	99.70	0.5	49.85	49.85	49.85	96.1
123478-HxCDD	45.9	2.4	0.1	4.59	4.59	4.59	0.1	4.59	4.59	4.59	71.5
123678-HxCDD	947.0	2.4	0.1	94.70	94.70	94.70	0.1	94.70	94.70	94.70	89.0
123789-HxCDD	184.0	2.4	0.1	18.40	18.40	18.40	0.1	18.40	18.40	18.40	-
1234678-HpCDD	25400.0	2.4	0.01	254.00	254.00	254.00	0.01	254.00	254.00	254.00	95.4
OCDD	334000.0	9.8	0.0003	100.20	100.20	100.20	0.001	334.00	334.00	334.00	147.8
2378-TCDF	28.0	0.5	0.1	2.80	2.80	2.80	0.1	2.80	2.80	2.80	55.4
12378-PeCDF	28.4	2.4	0.03	0.85	0.85	0.85	0.05	1.42	1.42	1.42	105.2
23478-PeCDF	133.0	2.4	0.3	39.90	39.90	39.90	0.5	66.50	66.50	66.50	107.1
123478-HxCDF	351.0	2.4	0.1	35.10	35.10	35.10	0.1	35.10	35.10	35.10	70.4
123678-HxCDF	87.3	2.4	0.1	8.73	8.73	8.73	0.1	8.73	8.73	8.73	84.8
234678-HxCDF	73.7	2.4	0.1	7.37	7.37	7.37	0.1	7.37	7.37	7.37	84.2
123789-HxCDF	<2.4	2.4	0.1	0.00	0.12	0.24	0.1	0.00	0.12	0.24	93.2
1234678-HpCDF	1500.0	2.4	0.01	15.00	15.00	15.00	0.01	15.00	15.00	15.00	78.3
1234789-HpCDF	198.0	2.4	0.01	1.98	1.98	1.98	0.01	1.98	1.98	1.98	112.8
OCDF	5600.0	4.9	0.0003	1.68	1.68	1.68	0.001	5.60	5.60	5.60	-
Total TEQ	-	-	-	945.00	945.12	945.25	-	1160.04	1160.16	1160.28	-

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	887.0	5.9	12
Penta-Dioxins	1400.0	22.0	9
Hexa-Dioxins	5790.0	14.7	6
Hepta-Dioxins	42600.0	4.9	2
Octa-Dioxin	334000.0	9.8	1
Tetra-Furans	1300.0	8.3	17
Penta-Furans	1730.0	29.4	12
Hexa-Furans	2570.0	26.9	11
Hepta-Furans	6230.0	9.8	4
Octa-Furan	5600.0	4.9	1
S **PCDD/Fs**	402107.0		

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ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB2090071007
Client Sample ID: SD07
Qc Lot Number: 4542048
Sample Matrix: SEDIMENT
Date Sampled: 15-Jul-2020
Date Extracted: 29-Jul-2020
Date Analysed: 29-Jul-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	180.0	0.5	1	180.00	180.00	180.00	1	180.00	180.00	180.00	72.6
12378-PeCDD	66.9	2.4	1	66.90	66.90	66.90	0.5	33.45	33.45	33.45	105.1
123478-HxCDD	47.6	2.4	0.1	4.76	4.76	4.76	0.1	4.76	4.76	4.76	72.7
123678-HxCDD	1040.0	2.4	0.1	104.00	104.00	104.00	0.1	104.00	104.00	104.00	92.6
123789-HxCDD	192.0	2.4	0.1	19.20	19.20	19.20	0.1	19.20	19.20	19.20	-
1234678-HpCDD	33800.0	2.4	0.01	338.00	338.00	338.00	0.01	338.00	338.00	338.00	87.3
OCDD	373000.0	9.8	0.0003	111.90	111.90	111.90	0.001	373.00	373.00	373.00	134.5
2378-TCDF	20.3	0.5	0.1	2.03	2.03	2.03	0.1	2.03	2.03	2.03	48.9
12378-PeCDF	21.5	2.4	0.03	0.65	0.65	0.65	0.05	1.08	1.08	1.08	94.0
23478-PeCDF	97.2	2.4	0.3	29.16	29.16	29.16	0.5	48.60	48.60	48.60	101.5
123478-HxCDF	281.0	2.4	0.1	28.10	28.10	28.10	0.1	28.10	28.10	28.10	71.0
123678-HxCDF	49.4	2.4	0.1	4.94	4.94	4.94	0.1	4.94	4.94	4.94	80.1
234678-HxCDF	63.8	2.4	0.1	6.38	6.38	6.38	0.1	6.38	6.38	6.38	85.1
123789-HxCDF	<2.4	2.4	0.1	0.00	0.12	0.24	0.1	0.00	0.12	0.24	85.0
1234678-HpCDF	1480.0	2.4	0.01	14.80	14.80	14.80	0.01	14.80	14.80	14.80	83.4
1234789-HpCDF	220.0	2.4	0.01	2.20	2.20	2.20	0.01	2.20	2.20	2.20	105.2
OCDF	6230.0	4.9	0.0003	1.87	1.87	1.87	0.001	6.23	6.23	6.23	-
Total TEQ	-	-	-	914.88	915.01	915.13	-	1166.77	1166.89	1167.01	-

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	742.0	4.9	10
Penta-Dioxins	1140.0	22.0	9
Hexa-Dioxins	6190.0	17.1	7
Hepta-Dioxins	53800.0	4.9	2
Octa-Dioxin	373000.0	9.8	1
Tetra-Furans	973.0	9.3	19
Penta-Furans	1290.0	36.7	15
Hexa-Furans	2180.0	26.9	11
Hepta-Furans	5190.0	9.8	4
Octa-Furan	6230.0	4.9	1
S **PCDD/Fs**	450735.0		

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ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB2090071008
Client Sample ID: SD08
Qc Lot Number: 4542048
Sample Matrix: SEDIMENT
Date Sampled: 15-Jul-2020
Date Extracted: 29-Jul-2020
Date Analysed: 29-Jul-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	222.0	0.5	1	222.00	222.00	222.00	1	222.00	222.00	222.00	54.9
12378-PeCDD	109.0	2.5	1	109.00	109.00	109.00	0.5	54.50	54.50	54.50	82.9
123478-HxCDD	68.3	2.5	0.1	6.83	6.83	6.83	0.1	6.83	6.83	6.83	72.4
123678-HxCDD	1670.0	2.5	0.1	167.00	167.00	167.00	0.1	167.00	167.00	167.00	94.2
123789-HxCDD	296.0	2.5	0.1	29.60	29.60	29.60	0.1	29.60	29.60	29.60	-
1234678-HpCDD	53500.0	2.5	0.01	535.00	535.00	535.00	0.01	535.00	535.00	535.00	92.8
OCDD	478000.0	9.9	0.0003	143.40	143.40	143.40	0.001	478.00	478.00	478.00	144.1
2378-TCDF	18.1	0.5	0.1	1.81	1.81	1.81	0.1	1.81	1.81	1.81	38.6
12378-PeCDF	32.2	2.5	0.03	0.97	0.97	0.97	0.05	1.61	1.61	1.61	73.6
23478-PeCDF	105.0	2.5	0.3	31.50	31.50	31.50	0.5	52.50	52.50	52.50	81.0
123478-HxCDF	365.0	2.5	0.1	36.50	36.50	36.50	0.1	36.50	36.50	36.50	69.5
123678-HxCDF	68.2	2.5	0.1	6.82	6.82	6.82	0.1	6.82	6.82	6.82	90.2
234678-HxCDF	66.3	2.5	0.1	6.63	6.63	6.63	0.1	6.63	6.63	6.63	80.9
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	83.8
1234678-HpCDF	2030.0	2.5	0.01	20.30	20.30	20.30	0.01	20.30	20.30	20.30	83.7
1234789-HpCDF	223.0	2.5	0.01	2.23	2.23	2.23	0.01	2.23	2.23	2.23	120.1
OCDF	7970.0	5.0	0.0003	2.39	2.39	2.39	0.001	7.97	7.97	7.97	-
Total TEQ	-	-	-	1321.98	1322.10	1322.23	-	1629.30	1629.42	1629.55	-

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	806.0	5.5	11
Penta-Dioxins	1270.0	22.3	9
Hexa-Dioxins	9230.0	17.4	7
Hepta-Dioxins	85300.0	5.0	2
Octa-Dioxin	478000.0	9.9	1
Tetra-Furans	1210.0	11.9	24
Penta-Furans	1380.0	27.3	11
Hexa-Furans	2650.0	24.8	10
Hepta-Furans	7730.0	9.9	4
Octa-Furan	7970.0	5.0	1
S **PCDD/Fs**	595546.0		

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Client	: JACOBS GROUP (AUSTRALIA) PTY LTD	**Work Order**	: EB2090071
Project	: Rhodes Planned Precinct - Sediment	**ALS Quote Reference**	: ----

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB2090071009
Client Sample ID: SD QC01
Qc Lot Number: 4542048
Sample Matrix: SEDIMENT
Date Sampled: 15-Jul-2020
Date Extracted: 29-Jul-2020
Date Analysed: 29-Jul-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	226.0	0.5	1	226.00	226.00	226.00	1	226.00	226.00	226.00	57.9
12378-PeCDD	49.3	2.5	1	49.30	49.30	49.30	0.5	24.65	24.65	24.65	96.8
123478-HxCDD	45.0	2.5	0.1	4.50	4.50	4.50	0.1	4.50	4.50	4.50	63.8
123678-HxCDD	630.0	2.5	0.1	63.00	63.00	63.00	0.1	63.00	63.00	63.00	86.7
123789-HxCDD	146.0	2.5	0.1	14.60	14.60	14.60	0.1	14.60	14.60	14.60	-
1234678-HpCDD	16700.0	2.5	0.01	167.00	167.00	167.00	0.01	167.00	167.00	167.00	81.7
OCDD	280000.0	9.9	0.0003	84.00	84.00	84.00	0.001	280.00	280.00	280.00	144.4
2378-TCDF	10.8	0.5	0.1	1.08	1.08	1.08	0.1	1.08	1.08	1.08	34.2
12378-PeCDF	15.4	2.5	0.03	0.46	0.46	0.46	0.05	0.77	0.77	0.77	96.4
23478-PeCDF	52.1	2.5	0.3	15.63	15.63	15.63	0.5	26.05	26.05	26.05	97.2
123478-HxCDF	165.0	2.5	0.1	16.50	16.50	16.50	0.1	16.50	16.50	16.50	70.4
123678-HxCDF	34.8	2.5	0.1	3.48	3.48	3.48	0.1	3.48	3.48	3.48	72.1
234678-HxCDF	44.1	2.5	0.1	4.41	4.41	4.41	0.1	4.41	4.41	4.41	83.7
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	89.7
1234678-HpCDF	1030.0	2.5	0.01	10.30	10.30	10.30	0.01	10.30	10.30	10.30	79.9
1234789-HpCDF	130.0	2.5	0.01	1.30	1.30	1.30	0.01	1.30	1.30	1.30	80.8
OCDF	4170.0	5.0	0.0003	1.25	1.25	1.25	0.001	4.17	4.17	4.17	-
Total TEQ	-	-	-	662.81	662.94	663.06	-	847.81	847.93	848.06	-

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	655.0	6.0	12
Penta-Dioxins	885.0	19.9	8
Hexa-Dioxins	4540.0	17.4	7
Hepta-Dioxins	29400.0	5.0	2
Octa-Dioxin	280000.0	9.9	1
Tetra-Furans	650.0	8.4	17
Penta-Furans	779.0	27.3	11
Hexa-Furans	1360.0	22.4	9
Hepta-Furans	3620.0	9.9	4
Octa-Furan	4170.0	5.0	1
S **PCDD/Fs**	326059.0		

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ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB2090071010
Client Sample ID: SD R01
Qc Lot Number: 4542077
Sample Matrix: WATER
Date Sampled: 15-Jul-2020
Date Extracted: 30-Jul-2020
Date Analysed: 31-Jul-2020

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<9.3	9.3	1	0.00	4.63	9.26	1	0.00	4.63	9.26	114.2
12378-PeCDD	<46.3	46.3	1	0.00	23.15	46.30	0.5	0.00	11.57	23.15	105.1
123478-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	77.9
123678-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	101.1
123789-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	-
1234678-HpCDD	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	97.7
OCDD	<185.2	185.2	0.0003	0.00	0.03	0.06	0.001	0.00	0.09	0.19	115.1
2378-TCDF	<9.3	9.3	0.1	0.00	0.46	0.93	0.1	0.00	0.46	0.93	81.6
12378-PeCDF	<46.3	46.3	0.03	0.00	0.69	1.39	0.05	0.00	1.16	2.31	94.3
23478-PeCDF	<46.3	46.3	0.3	0.00	6.94	13.89	0.5	0.00	11.57	23.15	93.5
123478-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	67.2
123678-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	80.1
234678-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	80.1
123789-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	77.0
1234678-HpCDF	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	70.0
1234789-HpCDF	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	93.1
OCDF	<92.6	92.6	0.0003	0.00	0.01	0.03	0.001	0.00	0.05	0.09	-
Total TEQ	-	-	-	0.00	52.82	105.64	-	0.00	46.44	92.87	-

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<9.3	9.3	1
Penta-Dioxins	<46.3	46.3	1
Hexa-Dioxins	<46.3	46.3	1
Hepta-Dioxins	<92.6	92.6	2
Octa-Dioxin	<185.2	185.2	1
Tetra-Furans	<9.3	9.3	1
Penta-Furans	<46.3	46.3	1
Hexa-Furans	<46.3	46.3	1
Hepta-Furans	<46.3	46.3	1
Octa-Furan	<92.6	92.6	1
S **PCDD/Fs**	0.0		

QUALITY CONTROL REPORT

Client	**JACOBS GROUP (AUSTRALIA) PTY L**	**Laboratory :**	Environmental Division Brisbane		
Contact	KYLE MCLEAN	**Contact**	CUSTOMER.SERVICES.EB	**Work Order:**	**EB2090071**
Address:	100 CHRISTIE STREET P O BOX 164 ST LEONARDS NSW, AUSTRALIA 2065	**Address:**	Stafford QLD 4053 Australia		

Project	Rhodes Planned Precinct - Sedim	**Quote #**	----	**Received:**	21 Jul 2020
Order #	IS355800			**Issued**	31 Jul 2020
C-O-C #	233424				
Site	- Not provided -				
E-mail	kyle.mclean@jacobs.com	**E-mail**	ALSEnviro.Brisbane@alsglobal.	**Number of Samples**	
Phone	9928 2100	**Phone**	+61-7-3243 7222	**Received:**	10
Fax	9928 2272	**Fax**	+61-7-3243 7218	**Analysed:**	10

Work order specific comments

Sample SD_R01: Lower than the standard sample volume was available for this sample. The LOR is raised based on the volume available.

NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IED 17025

This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Environmetal www.alsglobal.com

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Quality Control Report
Laboratory Duplicates (DUP)

	Original Result	Duplicate Result
Laboratory Sample Id :	EB2090071001	5599242-007
Client Sample Id :	SD01	SD01
Sample Mass (g) :	10.0	10.0
Qc Lot Number :	4542049	4542049
Moisture Content (%) :		

Compound	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
2378-TCDD	60.7	0.5	57.6	0.5	5.2
12378-PeCDD	30.3	2.5	27.6	2.5	9.3
123478-HxCDD	7.9	2.5	7.7	2.5	2.6
123678-HxCDD	61.5	2.5	67.8	2.5	9.7
123789-HxCDD	23.9	2.5	27.6	2.5	14.4
1234678-HpCDD	1340.0	2.5	1270.0	2.5	5.4
OCDD	26900.0	10.0	26700.0	10.0	0.7
2378-TCDF	20.4	0.5	19.3	0.5	5.5
12378-PeCDF	4.8	2.5	4.8	2.5	0.0
23478-PeCDF	14.6	2.5	16.7	2.5	13.4
123478-HxCDF	41.8	2.5	40.2	2.5	3.9
123678-HxCDF	7.7	2.5	8.0	2.5	3.8
234678-HxCDF	11.1	2.5	13.4	2.5	18.8
123789-HxCDF	<2.5	2.5	<2.5	2.5	-
1234678-HpCDF	422.0	2.5	441.0	2.5	4.4
1234789-HpCDF	17.8	2.5	18.3	2.5	2.8
OCDF	1970.0	5.0	2050.0	5.0	4.0

Group Totals	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
Tetra-Dioxins	254.0	7.5	268.0	4.5	5.4
Penta-Dioxins	412.0	22.5	421.0	22.5	2.2
Hexa-Dioxins	947.0	17.5	977.0	17.5	3.1
Hepta-Dioxins	2970.0	5.0	2870.0	5.0	3.4
Octa-Dioxin	26900.0	10.0	26700.0	10.0	0.7
Tetra-Furans	501.0	6.5	463.0	7.0	7.9
Penta-Furans	405.0	22.5	435.0	22.5	7.1
Hexa-Furans	678.0	20.0	735.0	17.5	8.1
Hepta-Furans	1250.0	10.0	1310.0	7.5	4.7
Octa-Furan	1970.0	5.0	2050.0	5.0	4.0
Σ **PCDD/Fs**	**36287.0**		**36229.0**		**0.2**

Notes

LOR = Limit of reporting
T = tetra
Pe = penta
Hx = hexa
Hp = hepta
O = octa
CDD, dioxin = chlorinated debenzo-p-dioxin
CDF, furan = chlorinated debenzofuran
RPD = relative per cent difference
Permitted ranges for RPD are depencant upon the magnitude of the result in comparison to the LOR.
Result < 10x LOR, no limit, result between 10x and 20x LOR, 50%; result > 20x LOR, 20%

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Quality Control Results

Laboratory Control Samples(LCS)

Laboratory Sample Id : 5599242-010
QC Lot Number : 4542049
Sample Name : BCR 529 Sandy soil

Compound	Conc pg/g	Lower 1 pg/g	Upper 1 pg/g	$^{13}C_{12}$ Rec(%)	Lower 2 (%)	Upper 2 (%)
2378-TCDD	4100.0	3900	5100	56.4	25	164
12378-PeCDD	415.0	390	490	95.1	25	181
123478-HxCDD	1390.0	900	1500	67.9	32	141
123678-HxCDD	4710.0	4500	6300	68.1	28	130
123789-HxCDD	3230.0	2600	3400	-	-	-
2378-TCDF	74.3	65	91	42.4	24	169
12378-PeCDF	164.0	110	170	114.9	24	185
23478-PeCDF	401.0	290	430	90.1	21	178
123478-HxCDF	2980.0	2900	3900	57.1	26	152
123678-HxCDF	1110.0	940	1240	73.0	26	123
234678-HxCDF	374.0	330	410	80.2	28	136
123789-HxCDF	506.0	12	32	84.6	29	147

Notes

1. Acceptable concentration limits are as quoted on the analytical certificate for the cerified reference material
2. Acceptable recovery limits are derived from EPA1613 Revision B

T = tetra
Pe = penta
Hx = hexa
Hp = hepta

An ALS Limited Company

Quality Control Results

Laboratory Control Samples(LCS)

Laboratory Sample Id : 5599309-002
QC Lot Number : 4542076
Sample Name : Ongoing Precision and Recovery (OPR)

Compound	Conc pg/L	Lower pg/L	Upper pg/L	$^{13}C_{12}$ Rec(%)	Lower 2 (%)	Upper 2 (%)
2378-TCDD	730.0	536	1264	110.3	25	164
12378-PeCDD	3620.0	2800	5680	99.3	25	181
123478-HxCDD	3520.0	2800	6560	77.0	32	141
123678-HxCDD	3680.0	3040	5360	96.9	28	130
123789-HxCDD	4150.0	2560	6480	-	-	-
1234678-HpCDD	3700.0	2800	5600	78.1	23	140
OCDD	7830.0	6240	11520	71.7	17	157
2378-TCDF	772.0	600	1264	71.3	24	169
12378-PeCDF	3790.0	3200	5360	77.7	24	185
23478-PeCDF	3850.0	2720	6400	77.2	21	178
123478-HxCDF	3360.0	2880	5360	63.4	26	152
123678-HxCDF	3830.0	3360	5200	75.5	26	123
234678-HxCDF	3430.0	3120	5200	70.3	28	136
123789-HxCDF	3860.0	2800	6240	70.2	29	147
1234678-HpCDF	3640.0	3280	4880	56.0	28	143
1234789-HpCDF	3630.0	3120	5520	65.0	26	138
OCDF	6690.0	5040	13600			

Notes

1. Acceptable concentration limits are as quoted on the analytical certificate for the cerified reference material
2. Acceptable recovery limits are derived from EPA1613 Revision B

T = tetra
Pe = penta
Hx = hexa
Hp = hepta

An ALS Limited Company

Quality Control Report
Method Blank (MB)

Laboratory Sample ID: 5599242-001
Qc Lot Number : 4542049

Sample Matrix: SOIL
Date Extracted: 29-Jul-2020
Date Analysed: 29-Jul-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ 1	WHO-TEQ 2	WHO-TEQ 3	I-TEF	I-TEQ1 (zero)	I-TEQ2 (0.5 LOR)	I-TEQ3 (LOR)	13C12 Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	108.2
12378-PeCDD	<2.5	2.5	1	0.00	1.25	2.50	0.5	0.00	0.63	1.25	96.4
123478-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	78.7
123678-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	97.2
123789-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	-
1234678-HpCD	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	89.3
OCDD	<10.0	10.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.01	0.01	106.8
2378-TCDF	<0.5	0.5	0.1	0.00	0.03	0.05	0.1	0.00	0.03	0.05	79.8
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.08	0.05	0.00	0.06	0.13	86.3
23478-PeCDF	<2.5	2.5	0.3	0.00	0.38	0.75	0.5	0.00	0.63	1.25	86.5
123478-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	71.9
123678-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	84.4
234678-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	79.0
123789-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	77.4
1234678-HpCD	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	65.9
1234789-HpCD	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	90.1
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.01	-
			S **TEQ(WHO)**	0.00	2.89	5.72	S **TEQ(I)**	0.00	2.55	5.04	

Group Totals	Conc pg/g	LOR4 pg/g	No. of Peaks
Tetra-Dioxins	<0.5	0.5	1
Penta-Dioxins	<2.5	2.5	1
Hexa-Dioxins	<2.5	2.5	1
Hepta-Dioxins	<5.0	5.0	2
Octa-Dioxin	<10.0	10.0	1
Tetra-Furans	<0.5	0.5	1
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<2.5	2.5	1
Hepta-Furans	<2.5	2.5	1
Octa-Furan	<5.0	5.0	1
S **PCDD/Fs**	0.00		

Notes
LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence (pg/g)
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence (pg/g)
T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran
1 I -TEQ(zero) and WHO-TEQ(zero) calculated treating <LOR as zero concentration (pg/g)
2 I-TEQ(0.5 LOR) and WHO-TEQ(0.5 LOR) calculated treating <LOR as 50% LoR concentration (pg/g)
3 I-TEQ(LOR) and WHO-TEQ(LOR) calculated treating <LOR as LoR concentration (pg/g)
4 Totals LORs are calculated by mutiplying the number of peaks by the individual LOR per compound

An ALS Limited Company

Quality Control Report
Method Blank (MB)

Laboratory Sample ID: 5599309-005
Qc Lot Number : 4542076

Sample Matrix: WATER
Date Extracted: 30-Jul-2020
Date Analysed: 31-Jul-2020

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ 1	WHO-TEQ 2	WHO-TEQ 3	I-TEF	I-TEQ1 (zero)	I-TEQ2 (0.5 LOR)	I-TEQ3 (LOR)	13C12 Rec(%)
2378-TCDD	<5.0	5.0	1	0.00	2.50	5.00	1	0.00	2.50	5.00	102.1
12378-PeCDD	<25.0	25.0	1	0.00	12.50	25.00	0.5	0.00	6.25	12.50	79.2
123478-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	77.9
123678-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	94.5
123789-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	-
1234678-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	70.7
OCDD	<100.0	100.0	0.0003	0.00	0.02	0.03	0.001	0.00	0.05	0.10	67.5
2378-TCDF	<5.0	5.0	0.1	0.00	0.25	0.50	0.1	0.00	0.25	0.50	69.1
12378-PeCDF	<25.0	25.0	0.03	0.00	0.38	0.75	0.05	0.00	0.63	1.25	72.4
23478-PeCDF	<25.0	25.0	0.3	0.00	3.75	7.50	0.5	0.00	6.25	12.50	67.9
123478-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	66.3
123678-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	83.4
234678-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	73.4
123789-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	64.8
1234678-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	56.0
1234789-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	54.9
OCDF	<50.0	50.0	0.0003	0.00	0.01	0.02	0.001	0.00	0.03	0.05	-
			S **TEQ(WHO)**	0.00	28.55	57.05	S **TEQ(I)**	0.00	25.10	50.15	

Group Totals	Conc pg/L	LOR4 pg/L	No. of Peaks
Tetra-Dioxins	<190.0	190.0	38
Penta-Dioxins	<275.0	275.0	11
Hexa-Dioxins	<925.0	925.0	37
Hepta-Dioxins	<200.0	200.0	8
Octa-Dioxin	<100.0	100.0	1
Tetra-Furans	<175.0	175.0	35
Penta-Furans	<475.0	475.0	19
Hexa-Furans	<750.0	750.0	30
Hepta-Furans	<375.0	375.0	15
Octa-Furan	<50.0	50.0	1
S **PCDD/Fs**	0.00		

Notes

LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence (pg/L)
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence (pg/L)
T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran

1 I -TEQ(zero) and WHO-TEQ(zero) calculated treating <LOR as zero concentration (pg/L)
2 I-TEQ(0.5 LOR) and WHO-TEQ(0.5 LOR) calculated treating <LOR as 50% LoR concentration (pg/L)
3 I-TEQ(LOR) and WHO-TEQ(LOR) calculated treating <LOR as LoR concentration (pg/L)
4 Totals LORs are calculated by mutiplying the number of peaks by the individual LOR per compound

WORKORDER No:

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ ADELAIDE ☐ BRISBANE ☐ CHINCHILLA ☐ DARWIN ☐ EMERALD ☐ GLADSTONE ☐ MACKAY ☐ MELBOURNE ☐ MUDGEE ☐ NEWCASTLE ☐ NOWRA ☐ PERTH ☐ ROMA ☑ SYDNEY ☐ TOWNSVILLE ☐ WOLLONGONG

CLIENT: Jacobs

OFFICE: North Sydney

PROJECT: Rhodes Planned Precinct - Sediment Sampling

PURCHASE ORDER NUMBER: IS355800

PROJECT MANAGER: Kyle McLean

SAMPLER: Blair Cummings

SAMPLER MOBILE: 0408 427 609

ALS QUOTE NO.: SY/224/20

CONTACT PH: 0402 536 798

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☑ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

COC SEQUENCE NUMBER (Circle)
COC: (1) 2 3 4 5 6 7
OF: (1) 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? (Yes) No N/A
Free ice / frozen ice bricks present upon receipt? (Yes) No N/A
Random Sample Temperature on Receipt: 3-7 C
Other comment:

EDD FORMAT (or default):

o other addresses are listed): Kyle.McLean@jacobs.com, Blair.Cummings@jacobs.com and Robert.Gauthier@jacobs.com

other addresses are listed):

ORAGE OR DISPOSAL:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
B. Cummings	Sep M.		Sofia/AS
DATE/TIME: 16/07/20 1700	DATE/TIME: 16/07/2020 1705	DATE/TIME:	DATE/TIME: 16/7/20 1845

Environmental Division Sydney
Work Order Reference
ES2024630

Telephone : + 61-2-8784 8555

	DETAILS (S), WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or dissolved (field filtered bottle required).															Additional Information
		DATE/ TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	EG020-SD [redacted]	EG035-SD Mercury in Sediments	EP071-SD TRH Ultra Trace in Sediments	EP080-SD TRH(V)/BTEX	EP132 AB - PAH/Phenols Ultratrace	EP131B - PCBs (Ultratrace)	EP300B - Dioxins and Furans	EP090 (Solids) Organotin	S-18 (NO Holds)	TOC	Grain size distribution	W-27	EP090S - Organotin (TBT) Butylation	EP300B - Dioxins and Furans	PCBs	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	SD01	16/07/20	Sediment		3	X	X	X	X	X	X	X	X		X	X					
2	SD02					X	X	X	X	X	X	X	X		X						
3	SD03					X	X	X	X	X	X	X	X		X	X					
4	SD04					X	X	X	X	X	X	X	X		X	X					
5	SD05					X	X	X	X	X	X	X	X		X	X					
6	SD06					X	X	X	X	X	X	X	X		X	X					
7	SD07					X	X	X	X	X	X	X	X		X						
8	SD08				3	X	X	X	X	X	X	X	X		X	X					
9	SD_QC01				2	X	X	X	X	X	X	X	X								
	SD_QC02		Sediment		1	X	X	X	X	X	X	[redacted]	X			·					Please forward to Eurofins
10	SD_R01		W		7												X	X	X	X	
11	SD_TS01		Sediment		1									X							
12	SD_TB01	16/07/20	Sediment		1									X							
13	TSC			TOTAL																	

Sub-con / Forward Lab / Split WO: Split WO to Eurofins
Lab / Analysis:
Organised By / Date: B 16/07/20
Relinquished By / Date: Brisbane
Courier: Newcastle
WO No:
Attach By PO / Internal Sheet:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; LI = Lugols Iodine Preserved; STT = Sterile Sodium Thiosulfate Preserved; Z = Zinc Acetate Preserved Bottle; E = Ed TA Preserved Bottles; ST = Sterile Bottle *Soil Container Codes:* ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

233424

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2024630**

Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: KYLE MCLEAN	Contact	: Tyler Anderson
Address	: 177 Pacific Highway North Sydney 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: kyle.mclean@jacobs.com	E-mail	: Tyler.Anderson@ALSGlobal.com
Telephone	: +61 02 9928 2100	Telephone	: +61 2 8784 8555
Facsimile	: +61 02 9928 2272	Facsimile	: +61-2-8784 8500
Project	: RHODES PLANNED PRECINCT – SEDIMENT	Page	: 1 of 3
Order number	: IS355800	Quote number	: ES2020SINKNI0009 (SY/224/20)
C-O-C number	: 233424	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: BLAIR CUMINING		

Dates

Date Samples Received	: 16-Jul-2020 18:45	Issue Date	: 17-Jul-2020
Client Requested Due Date	: 28-Jul-2020	Scheduled Reporting Date	: **28-Jul-2020**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 3.7'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 13 / 13

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Sample SD_QC02 have been forwarded to EUROFINS.**
- **Dioxins analysis sent to ALS Brisbane.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **TOC and TBT analysis will be conducted by ALS Brisbane**
- **PSD analysis will be conducted by ALS Newcastle.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - EG020-SD Total Metals in Sediments by ICPMS (NODG)	SOIL - EG035-SD Mercury in Sediments by FIMS (NODG-required	SOIL - EP090 (solids) Organotins	SOIL - EP131B PCB's (Ultratrace)	SOIL - EP132AB PAH/Phenols Ultratrace	SOIL - TPH-SD Low Level TRH/BTEXN for Sediments
ES2024630-001	16-Jul-2020 00:00	SD01	✓	✓	✓	✓	✓	✓	✓
ES2024630-002	16-Jul-2020 00:00	SD02	✓	✓	✓	✓	✓	✓	✓
ES2024630-003	16-Jul-2020 00:00	SD03	✓	✓	✓	✓	✓	✓	✓
ES2024630-004	16-Jul-2020 00:00	SD04	✓	✓	✓	✓	✓	✓	✓
ES2024630-005	16-Jul-2020 00:00	SD05	✓	✓	✓	✓	✓	✓	✓
ES2024630-006	16-Jul-2020 00:00	SD06	✓	✓	✓	✓	✓	✓	✓
ES2024630-007	16-Jul-2020 00:00	SD07	✓	✓	✓	✓	✓	✓	✓
ES2024630-008	16-Jul-2020 00:00	SD08	✓	✓	✓	✓	✓	✓	✓
ES2024630-009	16-Jul-2020 00:00	SD_QC01	✓	✓	✓	✓	✓	✓	✓

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA150* Particle Size Analysis by Sieving (Default sieves	SOIL - EP003 Total Organic Carbon (TOC) in Soil	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs
ES2024630-001	16-Jul-2020 00:00	SD01	✓	✓	
ES2024630-002	16-Jul-2020 00:00	SD02		✓	
ES2024630-003	16-Jul-2020 00:00	SD03	✓	✓	
ES2024630-004	16-Jul-2020 00:00	SD04	✓	✓	
ES2024630-005	16-Jul-2020 00:00	SD05	✓	✓	
ES2024630-006	16-Jul-2020 00:00	SD06	✓	✓	
ES2024630-007	16-Jul-2020 00:00	SD07		✓	
ES2024630-008	16-Jul-2020 00:00	SD08	✓	✓	
ES2024630-011	16-Jul-2020 00:00	SD_TS01			✓
ES2024630-012	16-Jul-2020 00:00	SD_TB01			✓
ES2024630-013	16-Jul-2020 00:00	SD_TSC			✓

Matrix: **WATER**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	WATER - EP066-PCB-WA Polychlorinated Biphenyls (PCB)	WATER - EP090S Organotins (TBT) Brisbane	WATER - W-27T TRH/BTEXN/PAH/Phenols/Total 8 Metals
ES2024630-010	16-Jul-2020 00:00	SD_R01	✓	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

BLAIR CUMMINGS

- *AU Certificate of Analysis - NATA (COA)	Email	blair.cummings@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	blair.cummings@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	blair.cummings@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	blair.cummings@jacobs.com
- Attachment - Report (SUBCO)	Email	blair.cummings@jacobs.com
- Chain of Custody (CoC) (COC)	Email	blair.cummings@jacobs.com
- EDI Format - ENMRG (ENMRG)	Email	blair.cummings@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	blair.cummings@jacobs.com

KYLE MCLEAN

- *AU Certificate of Analysis - NATA (COA)	Email	kyle.mclean@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kyle.mclean@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kyle.mclean@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kyle.mclean@jacobs.com
- A4 - AU Tax Invoice (INV)	Email	kyle.mclean@jacobs.com
- Attachment - Report (SUBCO)	Email	kyle.mclean@jacobs.com
- Chain of Custody (CoC) (COC)	Email	kyle.mclean@jacobs.com
- EDI Format - ENMRG (ENMRG)	Email	kyle.mclean@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	kyle.mclean@jacobs.com

ROBERT GAUTHIER

- *AU Certificate of Analysis - NATA (COA)	Email	robert.gauthier@jacobs.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	robert.gauthier@jacobs.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	robert.gauthier@jacobs.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	robert.gauthier@jacobs.com
- Attachment - Report (SUBCO)	Email	robert.gauthier@jacobs.com
- Chain of Custody (CoC) (COC)	Email	robert.gauthier@jacobs.com
- EDI Format - ENMRG (ENMRG)	Email	robert.gauthier@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	robert.gauthier@jacobs.com

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2024630**	Page	: 1 of 17
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: KYLE MCLEAN	Contact	: Tyler Anderson
Address	: 177 Pacific Highway North Sydney 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 9928 2100	Telephone	: +61 2 8784 8555
Project	: RHODES PLANNED PRECINCT – SEDIMENT	Date Samples Received	: 16-Jul-2020 18:45
Order number	: IS355800	Date Analysis Commenced	: 17-Jul-2020
C-O-C number	: 233424	Issue Date	: 29-Jul-2020 12:46
Sampler	: BLAIR CUMINING		
Site	: ----		
Quote number	: SY/224/20		
No. of samples received	: 13		
No. of samples analysed	: 13		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Aleksandar Vujkovic	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Morgan Lennox		Brisbane Organics, Stafford, QLD
Satishkumar Trivedi	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

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

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

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

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

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

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

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

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP080-SD: Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EG035: Poor matrix spike recovery was obtained for Mercury on sample ES2024494 # 1. Confirmed by re-analysis.
- EG020 : Positive results for sample ES2024630-010 has been confirmed by reanalysis.
- EP131B : Positive PCB result is confirmed by re-extraction and re-analysis.
- EP132: Poor duplicate precision due to sample heterogeneity. Confirmed by re-extraction and re-analysis.
- EP071: Particular samples required dilution due to the presence of high level contaminants. LOR values have been adjusted accordingly.
- EP080: The trip spike and its control have been analysed for volatile TPH and BTEXN only. The trip spike and control were prepared in the lab using reagent grade sand spiked with petrol. The spike was dispatched from the lab and the control retained.
- EP132: Particular samples required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly. Poor surrogate and matrix spike recovery due to sample matrix interferences.
- EP131B : Particular samples required dilution prior to extraction due to matrix interferences. LOR values have been adjusted accordingly.
- EP090-Organotin: Poor matrix spike recovery for sample 'SD02' due to matrix interference.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	SD01	SD02	SD03	SD04	SD05
			Client sampling date / time	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00
Compound	CAS Number	LOR	Unit	ES2024630-001	ES2024630-002	ES2024630-003	ES2024630-004	ES2024630-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	40.0	57.6	44.0	39.2	51.1
EA150: Particle Sizing								
+75µm	----	1	%	55	----	32	34	32
+150µm	----	1	%	42	----	17	24	16
+300µm	----	1	%	23	----	4	4	5
+425µm	----	1	%	15	----	3	3	4
+600µm	----	1	%	10	----	3	2	4
+1180µm	----	1	%	7	----	2	2	3
+2.36mm	----	1	%	4	----	1	<1	2
+4.75mm	----	1	%	2	----	<1	<1	<1
+9.5mm	----	1	%	<1	----	<1	<1	<1
+19.0mm	----	1	%	<1	----	<1	<1	<1
+37.5mm	----	1	%	<1	----	<1	<1	<1
+75.0mm	----	1	%	<1	----	<1	<1	<1
EA150: Soil Classification based on Particle Size								
Fines (<75 µm)	----	1	%	45	----	68	66	68
Sand (>75 µm)	----	1	%	50	----	30	33	30
Gravel (>2mm)	----	1	%	5	----	2	1	2
Cobbles (>6cm)	----	1	%	<1	----	<1	<1	<1
EG020-SD: Total Metals in Sediments by ICPMS								
Arsenic	7440-38-2	1.00	mg/kg	22.5	31.1	17.3	14.2	29.0
Cadmium	7440-43-9	0.1	mg/kg	0.7	2.8	1.1	0.9	1.8
Chromium	7440-47-3	1.0	mg/kg	86.2	505	180	121	295
Copper	7440-50-8	1.0	mg/kg	55.8	166	79.1	82.5	98.4
Lead	7439-92-1	1.0	mg/kg	161	310	208	168	473
Nickel	7440-02-0	1.0	mg/kg	9.2	27.0	18.5	16.0	21.2
Zinc	7440-66-6	1.0	mg/kg	319	960	488	443	566
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.56	1.33	0.48	0.95	0.72
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	3.45	3.64	2.47	2.42	2.87
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
>C10 - C16 Fraction	----	3	mg/kg	59	214	80	51	151
>C16 - C34 Fraction	----	3	mg/kg	819	2240	1250	913	1820

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	SD01	SD02	SD03	SD04	SD05
				Client sampling date / time	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00
Compound	CAS Number	LOR	Unit		ES2024630-001	ES2024630-002	ES2024630-003	ES2024630-004	ES2024630-005
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C34 - C40 Fraction	----	5	mg/kg		195	636	406	324	539
>C10 - C40 Fraction (sum)	----	3	mg/kg		1070	3090	1740	1290	2510
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		59	214	80	51	151
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	<3	<3	<3
C10 - C14 Fraction	----	3	mg/kg		29	100	35	<16	60
C15 - C28 Fraction	----	3	mg/kg		569	1500	781	550	1210
C29 - C36 Fraction	----	5	mg/kg		358	1090	659	510	892
^ C10 - C36 Fraction (sum)	----	3	mg/kg		956	2690	1480	1060	2160
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	<3	<3	<3
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	<3.0	<3.0	<3.0
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	91-20-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
EP090: Organotin Compounds									
Monobutyltin	78763-54-9	1	µgSn/kg		<1	<1	<1	<1	<1
Dibutyltin	1002-53-5	1	µgSn/kg		<1	<1	3	5	2
Tributyltin	56573-85-4	0.5	µgSn/kg		<0.5	3.7	<0.5	0.7	0.5
EP131B: Polychlorinated Biphenyls (as Aroclors)									
^ Total Polychlorinated biphenyls	----	5.0	µg/kg		<15.6	413	<125	<15.6	<31.2
Aroclor 1016	12674-11-2	5.0	µg/kg		<15.6	<250	<125	<15.6	<31.2
Aroclor 1221	11104-28-2	5.0	µg/kg		<15.6	<250	<125	<15.6	<31.2
Aroclor 1232	11141-16-5	5.0	µg/kg		<15.6	<250	<125	<15.6	<31.2
Aroclor 1242	53469-21-9	5.0	µg/kg		<15.6	<250	<125	<15.6	<31.2
Aroclor 1248	12672-29-6	5.0	µg/kg		<15.6	<250	<125	<15.6	<31.2

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	SD01	SD02	SD03	SD04	SD05
				Client sampling date / time	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00
Compound	CAS Number	LOR	Unit		ES2024630-001	ES2024630-002	ES2024630-003	ES2024630-004	ES2024630-005
					Result	Result	Result	Result	Result
EP131B: Polychlorinated Biphenyls (as Aroclors) - Continued									
Aroclor 1254	11097-69-1	5.0	µg/kg		<15.6	**413**	<125	<15.6	<31.2
Aroclor 1260	11096-82-5	5.0	µg/kg		<15.6	<250	<125	<15.6	<31.2
EP132A: Phenolic Compounds									
2-Chlorophenol	95-57-8	10	µg/kg		<20	<50	<20	<20	<50
4-Chloro-3-methylphenol	59-50-7	10	µg/kg		<20	<50	<20	<20	<50
m-Cresol	108-39-4	10	µg/kg		**420**	<50	<20	<20	<50
o-Cresol	95-48-7	10	µg/kg		**380**	<50	<20	<20	<50
p-Cresol	106-44-5	10	µg/kg		**430**	<50	<20	<20	<50
2.4-Dichlorophenol	120-83-2	10	µg/kg		<20	<50	<20	<20	<50
2.6-Dichlorophenol	87-65-0	10	µg/kg		<20	<50	<20	<20	<50
2.4-Dimethylphenol	105-67-9	10	µg/kg		**640**	<50	<20	<20	<50
Hexachlorophene	70-30-4	10	µg/kg		<20	<50	<20	<20	<50
2-Nitrophenol	88-75-5	10	µg/kg		<20	<50	<20	<20	<50
4-Nitrophenol	100-02-7	10	µg/kg		<20	<50	<20	<20	<50
Pentachlorophenol	87-86-5	10	µg/kg		<20	<50	<20	<20	<50
Phenol	108-95-2	10	µg/kg		**280**	<50	<20	<20	<50
2.3.4.6-Tetrachlorophenol	58-90-2	10	µg/kg		<20	<50	<20	<20	<50
2.4.5-Trichlorophenol	95-95-4	10	µg/kg		<20	**150**	<20	<20	<50
2.4.6-Trichlorophenol	88-06-2	10	µg/kg		<20	<50	<20	<20	<50
EP132B: Polynuclear Aromatic Hydrocarbons									
3-Methylcholanthrene	56-49-5	10	µg/kg		<20	<50	<20	<20	<50
2-Methylnaphthalene	91-57-6	10	µg/kg		**1120**	**160**	**100**	**60**	<50
7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg		<20	<50	<20	<20	<50
Acenaphthene	83-32-9	10	µg/kg		**1270**	<50	<20	**50**	<50
Acenaphthylene	208-96-8	10	µg/kg		**2540**	**480**	**370**	**200**	**220**
Anthracene	120-12-7	10	µg/kg		**6520**	**400**	**290**	**170**	**230**
Benz(a)anthracene	56-55-3	10	µg/kg		**14700**	**1290**	**1120**	**660**	**810**
Benzo(a)pyrene	50-32-8	10	µg/kg		**15400**	**1630**	**1390**	**1220**	**1030**
Benzo(b+j)fluoranthene	205-99-2 205-82-3	10	µg/kg		**16500**	**2350**	**2200**	**1260**	**1830**
Benzo(e)pyrene	192-97-2	10	µg/kg		**7080**	**1340**	**980**	**550**	**860**
Benzo(g.h.i)perylene	191-24-2	10	µg/kg		**6620**	**1510**	**1290**	**1120**	**940**
Benzo(k)fluoranthene	207-08-9	10	µg/kg		**5680**	**750**	**640**	**490**	**630**
Chrysene	218-01-9	10	µg/kg		**15000**	**1430**	**1260**	**680**	**810**
Coronene	191-07-1	10	µg/kg		**550**	**390**	**280**	**290**	**210**

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	SD01	SD02	SD03	SD04	SD05
				Client sampling date / time	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00
Compound	CAS Number	LOR	Unit		ES2024630-001	ES2024630-002	ES2024630-003	ES2024630-004	ES2024630-005
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
Dibenz(a.h)anthracene	53-70-3	10	µg/kg		1710	410	340	220	200
Fluoranthene	206-44-0	10	µg/kg		35700	940	1640	1020	1180
Fluorene	86-73-7	10	µg/kg		4550	<50	<20	<20	<50
Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg		5850	1340	1210	740	950
N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg		<100	<100	<100	<100	<100
Naphthalene	91-20-3	10	µg/kg		2850	270	220	110	100
Perylene	198-55-0	10	µg/kg		3390	650	450	270	330
Phenanthrene	85-01-8	10	µg/kg		26600	530	750	430	500
Pyrene	129-00-0	10	µg/kg		37600	2740	1950	1180	1810
^ Sum of PAHs	----	10	µg/kg		211000	18600	16500	10700	12600
Benzo(a)pyrene TEQ (zero)	----	10	µg/kg		21600	2640	2270	1770	1670
Benzo(a)pyrene TEQ (half LOR)	----	10	µg/kg		21600	2640	2270	1770	1670
Benzo(a)pyrene TEQ (LOR)	----	10	µg/kg		21600	2640	2270	1770	1670
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		113	99.7	108	103	96.8
Toluene-D8	2037-26-5	0.2	%		111	102	108	100	91.0
4-Bromofluorobenzene	460-00-4	0.2	%		108	95.8	106	99.5	92.6
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		73.0	105	35.1	40.5	44.7
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		129	90.5	31.0	112	52.5
EP132S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	10	%		90.0	90.4	73.8	74.6	86.4
Phenol-d6	13127-88-3	10	%		92.7	96.9	78.7	75.7	91.4
2-Chlorophenol-D4	93951-73-6	10	%		84.9	86.2	72.7	60.5	89.5
2.4.6-Tribromophenol	118-79-6	10	%		107	90.8	79.3	75.5	93.0
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		105	106	73.4	66.4	88.5
Anthracene-d10	1719-06-8	10	%		134	117	94.4	115	123
4-Terphenyl-d14	1718-51-0	10	%		124	83.2	72.2	78.8	85.3

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	SD06	SD07	SD08	SD_QC01	SD_TS01
			Client sampling date / time	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00
Compound	CAS Number	LOR	Unit	ES2024630-006	ES2024630-007	ES2024630-008	ES2024630-009	ES2024630-011
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	42.3	47.2	41.8	42.5	----
EA150: Particle Sizing								
+75µm	----	1	%	39	----	34	----	----
+150µm	----	1	%	20	----	19	----	----
+300µm	----	1	%	7	----	8	----	----
+425µm	----	1	%	6	----	7	----	----
+600µm	----	1	%	5	----	6	----	----
+1180µm	----	1	%	4	----	5	----	----
+2.36mm	----	1	%	3	----	3	----	----
+4.75mm	----	1	%	<1	----	<1	----	----
+9.5mm	----	1	%	<1	----	<1	----	----
+19.0mm	----	1	%	<1	----	<1	----	----
+37.5mm	----	1	%	<1	----	<1	----	----
+75.0mm	----	1	%	<1	----	<1	----	----
EA150: Soil Classification based on Particle Size								
Fines (<75 µm)	----	1	%	61	----	66	----	----
Sand (>75 µm)	----	1	%	35	----	30	----	----
Gravel (>2mm)	----	1	%	4	----	4	----	----
Cobbles (>6cm)	----	1	%	<1	----	<1	----	----
EG020-SD: Total Metals in Sediments by ICPMS								
Arsenic	7440-38-2	1.00	mg/kg	25.8	26.0	27.0	15.2	----
Cadmium	7440-43-9	0.1	mg/kg	1.4	1.3	1.4	0.9	----
Chromium	7440-47-3	1.0	mg/kg	224	289	272	124	----
Copper	7440-50-8	1.0	mg/kg	74.9	84.9	82.0	86.5	----
Lead	7439-92-1	1.0	mg/kg	366	521	297	173	----
Nickel	7440-02-0	1.0	mg/kg	16.9	17.0	17.1	16.6	----
Zinc	7440-66-6	1.0	mg/kg	448	458	475	483	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.01	mg/kg	0.58	0.59	0.57	0.45	----
EP003: Total Organic Carbon (TOC) in Soil								
Total Organic Carbon	----	0.02	%	2.66	2.43	2.46	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	59
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	SD06	SD07	SD08	SD_QC01	SD_TS01
				Client sampling date / time	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00
Compound	CAS Number	LOR	Unit		ES2024630-006	ES2024630-007	ES2024630-008	ES2024630-009	ES2024630-011
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	----	----	----	71
>C10 - C16 Fraction	----	3	mg/kg		82	155	114	79	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	----	----	----	26
>C16 - C34 Fraction	----	3	mg/kg		1260	1800	1480	1350	----
>C34 - C40 Fraction	----	5	mg/kg		440	603	470	435	----
>C10 - C40 Fraction (sum)	----	3	mg/kg		1780	2560	2060	1860	----
>C10 - C16 Fraction minus Naphthalene (F2)	----	3	mg/kg		82	155	114	79	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	----	----	----	0.3
Toluene	108-88-3	0.5	mg/kg		----	----	----	----	19.8
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	----	----	3.1
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	----	----	15.6
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	----	----	6.3
^ Sum of BTEX	----	0.2	mg/kg		----	----	----	----	45.1
^ Total Xylenes	----	0.5	mg/kg		----	----	----	----	21.9
Naphthalene	91-20-3	1	mg/kg		----	----	----	----	<1
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	3	mg/kg		<3	<3	<3	<3	----
C10 - C14 Fraction	----	3	mg/kg		37	65	48	34	----
C15 - C28 Fraction	----	3	mg/kg		770	1150	954	834	----
C29 - C36 Fraction	----	5	mg/kg		692	953	760	727	----
^ C10 - C36 Fraction (sum)	----	3	mg/kg		1500	2170	1760	1600	----
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons									
C6 - C10 Fraction	C6_C10	3	mg/kg		<3	<3	<3	<3	----
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	3.0	mg/kg		<3.0	<3.0	<3.0	<3.0	----
EP080-SD: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
Ethylbenzene	100-41-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
ortho-Xylene	95-47-6	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	SD06	SD07	SD08	SD_QC01	SD_TS01
			Client sampling date / time	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00
Compound	CAS Number	LOR	Unit	ES2024630-006	ES2024630-007	ES2024630-008	ES2024630-009	ES2024630-011
				Result	Result	Result	Result	Result
EP080-SD: BTEXN - Continued								
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
Naphthalene	91-20-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
EP090: Organotin Compounds								
Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	<1	<1	----
Dibutyltin	1002-53-5	1	µgSn/kg	1	<1	<1	3	----
Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	<0.5	1.8	----
EP131B: Polychlorinated Biphenyls (as Aroclors)								
^ Total Polychlorinated biphenyls	----	5.0	µg/kg	<15.6	<15.6	<15.6	<15.6	----
Aroclor 1016	12674-11-2	5.0	µg/kg	<15.6	<15.6	<15.6	<15.6	----
Aroclor 1221	11104-28-2	5.0	µg/kg	<15.6	<15.6	<15.6	<15.6	----
Aroclor 1232	11141-16-5	5.0	µg/kg	<15.6	<15.6	<15.6	<15.6	----
Aroclor 1242	53469-21-9	5.0	µg/kg	<15.6	<15.6	<15.6	<15.6	----
Aroclor 1248	12672-29-6	5.0	µg/kg	<15.6	<15.6	<15.6	<15.6	----
Aroclor 1254	11097-69-1	5.0	µg/kg	<15.6	<15.6	<15.6	<15.6	----
Aroclor 1260	11096-82-5	5.0	µg/kg	<15.6	<15.6	<15.6	<15.6	----
EP132A: Phenolic Compounds								
2-Chlorophenol	95-57-8	10	µg/kg	<20	<10	<20	<20	----
4-Chloro-3-methylphenol	59-50-7	10	µg/kg	<20	<10	<20	<20	----
m-Cresol	108-39-4	10	µg/kg	<20	<10	<20	<20	----
o-Cresol	95-48-7	10	µg/kg	<20	<10	<20	<20	----
p-Cresol	106-44-5	10	µg/kg	<20	<10	<20	<20	----
2.4-Dichlorophenol	120-83-2	10	µg/kg	<20	<10	<20	<20	----
2.6-Dichlorophenol	87-65-0	10	µg/kg	<20	<10	<20	<20	----
2.4-Dimethylphenol	105-67-9	10	µg/kg	<20	<10	<20	<20	----
Hexachlorophene	70-30-4	10	µg/kg	<20	<10	<20	<20	----
2-Nitrophenol	88-75-5	10	µg/kg	<20	<10	<20	<20	----
4-Nitrophenol	100-02-7	10	µg/kg	<20	<10	<20	<20	----
Pentachlorophenol	87-86-5	10	µg/kg	<20	<10	<20	<20	----
Phenol	108-95-2	10	µg/kg	<20	<10	<20	<20	----
2.3.4.6-Tetrachlorophenol	58-90-2	10	µg/kg	<20	<10	<20	<20	----
2.4.5-Trichlorophenol	95-95-4	10	µg/kg	<20	<10	<20	<20	----
2.4.6-Trichlorophenol	88-06-2	10	µg/kg	<20	<10	<20	<20	----
EP132B: Polynuclear Aromatic Hydrocarbons								
3-Methylcholanthrene	56-49-5	10	µg/kg	<20	<10	<20	<20	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	SD06	SD07	SD08	SD_QC01	SD_TS01
				Client sampling date / time	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00
Compound	CAS Number	LOR	Unit		ES2024630-006	ES2024630-007	ES2024630-008	ES2024630-009	ES2024630-011
					Result	Result	Result	Result	Result
EP132B: Polynuclear Aromatic Hydrocarbons - Continued									
2-Methylnaphthalene	91-57-6	10	µg/kg		60	30	<20	50	----
7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg		<20	<10	<20	<20	----
Acenaphthene	83-32-9	10	µg/kg		<20	<10	<20	40	----
Acenaphthylene	208-96-8	10	µg/kg		240	90	160	180	----
Anthracene	120-12-7	10	µg/kg		210	120	160	160	----
Benz(a)anthracene	56-55-3	10	µg/kg		730	420	560	570	----
Benzo(a)pyrene	50-32-8	10	µg/kg		1030	840	760	1000	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	10	µg/kg		1570	960	1260	1010	----
Benzo(e)pyrene	192-97-2	10	µg/kg		630	470	590	450	----
Benzo(g.h.i)perylene	191-24-2	10	µg/kg		890	650	730	900	----
Benzo(k)fluoranthene	207-08-9	10	µg/kg		550	360	490	460	----
Chrysene	218-01-9	10	µg/kg		780	430	630	580	----
Coronene	191-07-1	10	µg/kg		200	60	100	200	----
Dibenz(a.h)anthracene	53-70-3	10	µg/kg		200	100	180	190	----
Fluoranthene	206-44-0	10	µg/kg		1090	870	870	910	----
Fluorene	86-73-7	10	µg/kg		<20	<10	<20	<20	----
Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg		870	440	660	620	----
N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg		<100	<100	<100	<100	----
Naphthalene	91-20-3	10	µg/kg		130	60	90	90	----
Perylene	198-55-0	10	µg/kg		340	170	250	230	----
Phenanthrene	85-01-8	10	µg/kg		460	320	340	390	----
Pyrene	129-00-0	10	µg/kg		1300	1240	1060	1070	----
^ Sum of PAHs	----	10	µg/kg		11300	7630	8890	9100	----
Benzo(a)pyrene TEQ (zero)	----	10	µg/kg		1620	1170	1250	1470	----
Benzo(a)pyrene TEQ (half LOR)	----	10	µg/kg		1620	1170	1250	1470	----
Benzo(a)pyrene TEQ (LOR)	----	10	µg/kg		1620	1170	1250	1470	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	----	----	105
Toluene-D8	2037-26-5	0.2	%		----	----	----	----	103
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	----	----	99.6
EP080-SD: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		112	111	109	111	----
Toluene-D8	2037-26-5	0.2	%		113	108	108	111	----
4-Bromofluorobenzene	460-00-4	0.2	%		106	105	103	105	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)				Client sample ID	SD06	SD07	SD08	SD_QC01	SD_TS01
				Client sampling date / time	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00	16-Jul-2020 00:00
Compound	CAS Number	LOR	Unit		ES2024630-006	ES2024630-007	ES2024630-008	ES2024630-009	ES2024630-011
					Result	Result	Result	Result	Result
EP090S: Organotin Surrogate									
Tripropyltin	----	0.5	%		49.2	95.4	71.9	75.3	----
EP131T: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.5	%		49.4	78.1	78.8	63.1	----
EP132S: Acid Extractable Surrogates									
2-Fluorophenol	367-12-4	10	%		100	51.7	72.4	36.2	----
Phenol-d6	13127-88-3	10	%		106	53.9	79.3	37.4	----
2-Chlorophenol-D4	93951-73-6	10	%		97.7	45.6	76.6	32.5	----
2.4.6-Tribromophenol	118-79-6	10	%		105	51.7	88.8	39.5	----
EP132T: Base/Neutral Extractable Surrogates									
2-Fluorobiphenyl	321-60-8	10	%		99.9	44.9	103	33.5	----
Anthracene-d10	1719-06-8	10	%		138	49.1	141	66.1	----
4-Terphenyl-d14	1718-51-0	10	%		104	54.4	87.2	39.3	----

Analytical Results

Sub-Matrix: SEDIMENT (Matrix: SOIL)			Client sample ID	SD_TB01	SD_TSC	----	----	----
			Client sampling date / time	16-Jul-2020 00:00	16-Jul-2020 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2024630-012	ES2024630-013	--------	--------	--------
				Result	Result	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	**65**	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	**88**	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	**41**	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	**0.4**	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	**20.6**	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	**3.1**	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	**16.2**	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	**6.7**	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	**47.0**	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	**22.9**	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**98.6**	**116**	----	----	----
Toluene-D8	2037-26-5	0.2	%	**99.8**	**98.7**	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	**95.3**	**105**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SD_R01	----	----	----	----
			Client sampling date / time	16-Jul-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2024630-010	--------	--------	--------	--------
				Result	----	----	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	**0.004**	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.006**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
^ **Total Polychlorinated biphenyls**	----	1	µg/L	<1	----	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	----	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	----	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	----	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	----	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	----	----	----	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	----	----	----	----
2.4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	----	----	----	----
2.6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	----	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	SD_R01	----	----	----	----
				Client sampling date / time	16-Jul-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2024630-010	--------	--------	--------	--------
					Result	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Chrysene	218-01-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	----	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	µg/L		<0.5	----	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	µg/L		<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L		<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L		<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ **Total Xylenes**	----	2	µg/L		<2	----	----	----	----
^ **Sum of BTEX**	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SD_R01	----	----	----	----
			Client sampling date / time	16-Jul-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2024630-010	--------	--------	--------	--------
				Result	----	----	----	----
EP090: Organotin Compounds (Soluble)								
Tributyltin	56573-85-4	2	ngSn/L	<2	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	1	%	**74.0**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	**22.4**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	**46.5**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%	**50.5**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	**54.9**	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%	**68.5**	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	**67.5**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**116**	----	----	----	----
Toluene-D8	2037-26-5	2	%	**100.0**	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	**95.5**	----	----	----	----
EP090S: Organotin Surrogate								
Tripropyltin	----	5	%	**123**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: SEDIMENT		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130
EP080-SD: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	67	137
Toluene-D8	2037-26-5	74	134
4-Bromofluorobenzene	460-00-4	73	137
EP090S: Organotin Surrogate			
Tripropyltin	----	35	130
EP131T: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	10	106
EP132S: Acid Extractable Surrogates			
2-Fluorophenol	367-12-4	25	121
Phenol-d6	13127-88-3	25	121
2-Chlorophenol-D4	93951-73-6	21	137
2.4.6-Tribromophenol	118-79-6	19	122
EP132T: Base/Neutral Extractable Surrogates			
2-Fluorobiphenyl	321-60-8	27	131
Anthracene-d10	1719-06-8	35	139
4-Terphenyl-d14	1718-51-0	30	164

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	45	134
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128
EP090S: Organotin Surrogate			

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP090S: Organotin Surrogate - Continued			
Tripropyltin	----	24	116

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2024630**	Page	: 1 of 15
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: KYLE MCLEAN	Contact	: Tyler Anderson
Address	: 177 Pacific Highway North Sydney 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 9928 2100	Telephone	: +61 2 8784 8555
Project	: RHODES PLANNED PRECINCT – SEDIMENT	Date Samples Received	: 16-Jul-2020
Order number	: IS355800	Date Analysis Commenced	: 17-Jul-2020
C-O-C number	: 233424	Issue Date	: 29-Jul-2020
Sampler	: BLAIR CUMINING		
Site	: ----		
Quote number	: SY/224/20		
No. of samples received	: 13		
No. of samples analysed	: 13		

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

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

This Quality Control Report contains the following information:

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

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

Aleksandar Vujkovic	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Morgan Lennox		Brisbane Organics, Stafford, QLD
Satishkumar Trivedi	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

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

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

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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG035T: Total Recoverable Mercury by FIMS (Low Level) (QC Lot: 3160799)									
ES2024630-001	SD01	EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	0.56	0.58	4.50	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3160803)									
ES2024630-003	SD03	EA055: Moisture Content	----	0.1	%	44.0	44.4	0.818	0% - 20%
EG020-SD: Total Metals in Sediments by ICPMS (QC Lot: 3160800)									
ES2024630-001	SD01	EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	0.7	0.7	0.00	No Limit
		EG020-SD: Arsenic	7440-38-2	1	mg/kg	22.5	23.3	3.36	0% - 20%
		EG020-SD: Chromium	7440-47-3	1	mg/kg	86.2	86.3	0.135	0% - 20%
		EG020-SD: Copper	7440-50-8	1	mg/kg	55.8	48.6	14.0	0% - 20%
		EG020-SD: Lead	7439-92-1	1	mg/kg	161	160	0.657	0% - 20%
		EG020-SD: Nickel	7440-02-0	1	mg/kg	9.2	9.2	0.00	No Limit
		EG020-SD: Zinc	7440-66-6	1	mg/kg	319	339	6.06	0% - 20%
EP003: Total Organic Carbon (TOC) in Soil (QC Lot: 3161972)									
ES2024630-001	SD01	EP003: Total Organic Carbon	----	0.02	%	3.45	3.58	3.77	0% - 20%
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3150168)									
ES2024821-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES2024821-005	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3150168)									
ES2024821-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES2024821-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 3150168)									
ES2024821-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080: BTEXN (QC Lot: 3150168) - continued									
ES2024821-001	Anonymous	EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
ES2024821-005	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 3148361)									
ES2024630-001	SD01	EP071-SD: C10 - C14 Fraction	----	3	mg/kg	29	32	8.22	No Limit
		EP071-SD: C15 - C28 Fraction	----	3	mg/kg	569	592	4.01	0% - 50%
		EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	956	1000	5.00	0% - 20%
		EP071-SD: C29 - C36 Fraction	----	5	mg/kg	358	381	6.07	0% - 50%
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QC Lot: 3148765)									
ES2024630-001	SD01	EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	<3	0.00	No Limit
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QC Lot: 3148361)									
ES2024630-001	SD01	EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	59	62	5.59	No Limit
		EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	819	856	4.44	0% - 20%
		EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	1070	1140	5.79	0% - 20%
		EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	195	219	11.7	No Limit
EP080-SD: BTEXN (QC Lot: 3148765)									
ES2024630-001	SD01	EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP090: Organotin Compounds (QC Lot: 3151886)									
ES2024630-001	SD01	EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	<0.5	0.00	No Limit
		EP090: Monobutyltin	78763-54-9	1	µgSn/kg	<1	<1	0.00	No Limit
		EP090: Dibutyltin	1002-53-5	1	µgSn/kg	<1	<1	0.00	No Limit
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 3148360)									
ES2024630-001	SD01	EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<15.6	<15.6	0.00	No Limit
		EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<15.6	<15.6	0.00	No Limit
		EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<15.6	<15.6	0.00	No Limit
		EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<15.6	<15.6	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP131B: Polychlorinated Biphenyls (as Aroclors) (QC Lot: 3148360) - continued									
ES2024630-001	SD01	EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<15.6	<15.6	0.00	No Limit
		EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<15.6	<15.6	0.00	No Limit
		EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<15.6	<15.6	0.00	No Limit
		EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<15.6	<15.6	0.00	No Limit
EP132A: Phenolic Compounds (QC Lot: 3148484)									
ES2024630-001	SD01	EP132: 2-Chlorophenol	95-57-8	10	µg/kg	<20	<20	0.00	No Limit
		EP132: 4-Chloro-3-methylphenol	59-50-7	10	µg/kg	<20	<20	0.00	No Limit
		EP132: m-Cresol	108-39-4	10	µg/kg	420	# 150	95.6	0% - 50%
		EP132: o-Cresol	95-48-7	10	µg/kg	380	# 140	94.8	0% - 50%
		EP132: p-Cresol	106-44-5	10	µg/kg	430	# 160	93.5	0% - 50%
		EP132: 2.4-Dichlorophenol	120-83-2	10	µg/kg	<20	<20	0.00	No Limit
		EP132: 2.6-Dichlorophenol	87-65-0	10	µg/kg	<20	<20	0.00	No Limit
		EP132: 2.4-Dimethylphenol	105-67-9	10	µg/kg	640	# 240	91.7	0% - 20%
		EP132: Hexachlorophene	70-30-4	10	µg/kg	<20	<20	0.00	No Limit
		EP132: 2-Nitrophenol	88-75-5	10	µg/kg	<20	<20	0.00	No Limit
		EP132: 4-Nitrophenol	100-02-7	10	µg/kg	<20	<20	0.00	No Limit
		EP132: Pentachlorophenol	87-86-5	10	µg/kg	<20	<20	0.00	No Limit
		EP132: Phenol	108-95-2	10	µg/kg	280	# 100	89.3	0% - 50%
		EP132: 2.3.4.6-Tetrachlorophenol	58-90-2	10	µg/kg	<20	<20	0.00	No Limit
		EP132: 2.4.5-Trichlorophenol	95-95-4	10	µg/kg	<20	<20	0.00	No Limit
		EP132: 2.4.6-Trichlorophenol	88-06-2	10	µg/kg	<20	<20	0.00	No Limit
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3148484)									
ES2024630-001	SD01	EP132: 3-Methylcholanthrene	56-49-5	10	µg/kg	<20	<20	0.00	No Limit
		EP132: 2-Methylnaphthalene	91-57-6	10	µg/kg	1120	# 470	81.4	0% - 20%
		EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	<20	<20	0.00	No Limit
		EP132: Acenaphthene	83-32-9	10	µg/kg	1270	# 830	42.1	0% - 20%
		EP132: Acenaphthylene	208-96-8	10	µg/kg	2540	# 2030	22.3	0% - 20%
		EP132: Anthracene	120-12-7	10	µg/kg	6520	# 4530	36.1	0% - 20%
		EP132: Benz(a)anthracene	56-55-3	10	µg/kg	14700	12900	13.4	0% - 20%
		EP132: Benzo(a)pyrene	50-32-8	10	µg/kg	15400	13500	13.0	0% - 20%
		EP132: Benzo(b+j)fluoranthene	205-99-2 205-82-3	10	µg/kg	16500	14100	15.5	0% - 20%
		EP132: Benzo(e)pyrene	192-97-2	10	µg/kg	7080	6100	14.7	0% - 20%
		EP132: Benzo(g.h.i)perylene	191-24-2	10	µg/kg	6620	5640	15.9	0% - 20%
		EP132: Benzo(k)fluoranthene	207-08-9	10	µg/kg	5680	5120	10.4	0% - 20%
		EP132: Chrysene	218-01-9	10	µg/kg	15000	13100	12.9	0% - 20%
		EP132: Coronene	191-07-1	10	µg/kg	550	570	3.75	0% - 20%
		EP132: Dibenz(a.h)anthracene	53-70-3	10	µg/kg	1710	1490	13.6	0% - 20%
		EP132: Fluoranthene	206-44-0	10	µg/kg	35700	# 28800	21.6	0% - 20%
		EP132: Fluorene	86-73-7	10	µg/kg	4550	# 2610	54.2	0% - 20%

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP132B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3148484) - continued									
ES2024630-001	SD01	EP132: Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	5850	5010	15.5	0% - 20%
		EP132: Naphthalene	91-20-3	10	µg/kg	2850	# 1030	93.9	0% - 20%
		EP132: Perylene	198-55-0	10	µg/kg	3390	3000	12.4	0% - 20%
		EP132: Phenanthrene	85-01-8	10	µg/kg	26600	# 17900	39.0	0% - 20%
		EP132: Pyrene	129-00-0	10	µg/kg	37600	31300	18.5	0% - 20%
		EP132: N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	<100	<100	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 3150452)									
ES2024631-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.002	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.003	<0.001	88.1	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.002	0.003	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
ES2024655-002	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3146766)									
ES2024391-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES2024558-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3150049)									
ES2024856-004	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EW2003234-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3150049)									
ES2024856-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EW2003234-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 3150049)									
ES2024856-004	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080: BTEXN (QC Lot: 3150049) - continued									
ES2024856-004	Anonymous	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EW2003234-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG035T: Total Recoverable Mercury by FIMS (Low Level) (QCLot: 3160799)								
EG035T-LL: Mercury	7439-97-6	0.01	mg/kg	<0.01	0.0847 mg/kg	88.0	72.0	116
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3160800)								
EG020-SD: Arsenic	7440-38-2	1	mg/kg	<1.00	98 mg/kg	108	80.0	139
EG020-SD: Cadmium	7440-43-9	0.1	mg/kg	<0.1	0.74 mg/kg	122	83.0	127
EG020-SD: Chromium	7440-47-3	1	mg/kg	<1.0	15.4 mg/kg	124	73.0	130
EG020-SD: Copper	7440-50-8	1	mg/kg	<1.0	48 mg/kg	98.9	76.0	130
EG020-SD: Lead	7439-92-1	1	mg/kg	<1.0	50 mg/kg	118	74.0	130
EG020-SD: Nickel	7440-02-0	1	mg/kg	<1.0	12.4 mg/kg	109	83.0	130
EG020-SD: Zinc	7440-66-6	1	mg/kg	<1.0	115 mg/kg	126	82.0	137
EP003: Total Organic Carbon (TOC) in Soil (QCLot: 3161972)								
EP003: Total Organic Carbon	----	0.02	%	<0.02	4.16 %	97.4	70.0	130
				<0.02	0.48 %	110	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3150168)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	102	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3150168)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	104	68.4	128
EP080: BTEXN (QCLot: 3150168)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	97.2	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	101	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	99.2	65.0	117
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	101	66.0	118
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	101	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	98.4	63.0	119
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3148361)								
EP071-SD: C10 - C14 Fraction	----	3	mg/kg	<3	5 mg/kg	89.4	78.0	118
EP071-SD: C15 - C28 Fraction	----	3	mg/kg	<3	7.5 mg/kg	89.8	84.0	118
EP071-SD: C29 - C36 Fraction	----	5	mg/kg	<5	5 mg/kg	89.4	73.0	119
EP071-SD: C10 - C36 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3148765)								
EP080-SD: C6 - C9 Fraction	----	3	mg/kg	<3	6.2 mg/kg	71.5	61.0	133
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 3148361)								
EP071-SD: >C10 - C16 Fraction	----	3	mg/kg	<3	6.25 mg/kg	91.7	70.0	130

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons (QCLot: 3148361) - continued								
EP071-SD: >C16 - C34 Fraction	----	3	mg/kg	<3	8.75 mg/kg	88.6	74.0	138
EP071-SD: >C34 - C40 Fraction	----	5	mg/kg	<5	3.75 mg/kg	89.4	63.0	131
EP071-SD: >C10 - C40 Fraction (sum)	----	3	mg/kg	<3	----	----	----	----
EP080-SD: BTEXN (QCLot: 3148765)								
EP080-SD: Benzene	71-43-2	0.2	mg/kg	<0.2	0.2 mg/kg	81.1	66.0	122
EP080-SD: Toluene	108-88-3	0.2	mg/kg	<0.2	0.2 mg/kg	84.1	70.0	130
EP080-SD: Ethylbenzene	100-41-4	0.2	mg/kg	<0.2	0.2 mg/kg	83.9	66.0	126
EP080-SD: meta- & para-Xylene	108-38-3 106-42-3	0.2	mg/kg	<0.2	0.4 mg/kg	81.6	59.0	129
EP080-SD: ortho-Xylene	95-47-6	0.2	mg/kg	<0.2	0.2 mg/kg	85.2	66.0	126
EP090: Organotin Compounds (QCLot: 3151886)								
EP090: Monobutyltin	78763-54-9	1	µgSn/kg	<1	1.25 µgSn/kg	78.0	36.0	128
EP090: Dibutyltin	1002-53-5	1	µgSn/kg	<1	1.25 µgSn/kg	111	42.0	132
EP090: Tributyltin	56573-85-4	0.5	µgSn/kg	<0.5	1.25 µgSn/kg	94.8	52.0	139
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3148360)								
EP131B: Total Polychlorinated biphenyls	----	5	µg/kg	<5.0	50 µg/kg	78.4	45.0	115
EP131B: Aroclor 1016	12674-11-2	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1221	11104-28-2	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1232	11141-16-5	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1242	53469-21-9	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1248	12672-29-6	5	µg/kg	<5.0	----	----	----	----
EP131B: Aroclor 1254	11097-69-1	5	µg/kg	<5.0	50 µg/kg	78.4	45.0	115
EP131B: Aroclor 1260	11096-82-5	5	µg/kg	<5.0	----	----	----	----
EP132A: Phenolic Compounds (QCLot: 3148484)								
EP132: 2-Chlorophenol	95-57-8	10	µg/kg	<10	100 µg/kg	58.7	44.0	124
EP132: 4-Chloro-3-methylphenol	59-50-7	10	µg/kg	<10	100 µg/kg	63.9	52.0	132
EP132: m-Cresol	108-39-4	10	µg/kg	<10	100 µg/kg	63.2	41.0	127
EP132: o-Cresol	95-48-7	10	µg/kg	<10	100 µg/kg	60.6	26.9	123
EP132: p-Cresol	106-44-5	10	µg/kg	<10	100 µg/kg	60.0	34.0	126
EP132: 2.4-Dichlorophenol	120-83-2	10	µg/kg	<10	100 µg/kg	61.3	43.0	127
EP132: 2.6-Dichlorophenol	87-65-0	10	µg/kg	<10	100 µg/kg	61.8	45.0	123
EP132: 2.4-Dimethylphenol	105-67-9	10	µg/kg	<10	100 µg/kg	40.0	30.5	83.0
EP132: Hexachlorophene	70-30-4	10	µg/kg	<10	100 µg/kg	39.0	15.6	94.0
EP132: 2-Nitrophenol	88-75-5	10	µg/kg	<10	100 µg/kg	56.6	24.3	128
EP132: 4-Nitrophenol	100-02-7	10	µg/kg	<10	100 µg/kg	64.0	12.0	144
EP132: Pentachlorophenol	87-86-5	10	µg/kg	<10	100 µg/kg	69.3	41.0	133
EP132: Phenol	108-95-2	10	µg/kg	<10	100 µg/kg	61.6	42.0	128
EP132: 2.3.4.6-Tetrachlorophenol	58-90-2	10	µg/kg	<10	100 µg/kg	70.0	28.2	120

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP132A: Phenolic Compounds (QCLot: 3148484) - continued								
EP132: 2.4.5-Trichlorophenol	95-95-4	10	µg/kg	<10	100 µg/kg	67.3	45.0	123
EP132: 2.4.6-Trichlorophenol	88-06-2	10	µg/kg	<10	100 µg/kg	64.8	41.0	123
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3148484)								
EP132: 3-Methylcholanthrene	56-49-5	10	µg/kg	<10	100 µg/kg	58.4	36.0	120
EP132: 2-Methylnaphthalene	91-57-6	10	µg/kg	<10	100 µg/kg	67.6	57.0	131
EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	10	µg/kg	<10	100 µg/kg	90.7	14.9	157
EP132: Acenaphthene	83-32-9	10	µg/kg	<10	100 µg/kg	69.4	57.0	125
EP132: Acenaphthylene	208-96-8	10	µg/kg	<10	100 µg/kg	64.7	48.0	132
EP132: Anthracene	120-12-7	10	µg/kg	<10	100 µg/kg	70.0	50.0	114
EP132: Benz(a)anthracene	56-55-3	10	µg/kg	<10	100 µg/kg	78.8	66.0	124
EP132: Benzo(a)pyrene	50-32-8	10	µg/kg	<10	100 µg/kg	44.9	43.0	125
EP132: Benzo(b+j)fluoranthene	205-99-2 205-82-3	10	µg/kg	<10	100 µg/kg	71.2	64.0	130
EP132: Benzo(e)pyrene	192-97-2	10	µg/kg	<10	100 µg/kg	# 69.1	70.0	142
EP132: Benzo(g.h.i)perylene	191-24-2	10	µg/kg	<10	100 µg/kg	58.9	46.0	134
EP132: Benzo(k)fluoranthene	207-08-9	10	µg/kg	<10	100 µg/kg	72.0	65.0	129
EP132: Chrysene	218-01-9	10	µg/kg	<10	100 µg/kg	78.2	69.0	129
EP132: Coronene	191-07-1	10	µg/kg	<10	100 µg/kg	63.3	26.9	149
EP132: Dibenz(a.h)anthracene	53-70-3	10	µg/kg	<10	100 µg/kg	69.4	50.0	134
EP132: Fluoranthene	206-44-0	10	µg/kg	<10	100 µg/kg	74.9	68.0	130
EP132: Fluorene	86-73-7	10	µg/kg	<10	100 µg/kg	70.2	57.0	131
EP132: Indeno(1.2.3.cd)pyrene	193-39-5	10	µg/kg	<10	100 µg/kg	70.1	46.0	138
EP132: N-2-Fluorenyl Acetamide	53-96-3	100	µg/kg	<100	100 µg/kg	73.6	50.0	138
EP132: Naphthalene	91-20-3	10	µg/kg	<10	100 µg/kg	66.2	52.0	130
EP132: Perylene	198-55-0	10	µg/kg	<10	100 µg/kg	68.6	48.0	132
EP132: Phenanthrene	85-01-8	10	µg/kg	<10	100 µg/kg	73.9	67.0	127
EP132: Pyrene	129-00-0	10	µg/kg	<10	100 µg/kg	74.4	66.0	130

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 3150452)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	98.1	82.0	114
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	97.5	84.0	112
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	96.9	86.0	116
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	105	83.0	118
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	91.9	85.0	115
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	93.2	84.0	116
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	95.6	79.0	117

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3146766)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	101	77.0	111
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3148441)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	105	68.9	113
EP075(SIM)A: Phenolic Compounds (QCLot: 3148438)								
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	5 µg/L	35.3	24.5	61.9
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	5 µg/L	71.3	52.0	90.0
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	5 µg/L	69.6	51.0	91.0
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	10 µg/L	58.4	44.0	88.0
EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	5 µg/L	78.0	48.0	100
EP075(SIM): 2.4-Dimethylphenol	105-67-9	1	µg/L	<1.0	5 µg/L	74.3	49.0	99.0
EP075(SIM): 2.4-Dichlorophenol	120-83-2	1	µg/L	<1.0	5 µg/L	69.6	53.0	105
EP075(SIM): 2.6-Dichlorophenol	87-65-0	1	µg/L	<1.0	5 µg/L	76.9	57.0	105
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	5 µg/L	74.7	53.0	99.0
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1	µg/L	<1.0	5 µg/L	82.1	50.0	106
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1	µg/L	<1.0	5 µg/L	75.3	51.0	105
EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	10 µg/L	40.1	10.0	95.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3148438)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	66.6	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	76.0	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	80.1	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	76.5	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	80.6	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	79.8	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	78.3	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	75.6	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	72.9	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	76.5	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	74.6	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	74.9	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	70.6	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	71.7	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	71.8	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	70.9	59.1	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3148439)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	77.8	55.8	112
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	84.2	71.6	113
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	88.0	56.0	121

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3150049)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	94.3	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3148439)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	79.4	57.9	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	86.5	62.5	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	83.0	61.5	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3150049)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	94.4	75.0	127
EP080: BTEXN (QCLot: 3150049)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	95.7	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	93.1	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	92.6	70.0	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	93.0	69.0	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	95.4	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	93.2	70.0	120
EP090: Organotin Compounds (Soluble) (QCLot: 3152776)								
EP090S: Tributyltin	56573-85-4	2	ngSn/L	<2	147 ngSn/L	117	30.7	134

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG035T: Total Recoverable Mercury by FIMS (Low Level) (QCLot: 3160799)							
ES2024630-001	SD01	EG035T-LL: Mercury	7439-97-6	0.05 mg/kg	# Not Determined	70.0	130
EG020-SD: Total Metals in Sediments by ICPMS (QCLot: 3160800)							
ES2024630-002	SD02	EG020-SD: Arsenic	7440-38-2	50 mg/kg	91.4	70.0	130
		EG020-SD: Cadmium	7440-43-9	50 mg/kg	92.3	70.0	130
		EG020-SD: Chromium	7440-47-3	50 mg/kg	# Not Determined	70.0	130
		EG020-SD: Copper	7440-50-8	250 mg/kg	83.9	70.0	130
		EG020-SD: Lead	7439-92-1	250 mg/kg	99.2	70.0	130
		EG020-SD: Nickel	7440-02-0	50 mg/kg	86.9	70.0	130
		EG020-SD: Zinc	7440-66-6	250 mg/kg	99.2	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3150168)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3150168) - continued							
ES2024821-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	84.5	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3150168)							
ES2024821-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	85.5	70.0	130
EP080: BTEXN (QCLot: 3150168)							
ES2024821-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	92.0	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	90.8	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	89.2	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	92.0	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	94.7	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	91.7	70.0	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3148361)							
ES2024630-001	SD01	EP071-SD: C10 - C14 Fraction	----	14 mg/kg	95.1	70.0	130
		EP071-SD: C15 - C28 Fraction	----	59 mg/kg	# Not Determined	70.0	130
		EP071-SD: C29 - C36 Fraction	----	42 mg/kg	# Not Determined	70.0	130
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons (QCLot: 3148765)							
ES2024630-001	SD01	EP080-SD: C6 - C9 Fraction	----	6.5 mg/kg	95.6	70.0	130
EP080-SD: BTEXN (QCLot: 3148765)							
ES2024630-001	SD01	EP080-SD: Benzene	71-43-2	0.5 mg/kg	90.4	70.0	130
		EP080-SD: Toluene	108-88-3	0.5 mg/kg	91.6	70.0	130
		EP080-SD: Ethylbenzene	100-41-4	0.5 mg/kg	94.1	70.0	130
		EP080-SD: meta- & para-Xylene	108-38-3 106-42-3	0.5 mg/kg	87.4	70.0	130
		EP080-SD: ortho-Xylene	95-47-6	0.5 mg/kg	90.8	70.0	130
EP090: Organotin Compounds (QCLot: 3151886)							
ES2024630-002	SD02	EP090: Monobutyltin	78763-54-9	1.25 µgSn/kg	# 3.11	20.0	130
		EP090: Dibutyltin	1002-53-5	1.25 µgSn/kg	34.3	20.0	130
		EP090: Tributyltin	56573-85-4	1.25 µgSn/kg	63.9	20.0	130
EP131B: Polychlorinated Biphenyls (as Aroclors) (QCLot: 3148360)							
ES2024630-001	SD01	EP131B: Total Polychlorinated biphenyls	----	50 µg/kg	60.0	44.0	136
		EP131B: Aroclor 1254	11097-69-1	50 µg/kg	60.0	44.0	136
EP132A: Phenolic Compounds (QCLot: 3148484)							
ES2024630-001	SD01	EP132: 2-Chlorophenol	95-57-8	100 µg/kg	101	48.0	118
		EP132: 4-Chloro-3-methylphenol	59-50-7	100 µg/kg	94.2	51.0	127

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP132A: Phenolic Compounds (QCLot: 3148484) - continued							
ES2024630-001	SD01	EP132: m-Cresol	108-39-4	100 µg/kg	# Not Determined	44.0	120
		EP132: o-Cresol	95-48-7	100 µg/kg	# Not Determined	22.3	118
		EP132: p-Cresol	106-44-5	100 µg/kg	# Not Determined	22.3	126
		EP132: 2.4-Dichlorophenol	120-83-2	100 µg/kg	106	42.0	122
		EP132: 2.6-Dichlorophenol	87-65-0	100 µg/kg	104	45.0	123
		EP132: 2.4-Dimethylphenol	105-67-9	100 µg/kg	# Not Determined	30.5	83.0
		EP132: Hexachlorophene	70-30-4	100 µg/kg	# 0.00	6.80	91.0
		EP132: 2-Nitrophenol	88-75-5	100 µg/kg	66.9	24.3	128
		EP132: 4-Nitrophenol	100-02-7	100 µg/kg	61.6	16.2	144
		EP132: Pentachlorophenol	87-86-5	100 µg/kg	118	22.6	129
		EP132: Phenol	108-95-2	100 µg/kg	# Not Determined	42.0	128
		EP132: 2.3.4.6-Tetrachlorophenol	58-90-2	100 µg/kg	116	28.2	120
		EP132: 2.4.5-Trichlorophenol	95-95-4	100 µg/kg	118	45.0	123
		EP132: 2.4.6-Trichlorophenol	88-06-2	100 µg/kg	109	41.0	123
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3148484)							
ES2024630-001	SD01	EP132: 3-Methylcholanthrene	56-49-5	100 µg/kg	# 128	15.0	119
		EP132: 2-Methylnaphthalene	91-57-6	100 µg/kg	# Not Determined	49.0	129
		EP132: 7.12-Dimethylbenz(a)anthracene	57-97-6	100 µg/kg	# 0.00	14.9	157
		EP132: Acenaphthene	83-32-9	100 µg/kg	# Not Determined	57.0	125
		EP132: Acenaphthylene	208-96-8	100 µg/kg	# Not Determined	37.0	123
		EP132: Anthracene	120-12-7	100 µg/kg	# Not Determined	50.0	114
		EP132: Benz(a)anthracene	56-55-3	100 µg/kg	# Not Determined	66.0	124
		EP132: Benzo(a)pyrene	50-32-8	100 µg/kg	# Not Determined	43.0	125
		EP132: Benzo(b+j)fluoranthene	205-99-2 205-82-3	100 µg/kg	# Not Determined	64.0	130
		EP132: Benzo(e)pyrene	192-97-2	100 µg/kg	# Not Determined	43.0	145
		EP132: Benzo(g.h.i)perylene	191-24-2	100 µg/kg	# Not Determined	46.0	134

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP132B: Polynuclear Aromatic Hydrocarbons (QCLot: 3148484) - continued							
ES2024630-001	SD01	EP132: Benzo(k)fluoranthene	207-08-9	100 µg/kg	# Not Determined	65.0	129
		EP132: Chrysene	218-01-9	100 µg/kg	# Not Determined	69.0	129
		EP132: Coronene	191-07-1	100 µg/kg	# Not Determined	26.9	149
		EP132: Dibenz(a.h)anthracene	53-70-3	100 µg/kg	# Not Determined	50.0	134
		EP132: Fluoranthene	206-44-0	100 µg/kg	# Not Determined	68.0	130
		EP132: Fluorene	86-73-7	100 µg/kg	# Not Determined	57.0	131
		EP132: Indeno(1.2.3.cd)pyrene	193-39-5	100 µg/kg	# Not Determined	46.0	138
		EP132: N-2-Fluorenyl Acetamide	53-96-3	100 µg/kg	# 0.00	50.0	138
		EP132: Naphthalene	91-20-3	100 µg/kg	# Not Determined	48.0	126
		EP132: Perylene	198-55-0	100 µg/kg	# Not Determined	37.0	125
		EP132: Phenanthrene	85-01-8	100 µg/kg	# Not Determined	67.0	127
		EP132: Pyrene	129-00-0	100 µg/kg	# Not Determined	66.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 3150452)							
ES2024617-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	95.4	70.0	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	98.0	70.0	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	102	70.0	130
		EG020A-T: Copper	7440-50-8	1 mg/L	106	70.0	130
		EG020A-T: Lead	7439-92-1	1 mg/L	91.2	70.0	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	92.7	70.0	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	102	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3146766)							
ES2024494-001	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	# 34.9	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3150049)							
ES2024856-004	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	107	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3150049)							
ES2024856-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	104	70.0	130
EP080: BTEXN (QCLot: 3150049)							
ES2024856-004	Anonymous	EP080: Benzene	71-43-2	25 µg/L	96.8	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	88.7	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	91.1	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	90.8	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	94.1	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	90.6	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2024630**	Page	: 1 of 14
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: KYLE MCLEAN	Telephone	: +61 2 8784 8555
Project	: RHODES PLANNED PRECINCT – SEDIMENT	Date Samples Received	: 16-Jul-2020
Site	: ----	Issue Date	: 29-Jul-2020
Sampler	: BLAIR CUMINING	No. of samples received	: 13
Order number	: IS355800	No. of samples analysed	: 13

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **Laboratory Control outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EP132A: Phenolic Compounds	ES2024630--001	SD01	**m-Cresol**	108-39-4	95.6 %	0% - 50%	**RPD exceeds LOR based limits**
EP132A: Phenolic Compounds	ES2024630--001	SD01	**o-Cresol**	95-48-7	94.8 %	0% - 50%	**RPD exceeds LOR based limits**
EP132A: Phenolic Compounds	ES2024630--001	SD01	**p-Cresol**	106-44-5	93.5 %	0% - 50%	**RPD exceeds LOR based limits**
EP132A: Phenolic Compounds	ES2024630--001	SD01	**2.4-Dimethylphenol**	105-67-9	91.7 %	0% - 20%	**RPD exceeds LOR based limits**
EP132A: Phenolic Compounds	ES2024630--001	SD01	**Phenol**	108-95-2	89.3 %	0% - 50%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**2-Methylnaphthalene**	91-57-6	81.4 %	0% - 20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Acenaphthene**	83-32-9	42.1 %	0% - 20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Acenaphthylene**	208-96-8	22.3 %	0% - 20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Anthracene**	120-12-7	36.1 %	0% - 20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Fluoranthene**	206-44-0	21.6 %	0% - 20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Fluorene**	86-73-7	54.2 %	0% - 20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Naphthalene**	91-20-3	93.9 %	0% - 20%	**RPD exceeds LOR based limits**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Phenanthrene**	85-01-8	39.0 %	0% - 20%	**RPD exceeds LOR based limits**
Laboratory Control Spike (LCS) Recoveries							
EP132B: Polynuclear Aromatic Hydrocarbons	QC-3148484-002	----	**Benzo(e)pyrene**	192-97-2	69.1 %	70.0-142%	**Recovery less than lower control limit**
Matrix Spike (MS) Recoveries							
EG035T: Total Recoverable Mercury by FIMS (Low Lev	ES2024630--001	SD01	**Mercury**	7439-97-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG020-SD: Total Metals in Sediments by ICPMS	ES2024630--002	SD02	**Chromium**	7440-47-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons	ES2024630--001	SD01	**C15 - C28 Fraction**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons	ES2024630--001	SD01	**C29 - C36 Fraction**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP090: Organotin Compounds	ES2024630--002	SD02	**Monobutyltin**	78763-54-9	3.11 %	20.0-130%	**Recovery less than lower data quality objective**
EP132A: Phenolic Compounds	ES2024630--001	SD01	**Hexachlorophene**	70-30-4	0.00 %	6.80-91.0%	**Recovery less than lower data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**3-Methylcholanthrene**	56-49-5	128 %	15.0-119%	**Recovery greater than upper data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**2-Methylnaphthalene**	91-57-6	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**7.12-Dimethylbenz(a)anthracene**	57-97-6	0.00 %	14.9-157%	**Recovery less than lower data quality objective**

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries - Continued							
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Acenaphthene**	83-32-9	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Acenaphthylene**	208-96-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Anthracene**	120-12-7	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Benz(a)anthracene**	56-55-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Benzo(a)pyrene**	50-32-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Benzo(b+j)fluoranthene**	205-99-2 205-82-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Benzo(e)pyrene**	192-97-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Benzo(g.h.i)perylene**	191-24-2	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Benzo(k)fluoranthene**	207-08-9	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Chrysene**	218-01-9	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Dibenz(a.h)anthracene**	53-70-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Fluoranthene**	206-44-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Fluorene**	86-73-7	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Indeno(1.2.3.cd)pyrene**	193-39-5	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries - Continued							
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**N-2-Fluorenyl Acetamide**	53-96-3	0.00 %	50.0-138%	**Recovery less than lower data quality objective**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Naphthalene**	91-20-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Perylene**	198-55-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Phenanthrene**	85-01-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP132B: Polynuclear Aromatic Hydrocarbons	ES2024630--001	SD01	**Pyrene**	129-00-0	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG035T: Total Recoverable Mercury by FIMS	ES2024494--001	Anonymous	**Mercury**	7439-97-6	34.9 %	70.0-130%	**Recovery less than lower data quality objective**

Regular Sample Surrogates

Sub-Matrix: **SEDIMENT**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP131T: PCB Surrogate	ES2024630-001	SD01	**Decachlorobiphenyl**	2051-24-3	129 %	10.0-106 %	**Recovery greater than upper data quality objective**
EP131T: PCB Surrogate	ES2024630-004	SD04	**Decachlorobiphenyl**	2051-24-3	112 %	10.0-106 %	**Recovery greater than upper data quality objective**
EP132T: Base/Neutral Extractable Surrogates	ES2024630-008	SD08	**Anthracene-d10**	1719-06-8	141 %	35.0-139 %	**Recovery greater than upper data quality objective**

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP090S: Organotin Surrogate	ES2024630-010	SD_R01	**Tripropyltin**	----	123 %	24.0-116 %	**Recovery greater than upper data quality objective**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP) - Continued					
Organotin Compounds (Soluble)	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	6	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
Organotin Compounds (Soluble)	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	6	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / *Container / Client Sample ID(s)*	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
SD01, SD02, SD03, SD04, SD05, SD06, SD07, SD08, SD_QC01	**16-Jul-2020**	**----**	----	----	**24-Jul-2020**	30-Jul-2020	✓
EA150: Particle Sizing							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA150)							
SD01, SD03, SD04, SD05, SD06, SD08	**16-Jul-2020**	**----**	----	----	**28-Jul-2020**	12-Jan-2021	✓
EA150: Soil Classification based on Particle Size							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA150)							
SD01, SD03, SD04, SD05, SD06, SD08	**16-Jul-2020**	**----**	----	----	**28-Jul-2020**	12-Jan-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020-SD: Total Metals in Sediments by ICPMS							
Soil Glass Jar - Unpreserved (EG020-SD)							
SD01, SD02, SD03, SD04, SD05, SD06, SD07, SD08, SD_QC01	**16-Jul-2020**	**24-Jul-2020**	12-Jan-2021	✓	**27-Jul-2020**	12-Jan-2021	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T-LL)							
SD01, SD02, SD03, SD04, SD05, SD06, SD07, SD08, SD_QC01	**16-Jul-2020**	**24-Jul-2020**	13-Aug-2020	✓	**28-Jul-2020**	13-Aug-2020	✓
EP003: Total Organic Carbon (TOC) in Soil							
Pulp Bag (EP003)							
SD01, SD02, SD03, SD04, SD05, SD06, SD07, SD08	**16-Jul-2020**	**27-Jul-2020**	13-Aug-2020	✓	**27-Jul-2020**	13-Aug-2020	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
SD_TS01, SD_TB01, SD_TSC	**16-Jul-2020**	**21-Jul-2020**	30-Jul-2020	✓	**22-Jul-2020**	30-Jul-2020	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP071-SD)							
SD01, SD02, SD03, SD04, SD05, SD06, SD07, SD08, SD_QC01	**16-Jul-2020**	**20-Jul-2020**	30-Jul-2020	✓	**23-Jul-2020**	29-Aug-2020	✓
Soil Glass Jar - Unpreserved (EP080)							
SD_TS01, SD_TB01, SD_TSC	**16-Jul-2020**	**21-Jul-2020**	30-Jul-2020	✓	**22-Jul-2020**	30-Jul-2020	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
SD_TS01, SD_TB01, SD_TSC	**16-Jul-2020**	**21-Jul-2020**	30-Jul-2020	✓	**22-Jul-2020**	30-Jul-2020	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080-SD / EP071-SD: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080-SD)							
SD01, SD02, SD03, SD04, SD05, SD06, SD07, SD08, SD_QC01	**16-Jul-2020**	**20-Jul-2020**	30-Jul-2020	✓	**22-Jul-2020**	30-Jul-2020	✓
Soil Glass Jar - Unpreserved (EP071-SD)							
SD01, SD02, SD03, SD04, SD05, SD06, SD07, SD08, SD_QC01	**16-Jul-2020**	**20-Jul-2020**	30-Jul-2020	✓	**23-Jul-2020**	29-Aug-2020	✓
EP080-SD / EP071-SD: Total Recoverable Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080-SD)							
SD01, SD02, SD03, SD04, SD05, SD06, SD07, SD08, SD_QC01	**16-Jul-2020**	**20-Jul-2020**	30-Jul-2020	✓	**22-Jul-2020**	30-Jul-2020	✓
EP080-SD: BTEXN							
Soil Glass Jar - Unpreserved (EP080-SD)							
SD01, SD02, SD03, SD04, SD05, SD06, SD07, SD08, SD_QC01	**16-Jul-2020**	**20-Jul-2020**	30-Jul-2020	✓	**22-Jul-2020**	30-Jul-2020	✓
EP090: Organotin Compounds							
Soil Glass Jar - Unpreserved (EP090)							
SD01, SD02, SD03, SD04, SD05, SD06, SD07, SD08, SD_QC01	**16-Jul-2020**	**22-Jul-2020**	30-Jul-2020	✓	**23-Jul-2020**	31-Aug-2020	✓
EP131B: Polychlorinated Biphenyls (as Aroclors)							
Soil Glass Jar - Unpreserved (EP131B)							
SD01, SD02, SD03, SD04, SD05, SD06, SD07, SD08, SD_QC01	**16-Jul-2020**	**20-Jul-2020**	30-Jul-2020	✓	**24-Jul-2020**	29-Aug-2020	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP132A: Phenolic Compounds							
Soil Glass Jar - Unpreserved (EP132)							
SD01, SD02, SD03, SD04, SD05, SD06, SD07, SD08, SD_QC01	**16-Jul-2020**	**20-Jul-2020**	30-Jul-2020	✓	**23-Jul-2020**	29-Aug-2020	✓
EP132B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP132)							
SD01, SD02, SD03, SD04, SD05, SD06, SD07, SD08, SD_QC01	**16-Jul-2020**	**20-Jul-2020**	30-Jul-2020	✓	**23-Jul-2020**	29-Aug-2020	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020A-T)							
SD_R01	**16-Jul-2020**	**21-Jul-2020**	12-Jan-2021	✓	**21-Jul-2020**	12-Jan-2021	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T)							
SD_R01	**16-Jul-2020**	**----**	----	----	**20-Jul-2020**	13-Aug-2020	✓
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
SD_R01	**16-Jul-2020**	**21-Jul-2020**	23-Jul-2020	✓	**23-Jul-2020**	30-Aug-2020	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
SD_R01	**16-Jul-2020**	**21-Jul-2020**	23-Jul-2020	✓	**23-Jul-2020**	30-Aug-2020	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
SD_R01	**16-Jul-2020**	**21-Jul-2020**	23-Jul-2020	✓	**23-Jul-2020**	30-Aug-2020	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
SD_R01	**16-Jul-2020**	**21-Jul-2020**	23-Jul-2020	✓	**23-Jul-2020**	30-Aug-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
SD_R01	**16-Jul-2020**	**21-Jul-2020**	30-Jul-2020	✓	**21-Jul-2020**	30-Jul-2020	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
SD_R01	**16-Jul-2020**	**21-Jul-2020**	23-Jul-2020	✓	**23-Jul-2020**	30-Aug-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
SD_R01	**16-Jul-2020**	**21-Jul-2020**	30-Jul-2020	✓	**21-Jul-2020**	30-Jul-2020	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
SD_R01	**16-Jul-2020**	**21-Jul-2020**	30-Jul-2020	✓	**21-Jul-2020**	30-Jul-2020	✓
EP090: Organotin Compounds (Soluble)							
Amber Glass Bottle - Unpreserved (EP090S)							
SD_R01	**16-Jul-2020**	**22-Jul-2020**	23-Jul-2020	✓	**22-Jul-2020**	31-Aug-2020	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Organotin Analysis	EP090	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	1	8	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	1	9	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Organotin Analysis	EP090	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	2	8	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Organotin Analysis	EP090	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Organic Carbon	EP003	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TPH - Semivolatile Fraction	EP071-SD	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Organotin Analysis	EP090	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PCB's (Ultra-trace)	EP131B	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS (Low Level)	EG035T-LL	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals in Sediments by ICPMS	EG020-SD	1	9	**11.11**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Matrix Spikes (MS) - Continued							
TPH - Semivolatile Fraction	EP071-SD	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX in Sediments	EP080-SD	1	9	11.11	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Organotin Compounds (Soluble)	EP090S	0	3	0.00	10.00	×	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	6	0.00	10.00	×	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	10.00	×	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	6	0.00	10.00	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Organotin Compounds (Soluble)	EP090S	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Organotin Compounds (Soluble)	EP090S	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Organotin Compounds (Soluble)	EP090S	0	3	0.00	5.00	×	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	6	0.00	5.00	×	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	4	0.00	5.00	×	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	6	0.00	5.00	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	5.88	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 6.1 and Table 1 (14 day holding time).
Particle Size Analysis (Sieving)	EA150	SOIL	In house: Referenced to AS1289.3.6.1 - 2009. Particle Size Analysis by Sieving
Total Metals in Sediments by ICPMS	EG020-SD	SOIL	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector. Analyte list and LORs per NODG.
Total Mercury by FIMS (Low Level)	EG035T-LL	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Organic Carbon	EP003	SOIL	In house C-IR17. Dried and pulverised sample is reacted with acid to remove inorganic Carbonates, then combusted in a furnace in the presence of strong oxidants / catalysts. The evolved (Organic) Carbon (as CO2) is automatically measured by infra-red detector.
TPH - Semivolatile Fraction	EP071-SD	SOIL	In house: Referenced to USEPA SW 846 - 8270E. Extracts are analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260D. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.
TRH Volatiles/BTEX in Sediments	EP080-SD	SOIL	In house: Referenced to USEPA SW 846 - 8260D Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve.
Organotin Analysis	EP090	SOIL	In house: Referenced to USEPA SW 846 - 8270E Prepared sample extracts are analysed by GC/MS coupled with high volume injection, and quanitified against an established calibration curve.
PCB's (Ultra-trace)	EP131B	SOIL	In house: Referenced to USEPA Method 3640 (GPC cleanup),3620 (Florisil), 8081/8082 (GC/µECD/µECD) This technique is compliant with NEPM (2013) Schedule B(3)
Semivolatile Compounds by GCMS(SIM - Ultra-trace)	EP132	SOIL	In house: Referenced to USEPA 8270E GCMS Capiliary column, SIM mode.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270E Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270E Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260D Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Organotin Compounds (Soluble)	EP090S	WATER	In house: Referenced to USEPA SW 846 - 8270E Sample extracts are analysed by GC/MS coupled with high volume injection and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Dry and Pulverise (up to 100g)	GEO30	SOIL	#
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids/ Acetylation	ORG17A-AC	SOIL	In house: Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to 1 mL with exchange into cyclohexane. Phenolic compounds are reacted with acetic anhydride to yield phenyl acetates suitable for ultra-trace analysis.
Tumbler Extraction of Solids/ Sample Cleanup	ORG17A-UTP	SOIL	In house: Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. Samples are extracted, concentrated (by KD) and exchanged into an appropriate solvent for GPC and florisil cleanup as required.
Tumbler Extraction of Solids for LVI (Non-concentrating)	ORG17D	SOIL	In house: 10g of sample, Na2SO4 and surrogate are extracted with 50mL 1:1 DCM/Acetone by end over end tumbling. An aliquot is concentrated by nitrogen blowdown to a reduced volume for analysis if required.

Preparation Methods	Method	Matrix	Method Descriptions
Organotin Sample Preparation	ORG35	SOIL	In house: 20g sample is spiked with surrogate and leached in a methanol:acetic acid:UHP water mix and vacuum filtered. Reagents and solvents are added to the sample and the mixture tumbled. The butyltin compounds are simultaneously derivatised and extracted. The extract is further extracted with petroleum ether. The resultant extracts are combined and concentrated for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.
Organotin Sample Preparation	ORG34	WATER	In house. A specified volume of sample is spiked with surrogate, acidified and vacuum filtered. Reagents and solvent are added and the mixture tumbled. The butyltin compounds is derivitisated, extracted and the subtitution reaction completed. The extract is transferred to a separatory funnel and further extracted two times with petroleum ether. The resultant extracts are combined and concentrated for analysis.

Certificate of Analysis

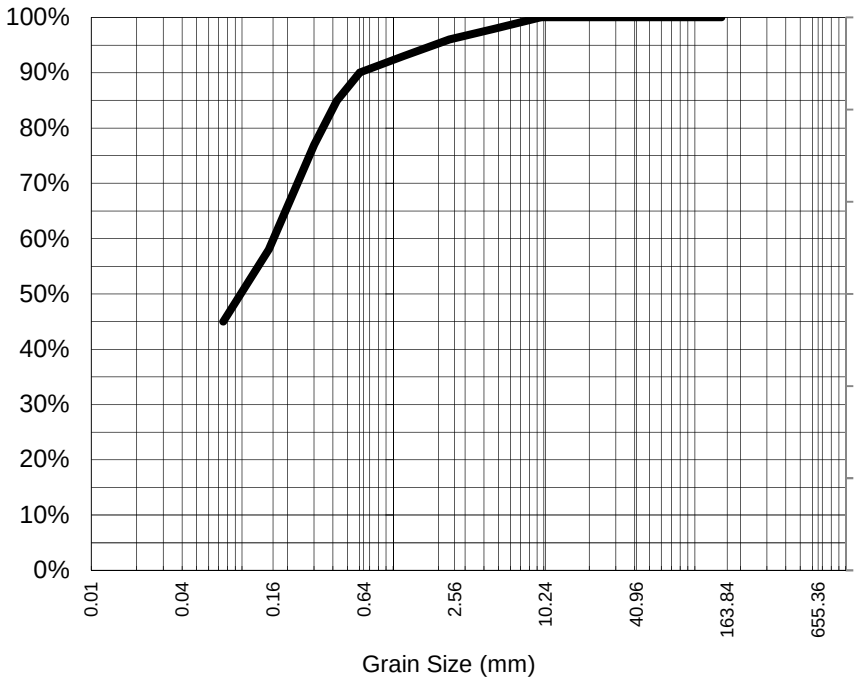
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Mayfield West, NSW 2304
pH 02 4014 2500
fax 02 4968 0349
samples.newcastle@alsenviro.com

ALS Environmental

Newcastle, NSW

CLIENT:	KYLE MCLEAN	**DATE REPORTED:**	28-Jul-2020
COMPANY:	JACOBS GROUP (AUSTRALIA) PTY LTD	**DATE RECEIVED:**	16-Jul-2020
ADDRESS:	177 Pacific Highway North Sydney	**REPORT NO:**	ES2024630-001 / PSD
PROJECT:	RHODES PLANNED PRECINCT \u2013 SEDIMENT	**SAMPLE ID:**	SD01

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	98%
2.36	96%
1.18	93%
0.600	90%
0.425	85%
0.300	77%
0.150	58%
0.075	45%

Analysis Notes

Samples analysed as received.

Median Particle Size (mm)*	0.104

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 27-Jul-20

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: SAND, FINES, SHELL

Test Method: AS1289.3.6.2/AS1289.3.6.3

NATA Accreditation: 825 Site: Newcastle
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Aleksandar Vujkovic
Laboratory Supervisor
Authorised Signatory

Certificate of Analysis

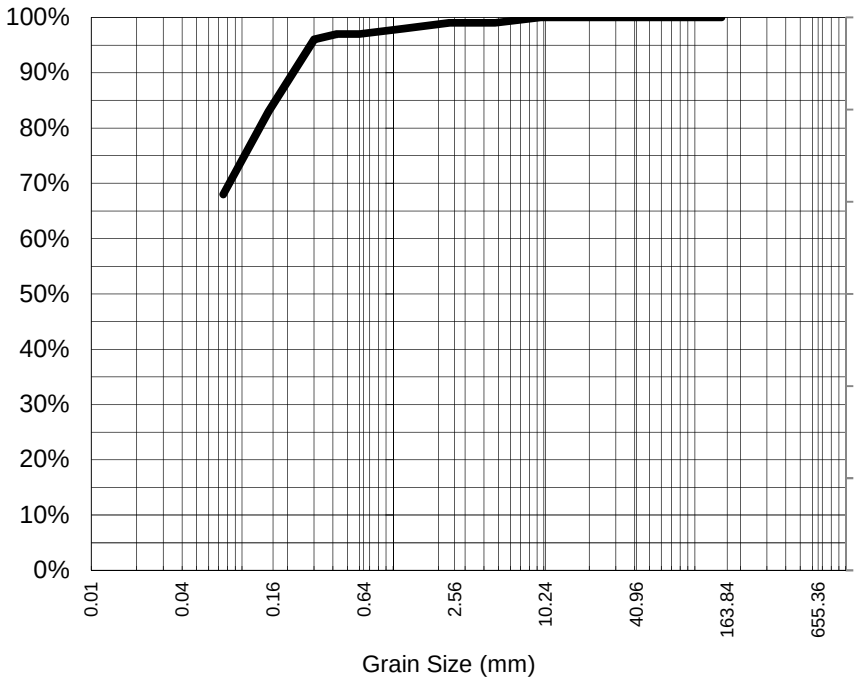
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CLIENT:	KYLE MCLEAN	**DATE REPORTED:**	28-Jul-2020
COMPANY:	JACOBS GROUP (AUSTRALIA) PTY LTD	**DATE RECEIVED:**	16-Jul-2020
ADDRESS:	177 Pacific Highway North Sydney	**REPORT NO:**	ES2024630-003 / PSD
PROJECT:	RHODES PLANNED PRECINCT \u2013 SEDIMENT	**SAMPLE ID:**	SD03

Particle Size Distribution



Particle Size (mm)	% Passing
9.50	100%
4.75	99%
2.36	99%
1.18	98%
0.600	97%
0.425	97%
0.300	96%
0.150	83%
0.075	68%

Analysis Notes

Samples analysed as received.

Median Particle Size (mm)*	<0.075

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 27-Jul-20

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: SAND, FINES, SHELL

Test Method: AS1289.3.6.2/AS1289.3.6.3

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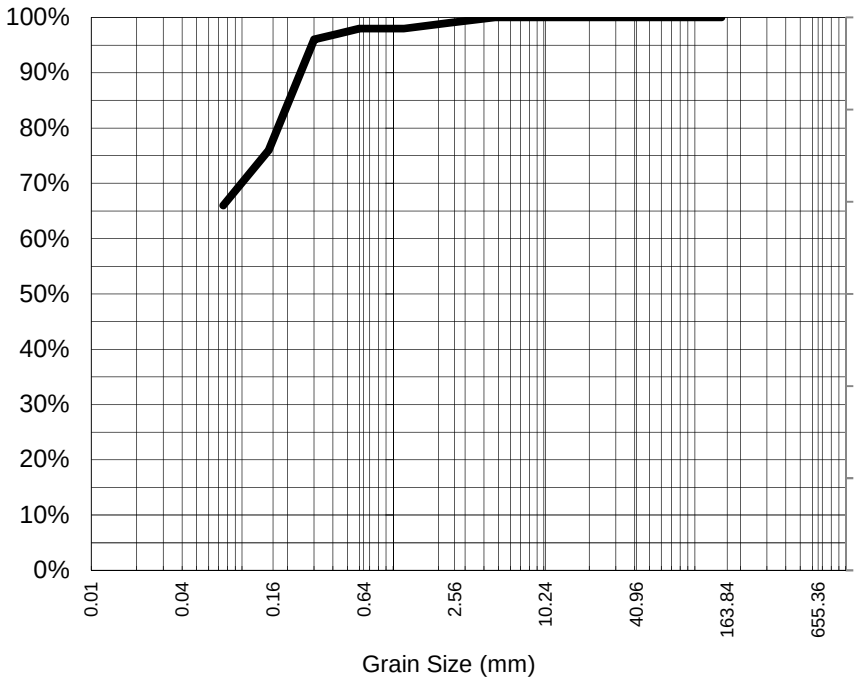
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COMPANY:	JACOBS GROUP (AUSTRALIA) PTY LTD	**DATE RECEIVED:**	16-Jul-2020
ADDRESS:	177 Pacific Highway North Sydney	**REPORT NO:**	ES2024630-004 / PSD
PROJECT:	RHODES PLANNED PRECINCT \u2013 SEDIMENT	**SAMPLE ID:**	SD04

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	99%
1.18	98%
0.600	98%
0.425	97%
0.300	96%
0.150	76%
0.075	66%

Analysis Notes

Samples analysed as received.

Median Particle Size (mm)*	<0.075

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 27-Jul-20

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: SAND, FINES, SHELL

Test Method: AS1289.3.6.2/AS1289.3.6.3

NATA Accreditation: 825 Site: Newcastle
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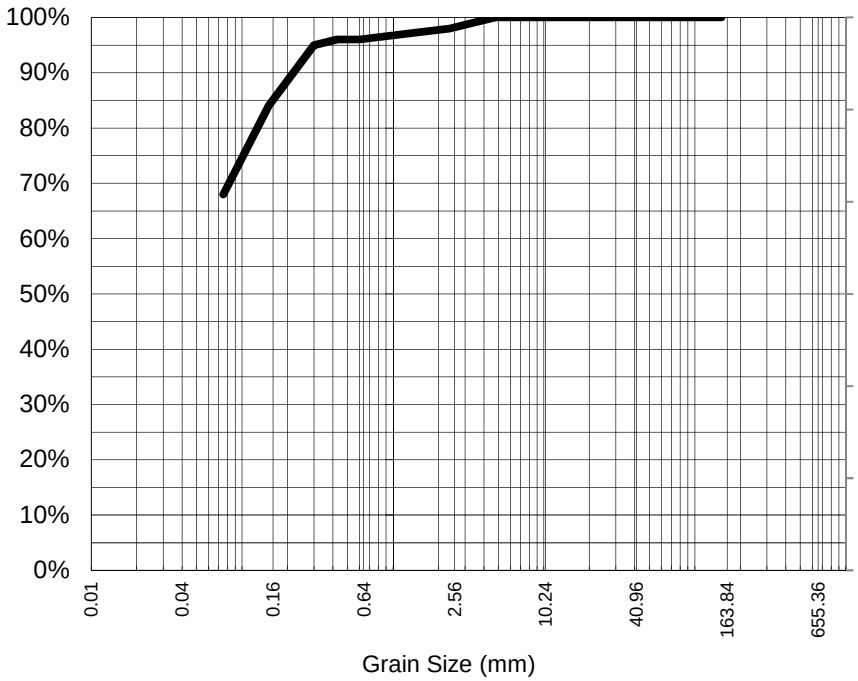
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CLIENT:	KYLE MCLEAN	**DATE REPORTED:**	28-Jul-2020
COMPANY:	JACOBS GROUP (AUSTRALIA) PTY LTD	**DATE RECEIVED:**	16-Jul-2020
ADDRESS:	177 Pacific Highway North Sydney	**REPORT NO:**	ES2024630-005 / PSD
PROJECT:	RHODES PLANNED PRECINCT \u2013 SEDIMENT	**SAMPLE ID:**	SD05

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	98%
1.18	97%
0.600	96%
0.425	96%
0.300	95%
0.150	84%
0.075	68%

Analysis Notes

Samples analysed as received.

Median Particle Size (mm)*	<0.075

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 27-Jul-20

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: SAND, FINES, SHELL

Test Method: AS1289.3.6.2/AS1289.3.6.3

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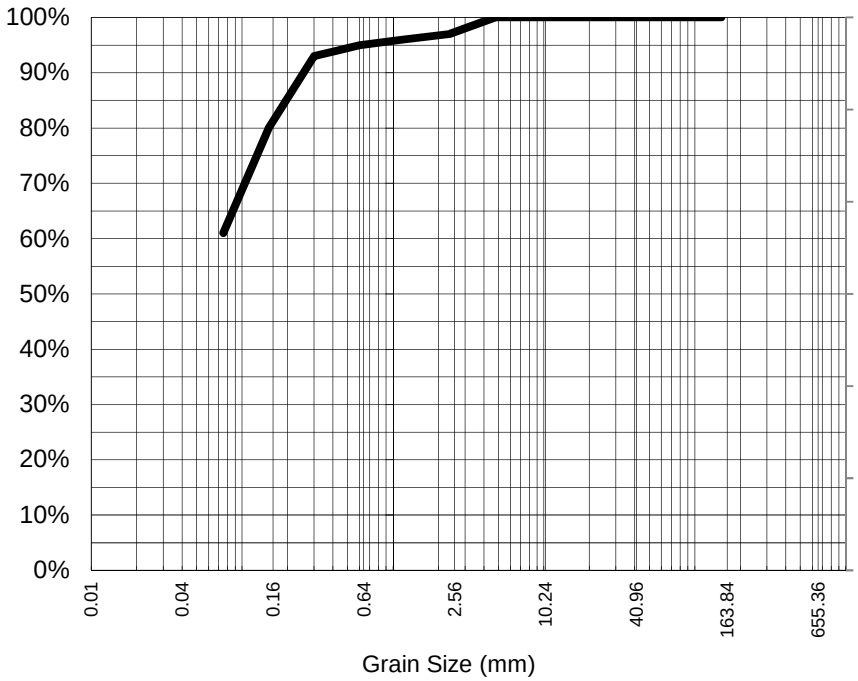
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CLIENT:	KYLE MCLEAN	**DATE REPORTED:**	28-Jul-2020
COMPANY:	JACOBS GROUP (AUSTRALIA) PTY LTD	**DATE RECEIVED:**	16-Jul-2020
ADDRESS:	177 Pacific Highway North Sydney	**REPORT NO:**	ES2024630-006 / PSD
PROJECT:	RHODES PLANNED PRECINCT \u2013 SEDIMENT	**SAMPLE ID:**	SD06

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	97%
1.18	96%
0.600	95%
0.425	94%
0.300	93%
0.150	80%
0.075	61%

Analysis Notes

Samples analysed as received.

Median Particle Size (mm)*	<0.075

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 27-Jul-20

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: SAND, FINES, SHELL

Test Method: AS1289.3.6.2/AS1289.3.6.3

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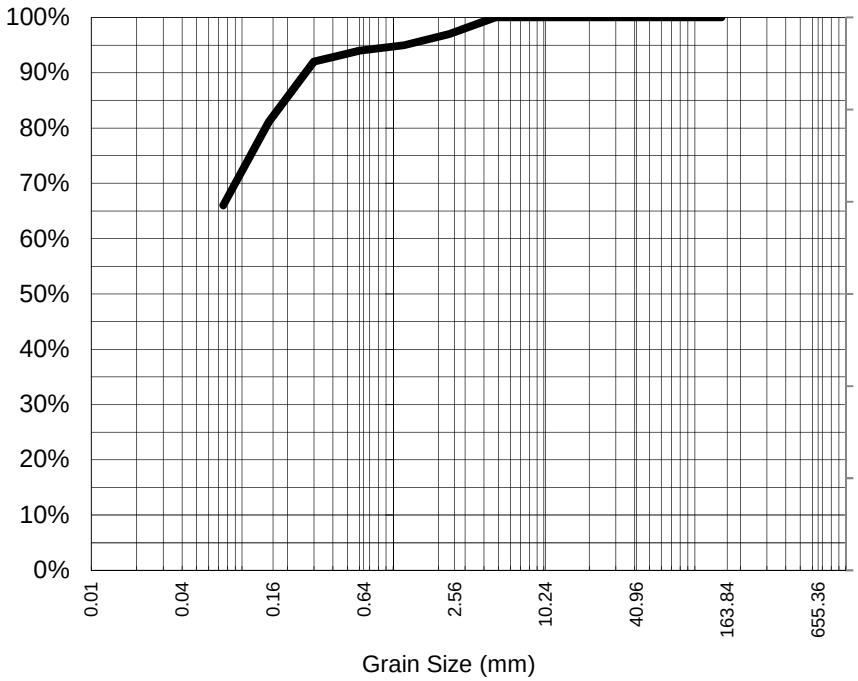
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Newcastle, NSW

CLIENT:	KYLE MCLEAN	**DATE REPORTED:**	28-Jul-2020
COMPANY:	JACOBS GROUP (AUSTRALIA) PTY LTD	**DATE RECEIVED:**	16-Jul-2020
ADDRESS:	177 Pacific Highway North Sydney	**REPORT NO:**	ES2024630-008 / PSD
PROJECT:	RHODES PLANNED PRECINCT \u2013 SEDIMENT	**SAMPLE ID:**	SD08

Particle Size Distribution



Particle Size (mm)	% Passing
4.75	100%
2.36	97%
1.18	95%
0.600	94%
0.425	93%
0.300	92%
0.150	81%
0.075	66%

Analysis Notes

Samples analysed as received.

Median Particle Size (mm)*	<0.075

Median Particle Size is not covered under the current scope of ALS's NATA accreditation.

Sample Comments:

Analysed: 27-Jul-20

Loss on Pretreatment NA

Limit of Reporting: 1%

Sample Description: SAND, FINES, SHELL

Test Method: AS1289.3.6.2/AS1289.3.6.3

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Aleksandar Vujkovic
Laboratory Supervisor
Authorised Signatory

CHAIN OF CUSTODY

HT

CLIENT: JACOBS	TURNAROUND REQUIREMENTS : ☑ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)	
OFFICE: Level 7, 177 Pacific Highway, North Sydney	(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact?	Yes No N/A
PROJECT: IS335800	QUOTE NO.:	Free of Frozen Ice bricks present upon receipt?	Yes No N/A
ORDER NUMBER:	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: 2.6 °C	
PROJECT MANAGER: K. Mclean CONTACT PH: 0402 536 796	OF: 1 2 3 4 5 6 7	Other comment:	

SAMPLER: Kyle McLean	SAMPLER MOBILE: 0402 536 796	RELINQUISHED BY:	RECEIVED BY:
COC emailed? (YES / (NO)	EDD FORMAT (or default):	K. MCLEAN	SO884 Lho 1 Aug
Email Reports to (will default to PM if no other addresses are listed): Kyle.Mclean@jacobs.com		DATE/TIME: 25-8-20	DATE/TIME: 25/8/20 1500
Email Invoice to (will default to PM if no other addresses are listed):		RELINQUISHED BY:	RECEIVED BY:
		DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).					Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	W-27	EP074	W-18	EP3008	HOLD	
1	MW04	25/8/20	W	Nitric + Sulphuric	6	X	X				
2	MW07				6	X	X				
3	MW09				6	X	X				
4	QC101_200825				6	X	X				
	QC201_200825				6	X	X				Send to Eurofins
5	QC301_200825				5	X	X				Rinsate.
6	QC501_200825				1			X			Trip blank
7	QC601_200825	25/8/20	W	Nitric + Sulphuric	1			X			Trip Spike
				TOTAL							

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Submission / Forwarding Details
Lab / Analysis:
Organised By / Date: Eurofins > QC201
Relinquished By / Date:
Connote / Courier:
WO No:
Attach By PO / Internal Sheet:

Environmental Division
Sydney
Work Order Reference
ES2029842

Telephone : +61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2029842**	Page	: 1 of 9
Amendment	: **1**		
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: KYLE MCLEAN	Contact	: Tyler Anderson
Address	: 177 Pacific Highway North Sydney 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 9928 2100	Telephone	: +61 2 8784 8555
Project	: IS335800	Date Samples Received	: 25-Aug-2020 15:00
Order number	: 1531	Date Analysis Commenced	: 27-Aug-2020
C-O-C number	: ----	Issue Date	: 03-Sep-2020 15:43
Sampler	: KYLE McLEAN		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 7		
No. of samples analysed	: 7		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EG020: Some samples were diluted and rerun due to matrix interference and LOR's have been raised accordingly. (High Total Dissolved Solids)
- EP080: Amendment (03/09/2020): This report has been amended following changes to the analytical data reported. The quality system is being utilised to resolve this issue. The specific data affected includes sample MW07 and QC501 results.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW04	MW07	MW09	QC101_200825	QC301_200825
				Client sampling date / time	25-Aug-2020 00:00	25-Aug-2020 00:00	25-Aug-2020 00:00	25-Aug-2020 00:00	25-Aug-2020 00:00
Compound	CAS Number	LOR	Unit		ES2029842-001	ES2029842-002	ES2029842-003	ES2029842-004	ES2029842-005
					Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.010	<0.010	<0.010	<0.010	<0.001
Cadmium	7440-43-9	0.0001	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0001
Chromium	7440-47-3	0.001	mg/L		<0.010	<0.010	<0.010	<0.010	<0.001
Copper	7440-50-8	0.001	mg/L		<0.010	<0.010	<0.010	<0.010	<0.001
Lead	7439-92-1	0.001	mg/L		<0.010	<0.010	<0.010	<0.010	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.010	<0.010	<0.010	<0.010	<0.001
Zinc	7440-66-6	0.005	mg/L		<0.050	<0.050	<0.050	<0.050	<0.005
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EP074A: Monocyclic Aromatic Hydrocarbons									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
Styrene	100-42-5	5	µg/L		<5	<5	<5	<5	<5
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2
Isopropylbenzene	98-82-8	5	µg/L		<5	<5	<5	<5	<5
n-Propylbenzene	103-65-1	5	µg/L		<5	<5	<5	<5	<5
1.3.5-Trimethylbenzene	108-67-8	5	µg/L		<5	<5	<5	<5	<5
sec-Butylbenzene	135-98-8	5	µg/L		<5	<5	<5	<5	<5
1.2.4-Trimethylbenzene	95-63-6	5	µg/L		<5	<5	<5	<5	<5
tert-Butylbenzene	98-06-6	5	µg/L		<5	<5	<5	<5	<5
p-Isopropyltoluene	99-87-6	5	µg/L		<5	<5	<5	<5	<5
n-Butylbenzene	104-51-8	5	µg/L		<5	<5	<5	<5	<5
EP074B: Oxygenated Compounds									
Vinyl Acetate	108-05-4	50	µg/L		<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	50	µg/L		<50	<50	<50	<50	<50
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L		<50	<50	<50	<50	<50
2-Hexanone (MBK)	591-78-6	50	µg/L		<50	<50	<50	<50	<50
EP074C: Sulfonated Compounds									
Carbon disulfide	75-15-0	5	µg/L		<5	<5	<5	<5	<5
EP074D: Fumigants									
2.2-Dichloropropane	594-20-7	5	µg/L		<5	<5	<5	<5	<5
1.2-Dichloropropane	78-87-5	5	µg/L		<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW04	MW07	MW09	QC101_200825	QC301_200825
				Client sampling date / time	25-Aug-2020 00:00	25-Aug-2020 00:00	25-Aug-2020 00:00	25-Aug-2020 00:00	25-Aug-2020 00:00
Compound	CAS Number	LOR	Unit		ES2029842-001	ES2029842-002	ES2029842-003	ES2029842-004	ES2029842-005
					Result	Result	Result	Result	Result
EP074D: Fumigants - Continued									
cis-1.3-Dichloropropylene	10061-01-5	5	µg/L		<5	<5	<5	<5	<5
trans-1.3-Dichloropropylene	10061-02-6	5	µg/L		<5	<5	<5	<5	<5
1.2-Dibromoethane (EDB)	106-93-4	5	µg/L		<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds									
Dichlorodifluoromethane	75-71-8	50	µg/L		<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L		<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L		<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L		<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L		<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L		<50	<50	<50	<50	<50
1.1-Dichloroethene	75-35-4	5	µg/L		<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L		<5	<5	<5	<5	<5
trans-1.2-Dichloroethene	156-60-5	5	µg/L		<5	<5	<5	<5	<5
1.1-Dichloroethane	75-34-3	5	µg/L		<5	<5	<5	<5	<5
cis-1.2-Dichloroethene	156-59-2	5	µg/L		<5	<5	<5	<5	<5
1.1.1-Trichloroethane	71-55-6	5	µg/L		<5	<5	<5	<5	<5
1.1-Dichloropropylene	563-58-6	5	µg/L		<5	<5	<5	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L		<5	<5	<5	<5	<5
1.2-Dichloroethane	107-06-2	5	µg/L		<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L		<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L		<5	<5	<5	<5	<5
1.1.2-Trichloroethane	79-00-5	5	µg/L		<5	<5	<5	<5	<5
1.3-Dichloropropane	142-28-9	5	µg/L		<5	<5	<5	<5	<5
Tetrachloroethene	127-18-4	5	µg/L		<5	<5	<5	<5	<5
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L		<5	<5	<5	<5	<5
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L		<5	<5	<5	<5	<5
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L		<5	<5	<5	<5	<5
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L		<5	<5	<5	<5	<5
1.2.3-Trichloropropane	96-18-4	5	µg/L		<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L		<5	<5	<5	<5	<5
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L		<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L		<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds									
Chlorobenzene	108-90-7	5	µg/L		<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW04	MW07	MW09	QC101_200825	QC301_200825
				Client sampling date / time	25-Aug-2020 00:00	25-Aug-2020 00:00	25-Aug-2020 00:00	25-Aug-2020 00:00	25-Aug-2020 00:00
Compound	CAS Number	LOR	Unit		ES2029842-001	ES2029842-002	ES2029842-003	ES2029842-004	ES2029842-005
					Result	Result	Result	Result	Result
EP074F: Halogenated Aromatic Compounds - Continued									
Bromobenzene	108-86-1	5	µg/L		<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L		<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L		<5	<5	<5	<5	<5
1.3-Dichlorobenzene	541-73-1	5	µg/L		<5	<5	<5	<5	<5
1.4-Dichlorobenzene	106-46-7	5	µg/L		<5	<5	<5	<5	<5
1.2-Dichlorobenzene	95-50-1	5	µg/L		<5	<5	<5	<5	<5
1.2.4-Trichlorobenzene	120-82-1	5	µg/L		<5	<5	<5	<5	<5
1.2.3-Trichlorobenzene	87-61-6	5	µg/L		<5	<5	<5	<5	<5
EP074G: Trihalomethanes									
Chloroform	67-66-3	5	µg/L		<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	5	µg/L		<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L		<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L		<5	<5	<5	<5	<5
EP074H: Naphthalene									
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2-Chlorophenol	95-57-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2-Methylphenol	95-48-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
3- & 4-Methylphenol	1319-77-3	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	<2.0
2-Nitrophenol	88-75-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.4-Dimethylphenol	105-67-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.4-Dichlorophenol	120-83-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.6-Dichlorophenol	87-65-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol	87-86-5	2.0	µg/L		<2.0	<2.0	<2.0	<2.0	<2.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW04	MW07	MW09	QC101_200825	QC301_200825
				Client sampling date / time	25-Aug-2020 00:00	25-Aug-2020 00:00	25-Aug-2020 00:00	25-Aug-2020 00:00	25-Aug-2020 00:00
Compound	CAS Number	LOR	Unit		ES2029842-001	ES2029842-002	ES2029842-003	ES2029842-004	ES2029842-005
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Anthracene	120-12-7	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	<100
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	<2

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	MW04	MW07	MW09	QC101_200825	QC301_200825
				Client sampling date / time	25-Aug-2020 00:00	25-Aug-2020 00:00	25-Aug-2020 00:00	25-Aug-2020 00:00	25-Aug-2020 00:00
Compound	CAS Number	LOR	Unit		ES2029842-001	ES2029842-002	ES2029842-003	ES2029842-004	ES2029842-005
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
^ Total Xylenes	----	2	µg/L		<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP074S: VOC Surrogates									
1.2-Dichloroethane-D4	17060-07-0	5	%		89.4	101	130	89.2	97.3
Toluene-D8	2037-26-5	5	%		112	108	109	102	102
4-Bromofluorobenzene	460-00-4	5	%		103	102	103	98.9	96.6
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		28.8	28.6	23.1	29.5	27.4
2-Chlorophenol-D4	93951-73-6	1.0	%		50.2	56.3	47.0	60.1	59.9
2.4.6-Tribromophenol	118-79-6	1.0	%		43.9	40.3	39.4	43.8	44.8
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		57.4	71.4	58.6	72.2	71.4
Anthracene-d10	1719-06-8	1.0	%		68.1	76.0	68.4	82.0	80.3
4-Terphenyl-d14	1718-51-0	1.0	%		70.8	73.6	70.8	80.6	83.7
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		135	94.7	136	135	90.7
Toluene-D8	2037-26-5	2	%		119	112	116	109	106
4-Bromofluorobenzene	460-00-4	2	%		98.0	96.2	97.6	94.0	91.0

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	QC501_200825 TRIP BLANK	QC601_200825 TRIP SPIKE	----	----	----
				Client sampling date / time	25-Aug-2020 00:00	25-Aug-2020 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2029842-006	ES2029842-007	--------	--------	--------
					Result	Result	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	**19**	----	----	----
Toluene	108-88-3	2	µg/L		<2	**16**	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	**15**	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	**15**	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	**16**	----	----	----
^ **Total Xylenes**	----	2	µg/L		<2	**31**	----	----	----
^ **Sum of BTEX**	----	1	µg/L		<1	**81**	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	**18**	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**92.9**	**91.9**	----	----	----
Toluene-D8	2037-26-5	2	%		**111**	**110**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**95.0**	**95.5**	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	78	133
Toluene-D8	2037-26-5	79	129
4-Bromofluorobenzene	460-00-4	81	124
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2029842**	Page	: 1 of 14
Amendment	: **1**		
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: KYLE MCLEAN	Contact	: Tyler Anderson
Address	: 177 Pacific Highway North Sydney 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 9928 2100	Telephone	: +61 2 8784 8555
Project	: IS335800	Date Samples Received	: 25-Aug-2020
Order number	: 1531	Date Analysis Commenced	: 27-Aug-2020
C-O-C number	: ----	Issue Date	: 03-Sep-2020
Sampler	: KYLE McLEAN		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 7		
No. of samples analysed	: 7		

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

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

This Quality Control Report contains the following information:

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

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

Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG020F: Dissolved Metals by ICP-MS (QC Lot: 3222513)									
ES2029254-004	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
ES2029945-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.009	0.008	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.006	21.9	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 3222510)									
EP2008854-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES2029820-005	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3222859)									
ES2029820-001	Anonymous	EP074: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP074: Toluene	108-88-3	2	µg/L	2	<2	0.00	No Limit
		EP074: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP074: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3222859) - continued									
ES2029820-001	Anonymous	EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.00	No Limit
ES2029842-005	QC301_200825	EP074: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP074: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP074: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP074: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.00	No Limit
EP074B: Oxygenated Compounds (QC Lot: 3222859)									
ES2029820-001	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.00	No Limit
ES2029842-005	QC301_200825	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.00	No Limit
EP074C: Sulfonated Compounds (QC Lot: 3222859)									
ES2029820-001	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.00	No Limit
ES2029842-005	QC301_200825	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.00	No Limit
EP074D: Fumigants (QC Lot: 3222859)									
ES2029820-001	Anonymous	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP074D: Fumigants (QC Lot: 3222859) - continued									
ES2029820-001	Anonymous	EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.00	No Limit
ES2029842-005	QC301_200825	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3222859)									
ES2029820-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.00	No Limit
ES2029842-005	QC301_200825	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3222859) - continued									
ES2029842-005	QC301_200825	EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 3222859)									
ES2029820-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.00	No Limit
ES2029842-005	QC301_200825	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP074F: Halogenated Aromatic Compounds (QC Lot: 3222859) - continued									
ES2029842-005	QC301_200825	EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 3222859)									
ES2029820-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.00	No Limit
ES2029842-005	QC301_200825	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 3222859)									
ES2029820-001	Anonymous	EP074: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
ES2029842-005	QC301_200825	EP074: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3220409)									
ES2029842-001	MW04	EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	<2.0	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3220409)									
ES2029842-001	MW04	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	<1.0	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3220409) - continued									
ES2029842-001	MW04	EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	<1.0	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3220410)									
ES2029842-004	QC101_200825	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
ES2029842-001	MW04	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3222858)									
ES2029820-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	20	<20	0.00	No Limit
ES2029842-005	QC301_200825	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3220410)									
ES2029842-004	QC101_200825	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
ES2029842-001	MW04	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3222858)									
ES2029820-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	30	<20	0.00	No Limit
ES2029842-005	QC301_200825	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 3222858)									
ES2029820-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
ES2029842-005	QC301_200825	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080: BTEXN (QC Lot: 3222858) - continued									
ES2029842-005	QC301_200825	EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3222513)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	93.6	85.0	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	91.6	84.0	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	88.0	85.0	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	90.8	81.0	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	88.8	83.0	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	90.6	82.0	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	88.2	81.0	117
EG035F: Dissolved Mercury by FIMS (QCLot: 3222510)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.7	83.0	105
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3222859)								
EP074: Benzene	71-43-2	1	µg/L	<1	10 µg/L	100	77.0	119
EP074: Toluene	108-88-3	2	µg/L	<2	10 µg/L	102	69.0	129
EP074: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	102	76.0	118
EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	20 µg/L	101	77.0	119
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	98.6	73.0	119
EP074: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	101	79.0	117
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	102	76.0	118
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	99.5	69.0	119
EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	98.5	74.0	116
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	101	73.0	119
EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	99.4	74.0	116
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	101	72.0	116
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	99.3	71.0	119
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	101	65.0	123
EP074B: Oxygenated Compounds (QCLot: 3222859)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	94.3	61.4	134
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	96.5	73.6	130
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	100	66.0	132
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	95.9	65.0	137
EP074C: Sulfonated Compounds (QCLot: 3222859)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	107	72.8	127
EP074D: Fumigants (QCLot: 3222859)								
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	99.7	68.0	122

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074D: Fumigants (QCLot: 3222859) - continued								
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	102	76.0	118
EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	100	62.0	120
EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	98.7	60.0	114
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	102	69.0	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 3222859)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	95.2	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	90.3	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	104	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	93.5	56.0	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	91.1	61.0	139
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	91.5	69.0	131
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	96.8	70.0	124
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	90.6	70.2	128
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	98.4	74.0	118
EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	99.4	74.0	120
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	100	77.0	119
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	99.7	67.0	119
EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	101	73.0	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	97.6	62.0	120
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	102	73.0	123
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	100	76.0	118
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	101	73.0	119
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	103	72.0	126
EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	102	71.0	129
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	100	72.0	124
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	101	66.0	114
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	95.9	60.0	120
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	102	70.6	128
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	102	70.0	124
EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	105	74.0	126
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	101	71.8	126
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	99.0	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	104	58.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 3222859)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	103	79.0	117
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	102	76.0	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	101	73.0	119
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	100	73.0	119
EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	102	75.0	117

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074F: Halogenated Aromatic Compounds (QCLot: 3222859) - continued								
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	102	74.0	118
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	103	75.0	117
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	102	61.0	125
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	102	67.0	123
EP074G: Trihalomethanes (QCLot: 3222859)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	101	72.0	120
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	102	64.0	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	99.6	65.0	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	96.2	73.5	126
EP074H: Naphthalene (QCLot: 3222859)								
EP074: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	103	72.0	122
EP075(SIM)A: Phenolic Compounds (QCLot: 3220409)								
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	5 µg/L	43.2	24.5	61.9
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	5 µg/L	72.4	52.0	90.0
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	5 µg/L	69.2	51.0	91.0
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	10 µg/L	67.2	44.0	88.0
EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	5 µg/L	71.5	48.0	100
EP075(SIM): 2.4-Dimethylphenol	105-67-9	1	µg/L	<1.0	5 µg/L	71.6	49.0	99.0
EP075(SIM): 2.4-Dichlorophenol	120-83-2	1	µg/L	<1.0	5 µg/L	69.1	53.0	105
EP075(SIM): 2.6-Dichlorophenol	87-65-0	1	µg/L	<1.0	5 µg/L	77.0	57.0	105
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	5 µg/L	70.0	53.0	99.0
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1	µg/L	<1.0	5 µg/L	70.4	50.0	106
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1	µg/L	<1.0	5 µg/L	67.0	51.0	105
EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	10 µg/L	33.3	10.0	95.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3220409)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	75.5	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	87.1	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	94.8	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	92.9	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	82.3	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	82.7	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	90.3	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	92.1	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	83.8	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	80.6	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	76.7	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	81.1	63.0	115

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3220409) - continued								
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	81.1	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	84.9	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	84.8	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	85.0	59.1	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3220410)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	67.5	55.8	112
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	86.8	71.6	113
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	84.6	56.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3222858)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	86.8	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3220410)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	71.2	57.9	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	89.6	62.5	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	70.8	61.5	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3222858)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	89.6	75.0	127
EP080: BTEXN (QCLot: 3222858)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	108	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	95.4	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	94.4	70.0	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	91.4	69.0	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	96.5	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	101	70.0	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3222513)							
ES2029820-005	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	88.5	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	92.3	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	89.2	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	90.1	70.0	130
		EG020A-F: Lead	7439-92-1	1 mg/L	96.6	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3222513) - continued							
ES2029820-005	Anonymous	EG020A-F: Nickel	7440-02-0	1 mg/L	89.8	70.0	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	92.2	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3222510)							
EP2008854-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	81.0	70.0	130
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3222859)							
ES2029820-001	Anonymous	EP074: Benzene	71-43-2	25 µg/L	118	70.0	130
		EP074: Toluene	108-88-3	25 µg/L	99.6	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3222859)							
ES2029820-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	110	70.0	130
		EP074: Trichloroethene	79-01-6	25 µg/L	115	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 3222859)							
ES2029820-001	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	105	70.0	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3220409)							
ES2029842-003	MW09	EP075(SIM): Phenol	108-95-2	20 µg/L	32.5	20.0	130
		EP075(SIM): 2-Chlorophenol	95-57-8	20 µg/L	79.4	60.0	130
		EP075(SIM): 2-Nitrophenol	88-75-5	20 µg/L	69.5	60.0	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	20 µg/L	81.2	70.0	130
		EP075(SIM): Pentachlorophenol	87-86-5	20 µg/L	57.3	20.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3220409)							
ES2029842-003	MW09	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	85.4	70.0	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	78.5	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3220410)							
ES2029842-003	MW09	EP071: C10 - C14 Fraction	----	200 µg/L	96.7	70.0	130
		EP071: C15 - C28 Fraction	----	250 µg/L	127	71.0	130
		EP071: C29 - C36 Fraction	----	200 µg/L	107	67.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3222858)							
ES2029820-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	102	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3220410)							
ES2029842-003	MW09	EP071: >C10 - C16 Fraction	----	250 µg/L	95.4	70.0	130
		EP071: >C16 - C34 Fraction	----	350 µg/L	118	75.0	130
		EP071: >C34 - C40 Fraction	----	150 µg/L	99.0	67.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3222858)							
ES2029820-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	94.2	70.0	130
EP080: BTEXN (QCLot: 3222858)							
ES2029820-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	90.4	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080: BTEXN (QCLot: 3222858) - continued							
ES2029820-001	Anonymous	EP080: Toluene	108-88-3	25 µg/L	74.9	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	89.6	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	86.8	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	89.0	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	87.6	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2029842**	Page	: 1 of 6
Amendment	: **1**		
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: KYLE MCLEAN	Telephone	: +61 2 8784 8555
Project	: IS335800	Date Samples Received	: 25-Aug-2020
Site	: ----	Issue Date	: 03-Sep-2020
Sampler	: KYLE McLEAN	No. of samples received	: 7
Order number	: 1531	No. of samples analysed	: 7

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
MW04, MW07, MW09, QC101_200825, QC301_200825	**25-Aug-2020**	**----**	----	----	**27-Aug-2020**	21-Feb-2021	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
MW04, MW07, MW09, QC101_200825, QC301_200825	**25-Aug-2020**	**----**	----	----	**28-Aug-2020**	22-Sep-2020	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP074)							
MW04, MW07, MW09, QC101_200825, QC301_200825	**25-Aug-2020**	**31-Aug-2020**	08-Sep-2020	✓	**31-Aug-2020**	08-Sep-2020	✓
EP074B: Oxygenated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
MW04, MW07, MW09, QC101_200825, QC301_200825	**25-Aug-2020**	**31-Aug-2020**	08-Sep-2020	✓	**31-Aug-2020**	08-Sep-2020	✓
EP074C: Sulfonated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
MW04, MW07, MW09, QC101_200825, QC301_200825	**25-Aug-2020**	**31-Aug-2020**	08-Sep-2020	✓	**31-Aug-2020**	08-Sep-2020	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074)							
MW04, MW07, MW09, QC101_200825, QC301_200825	**25-Aug-2020**	**31-Aug-2020**	08-Sep-2020	✓	**31-Aug-2020**	08-Sep-2020	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
MW04, MW07, MW09, QC101_200825, QC301_200825	**25-Aug-2020**	**31-Aug-2020**	08-Sep-2020	✓	**31-Aug-2020**	08-Sep-2020	✓
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
MW04, MW07, MW09, QC101_200825, QC301_200825	**25-Aug-2020**	**31-Aug-2020**	08-Sep-2020	✓	**31-Aug-2020**	08-Sep-2020	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074)							
MW04, MW07, MW09, QC101_200825, QC301_200825	**25-Aug-2020**	**31-Aug-2020**	08-Sep-2020	✓	**31-Aug-2020**	08-Sep-2020	✓
EP074H: Naphthalene							
Amber VOC Vial - Sulfuric Acid (EP074)							
MW04, MW07, MW09, QC101_200825, QC301_200825	**25-Aug-2020**	**31-Aug-2020**	08-Sep-2020	✓	**31-Aug-2020**	08-Sep-2020	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
MW04, MW07, MW09, QC101_200825, QC301_200825	**25-Aug-2020**	**27-Aug-2020**	01-Sep-2020	✓	**28-Aug-2020**	06-Oct-2020	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
MW04, MW07, MW09, QC101_200825, QC301_200825	**25-Aug-2020**	**27-Aug-2020**	01-Sep-2020	✓	**28-Aug-2020**	06-Oct-2020	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
MW04, MW07, MW09, QC101_200825, QC301_200825	**25-Aug-2020**	**27-Aug-2020**	01-Sep-2020	✓	**28-Aug-2020**	06-Oct-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
MW04, MW07, MW09, QC101_200825, QC301_200825, QC501_200825 - TRIP BLANK	**25-Aug-2020**	**31-Aug-2020**	08-Sep-2020	✓	**31-Aug-2020**	08-Sep-2020	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
MW04, MW07, MW09, QC101_200825, QC301_200825	**25-Aug-2020**	**27-Aug-2020**	01-Sep-2020	✓	**28-Aug-2020**	06-Oct-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
MW04, MW07, MW09, QC101_200825, QC301_200825, QC501_200825 - TRIP BLANK	**25-Aug-2020**	**31-Aug-2020**	08-Sep-2020	✓	**31-Aug-2020**	08-Sep-2020	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
MW04, MW07, MW09, QC101_200825, QC301_200825, QC501_200825 - TRIP BLANK, QC601_200825 - TRIP SPIKE	**25-Aug-2020**	**31-Aug-2020**	08-Sep-2020	✓	**31-Aug-2020**	08-Sep-2020	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

#140238

CHAIN OF CUSTODY

HT

CLIENT: JACOBS	TURNAROUND REQUIREMENTS: ☑ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)	
OFFICE: Level 7, 177 Pacific Highway, North Sydney	(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):		
PROJECT: IS335800	QUOTE NO.:	COC SEQUENCE NUMBER (Circle)	
ORDER NUMBER:		COC: 1 2 3 4 5 6 7	
PROJECT MANAGER: K. Mclean	CONTACT PH: 0402 536 796	OF: 1 2 3 4 5 6 7	
SAMPLER: Kyle McLean	SAMPLER MOBILE: 0402 536 796		
COC emailed? (YES / NO)	EDD FORMAT (or default):		
Email Reports to (will default to PM if no other addresses are listed): Kyle.Mclean@jacobs.com			
Email Invoice to (will default to PM if no other addresses are listed):			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
K. MCLEAN			Suzanne Ford
DATE/TIME: 25-8-20	DATE/TIME: 25/8/20 1500	DATE/TIME:	DATE/TIME: 26/8/2020 10:50AM

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).						Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	W-27	EP074	W-18	EP300B	Suites / Forwarding Holds		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	MW04	25/8/20	W	Nitric + Sulphuric	6	X	X			Lab / Analysis:		
2	MW07				6	X	X			Organised By / Date:	Eurofins > QC201	
3	MW09				6	X	X			Relinquished By / Date:		
4	QC101_200825				6	X	X			Courier:		
	QC201_200825				6	X	X			WO No:		Send to Eurofins
5	QC301_200825				5	X	X			Attach By PO / Internal Sheet:		Rinsate.
6	QC501_200825				1			X				Trip blank
7	QC601_200825	25/8/20	W	Nitric + Sulphuric	1			X				Trip Spike
				TOTAL								

Environmental Division
Sydney
Work Order Reference
ES2029842

Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

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43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Company Name: Jacobs Group (Australia) P/L NSW
Address: Level 7, 177 Pacific Highway
North Sydney
NSW 2065

Project Name:
Project ID: 15335800

Order No.:
Report #: 740238
Phone: 02 9928 2100
Fax: 02 9928 2504

Received: Aug 26, 2020 1:50 PM
Due: Sep 2, 2020
Priority: 5 Day
Contact Name: Kyle McLean

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Volatile Organics	Eurofins Suite B7A (filtered metals)
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217						X	X
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
Newcastle Laboratory							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	QC201_200825	Aug 25, 2020		Water	S20-Au42291	X	X
Test Counts						1	1

Jacobs Group (Australia) P/L NSW
Level 7, 177 Pacific Highway
North Sydney
NSW 2065

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.

Attention: **Kyle McLean**

Report **740238-W**
Project name
Project ID 15335800
Received Date Aug 26, 2020

Client Sample ID			**QC201_200825**
Sample Matrix			**Water**
Eurofins Sample No.			**S20-Au42291**
Date Sampled			**Aug 25, 2020**
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	0.07
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1
BTEX			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	95
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

Client Sample ID			QC201_200825
Sample Matrix			Water
Eurofins Sample No.			S20-Au42291
Date Sampled			Aug 25, 2020
Test/Reference	LOR	Unit	
Volatile Organics			
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
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	%	95
Toluene-d8 (surr.)	1	%	75
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.01	mg/L	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02
TRH >C10-C16	0.05	mg/L	0.13
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	0.13
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	0.13

Client Sample ID			QC201_200825
Sample Matrix			Water
Eurofins Sample No.			S20-Au42291
Date Sampled			Aug 25, 2020
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.001	mg/L	< 0.001
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	< 0.001
2-Fluorobiphenyl (surr.)	1	%	102
p-Terphenyl-d14 (surr.)	1	%	105
Phenols (Halogenated)			
2-Chlorophenol	0.003	mg/L	< 0.003
2.4-Dichlorophenol	0.003	mg/L	< 0.003
2.4.5-Trichlorophenol	0.01	mg/L	< 0.01
2.4.6-Trichlorophenol	0.01	mg/L	< 0.01
2.6-Dichlorophenol	0.003	mg/L	< 0.003
4-Chloro-3-methylphenol	0.01	mg/L	< 0.01
Pentachlorophenol	0.01	mg/L	< 0.01
Tetrachlorophenols - Total	0.03	mg/L	< 0.03
Total Halogenated Phenol*	0.01	mg/L	< 0.01
Phenols (non-Halogenated)			
2-Cyclohexyl-4.6-dinitrophenol	0.1	mg/L	< 0.1
2-Methyl-4.6-dinitrophenol	0.03	mg/L	< 0.03
2-Methylphenol (o-Cresol)	0.003	mg/L	< 0.003
2-Nitrophenol	0.01	mg/L	< 0.01
2.4-Dimethylphenol	0.003	mg/L	< 0.003
2.4-Dinitrophenol	0.03	mg/L	< 0.03
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	< 0.006
4-Nitrophenol	0.03	mg/L	< 0.03
Dinoseb	0.1	mg/L	< 0.1
Phenol	0.003	mg/L	< 0.003
Total Non-Halogenated Phenol*	0.1	mg/L	< 0.1
Phenol-d6 (surr.)	1	%	24
Heavy Metals			
Arsenic (filtered)	0.001	mg/L	< 0.001
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

Client Sample ID			QC201_200825
Sample Matrix			**Water**
Eurofins Sample No.			**S20-Au42291**
Date Sampled			**Aug 25, 2020**
Test/Reference	LOR	Unit	
Heavy Metals			
Nickel (filtered)	0.001	mg/L	0.001
Zinc (filtered)	0.005	mg/L	0.007

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.

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	Aug 26, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Aug 26, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Aug 26, 2020	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Aug 26, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Aug 26, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (Halogenated)	Sydney	Aug 26, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Sydney	Aug 26, 2020	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8 filtered	Sydney	Aug 26, 2020	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Volatile Organics	Sydney	Aug 26, 2020	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			

eurofins | Environment Testing

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Company Name: Jacobs Group (Australia) P/L NSW
Address: Level 7, 177 Pacific Highway
North Sydney
NSW 2065

Project Name:
Project ID: 15335800

Order No.:
Report #: 740238
Phone: 02 9928 2100
Fax: 02 9928 2504

Received: Aug 26, 2020 1:50 PM
Due: Sep 2, 2020
Priority: 5 Day
Contact Name: Kyle McLean

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Volatile Organics	Eurofins Suite B7A (filtered metals)
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217						X	X
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
Newcastle Laboratory							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	QC201_200825	Aug 25, 2020		Water	S20-Au42291	X	X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food 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. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

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

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands 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	US Department of Defense Quality Systems Manual Version 5.3
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 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

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							
Phenols (Halogenated)							
2-Chlorophenol	mg/L	< 0.003			0.003	Pass	
2.4-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2.4.5-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.4.6-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.6-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
4-Chloro-3-methylphenol	mg/L	< 0.01			0.01	Pass	
Pentachlorophenol	mg/L	< 0.01			0.01	Pass	
Tetrachlorophenols - Total	mg/L	< 0.03			0.03	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	mg/L	< 0.1			0.1	Pass	
2-Methyl-4.6-dinitrophenol	mg/L	< 0.03			0.03	Pass	
2-Methylphenol (o-Cresol)	mg/L	< 0.003			0.003	Pass	
2-Nitrophenol	mg/L	< 0.01			0.01	Pass	
2.4-Dimethylphenol	mg/L	< 0.003			0.003	Pass	
2.4-Dinitrophenol	mg/L	< 0.03			0.03	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
3&4-Methylphenol (m&p-Cresol)	mg/L	< 0.006			0.006	Pass	
4-Nitrophenol	mg/L	< 0.03			0.03	Pass	
Dinoseb	mg/L	< 0.1			0.1	Pass	
Phenol	mg/L	< 0.003			0.003	Pass	
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	%	111			70-130	Pass	
TRH C10-C14	%	102			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	101			70-130	Pass	
Toluene	%	104			70-130	Pass	
Ethylbenzene	%	104			70-130	Pass	
m&p-Xylenes	%	105			70-130	Pass	
o-Xylene	%	105			70-130	Pass	
Xylenes - Total*	%	105			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	117			70-130	Pass	
1.1.1-Trichloroethane	%	95			70-130	Pass	
1.2-Dichlorobenzene	%	99			70-130	Pass	
1.2-Dichloroethane	%	103			70-130	Pass	
Trichloroethene	%	95			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	119			70-130	Pass	
TRH C6-C10	%	112			70-130	Pass	
TRH >C10-C16	%	100			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	115			70-130	Pass	
Acenaphthylene	%	113			70-130	Pass	
Anthracene	%	100			70-130	Pass	
Benz(a)anthracene	%	107			70-130	Pass	
Benzo(a)pyrene	%	120			70-130	Pass	
Benzo(b&j)fluoranthene	%	126			70-130	Pass	
Chrysene	%	123			70-130	Pass	
Dibenz(a.h)anthracene	%	123			70-130	Pass	
Fluoranthene	%	102			70-130	Pass	
Fluorene	%	110			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	125			70-130	Pass	
Naphthalene	%	107			70-130	Pass	
Phenanthrene	%	109			70-130	Pass	
Pyrene	%	103			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	86			30-130	Pass	
2.4-Dichlorophenol	%	112			30-130	Pass	
2.4.5-Trichlorophenol	%	102			30-130	Pass	
2.4.6-Trichlorophenol	%	91			30-130	Pass	
2.6-Dichlorophenol	%	108			30-130	Pass	
4-Chloro-3-methylphenol	%	98			30-130	Pass	
Pentachlorophenol	%	106			30-130	Pass	
Tetrachlorophenols - Total	%	103			30-130	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	%	121			30-130	Pass	
2-Methyl-4.6-dinitrophenol	%	75			30-130	Pass	
2-Methylphenol (o-Cresol)	%	111			30-130	Pass	
2-Nitrophenol	%	128			30-130	Pass	
2.4-Dimethylphenol	%	96			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	%	104			30-130	Pass	
Dinoseb	%	129			30-130	Pass	
Phenol	%	71			30-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic (filtered)	%	93			80-120	Pass	
Cadmium (filtered)	%	92			80-120	Pass	
Chromium (filtered)	%	92			80-120	Pass	
Copper (filtered)	%	92			80-120	Pass	
Lead (filtered)	%	93			80-120	Pass	
Mercury (filtered)	%	106			80-120	Pass	
Nickel (filtered)	%	93			80-120	Pass	
Zinc (filtered)	%	93			80-120	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 C10-C14	S20-Au33638	NCP	%	89			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S20-Au49858	NCP	%	96			70-130	Pass	
Toluene	S20-Au49858	NCP	%	99			70-130	Pass	
Ethylbenzene	S20-Au49858	NCP	%	96			70-130	Pass	
m&p-Xylenes	S20-Au49858	NCP	%	98			70-130	Pass	
o-Xylene	S20-Au49858	NCP	%	98			70-130	Pass	
Xylenes - Total*	S20-Au49858	NCP	%	98			70-130	Pass	
Spike - % Recovery									
Volatile Organics				Result 1					
1.1-Dichloroethene	S20-Au49858	NCP	%	124			70-130	Pass	
1.1.1-Trichloroethane	S20-Au49858	NCP	%	89			70-130	Pass	
1.2-Dichlorobenzene	S20-Au49858	NCP	%	84			70-130	Pass	
1.2-Dichloroethane	S20-Au49858	NCP	%	98			70-130	Pass	
Trichloroethene	S20-Au49858	NCP	%	90			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S20-Au49858	NCP	%	83			70-130	Pass	
TRH >C10-C16	S20-Au33638	NCP	%	75			70-130	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heavy Metals				Result 1					
Arsenic (filtered)	S20-Se00557	NCP	%	90			75-125	Pass	
Cadmium (filtered)	S20-Se00557	NCP	%	95			75-125	Pass	
Chromium (filtered)	S20-Se00557	NCP	%	87			75-125	Pass	
Copper (filtered)	S20-Se00557	NCP	%	88			75-125	Pass	
Lead (filtered)	S20-Se00557	NCP	%	88			75-125	Pass	
Mercury (filtered)	S20-Se00557	NCP	%	83			75-125	Pass	
Nickel (filtered)	S20-Se00557	NCP	%	88			75-125	Pass	
Zinc (filtered)	S20-Se00557	NCP	%	85			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S20-Au49854	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	S20-Au40439	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	S20-Au40439	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	S20-Au40439	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S20-Au49854	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	S20-Au49854	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
1.1-Dichloroethane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1-Dichloroethene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.1-Trichloroethane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.1.2-Tetrachloroethane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.2-Trichloroethane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.2.2-Tetrachloroethane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2-Dibromoethane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2-Dichlorobenzene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2-Dichloroethane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2-Dichloropropane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2.3-Trichloropropane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2.4-Trimethylbenzene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.3-Dichlorobenzene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.3-Dichloropropane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.3.5-Trimethylbenzene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.4-Dichlorobenzene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
2-Butanone (MEK)	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
2-Propanone (Acetone)	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
4-Chlorotoluene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
4-Methyl-2-pentanone (MIBK)	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Allyl chloride	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bromobenzene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bromochloromethane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bromodichloromethane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bromoform	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bromomethane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Carbon disulfide	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Carbon Tetrachloride	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
Chlorobenzene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chloroethane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chloroform	S20-Au49854	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Chloromethane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
cis-1.2-Dichloroethene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
cis-1.3-Dichloropropene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibromochloromethane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibromomethane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dichlorodifluoromethane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Iodomethane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Isopropyl benzene (Cumene)	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Methylene Chloride	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Styrene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Tetrachloroethene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
trans-1.2-Dichloroethene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
trans-1.3-Dichloropropene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Trichloroethene	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Trichlorofluoromethane	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Vinyl chloride	S20-Au49854	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S20-Au49854	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	S20-Au49854	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	S20-Au40439	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	S20-Au40439	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	S20-Au40439	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S20-Au45698	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Acenaphthylene	S20-Au45698	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Anthracene	S20-Au45698	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benz(a)anthracene	S20-Au45698	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(a)pyrene	S20-Au45698	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(b&j)fluoranthene	S20-Au45698	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(g.h.i)perylene	S20-Au45698	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(k)fluoranthene	S20-Au45698	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chrysene	S20-Au45698	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibenz(a.h)anthracene	S20-Au45698	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluoranthene	S20-Au45698	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluorene	S20-Au45698	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S20-Au45698	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Naphthalene	S20-Au45698	NCP	mg/L	0.22	0.24	10	30%	Pass	
Phenanthrene	S20-Au45698	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Pyrene	S20-Au45698	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	S20-Au42291	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	S20-Au42291	CP	mg/L	0.0002	0.0002	16	30%	Pass	
Chromium (filtered)	S20-Au42291	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	S20-Au42291	CP	mg/L	0.001	0.002	50	30%	Fail	Q15
Lead (filtered)	S20-Au42291	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	S20-Au42291	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel (filtered)	S20-Au42291	CP	mg/L	0.001	< 0.001	13	30%	Pass	
Zinc (filtered)	S20-Au42291	CP	mg/L	0.007	0.007	6.0	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
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 Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Andrew Black	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)



Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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

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CHAIN OF CUSTODY

Lab / Analysis: _____
Organised By / Date: 9021 → Eurofins
Relinquished By / Date: _____
Connote / Courier: Organochlors + Dioxins → Brisbane
WO No: Asbestos → Newcastle: _____
Attach By PO / Internal Order

CLIENT: JACOBS	TURNAROUND REQUIREMENTS: ☑ Standard TAT (List due date):		
OFFICE: Level 7, 177 Pacific Highway, North Sydney	(Standard TAT may be longer for some tests e.g., Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):		
PROJECT: 15335800	QUOTE NO.: SY/224/20	COC SEQUENCE NUMBER (Circle) COC: (0) 2 3 4 5 6 7 OF: 1 2 (3) 4 5 6 7	LABORATORY USE ONLY (Circle) Custody Seal Intact? Yes No (N/A)
ORDER NUMBER:			Free ice / frozen ice bricks present upon receipt? (Yes) No N/A
PROJECT MANAGER:	CONTACT PH: 0402 536 796		Random Sample Temperature on Receipt: 1 o 7 °C
SAMPLER: Kyle McLean	SAMPLER MOBILE: 0402 536 796		Other comment:
COC emailed? (YES / (NO)	EDD FORMAT (or default):		
Email Reports to (will default to PM if no other addresses are listed): Kyle.Mclean@jacobs.com			
Email Invoice to (will default to PM if no other addresses are listed):			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
K. MCLEAN	Sep M.		SOSW/MS
DATE/TIME: 19/8/20 @ 17:00	DATE/TIME: 19/08/2020 1720	DATE/TIME:	DATE/TIME: 19 18120 1900

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-27	EP066	EA200G	EP300B			HOLD	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	BH17-0.2	17/8/20	S	n/a	3							X	
2	BH17-0.55.				3	X	X	X	X				
3	BH17-1.5.				3							X	
4	BH17-4.5				3	X	X	X	X				
5	BH17-5.7				2							X	
6	BH18-0.2				3	X	X	X	X				
7	BH18-0.5.				3							X	
8	BH18-2.2	17/8/20			3	X	X	X	X				
9	BH19-0.2	18/8/20			2	X	X	X	X				
10	BH20-0.2				3							X	
11	BH20-1.0				3	X	X	X	X				
12	BH20-2.4		S	n/a	3							X	
				TOTAL									

Environmental Division Sydney
Work Order Reference
ES2029204

Telephone : +61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

CLIENT: JACOBS	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☑ Standard TAT (List due date):	**FOR LABORATORY USE ONLY (Circle)**
OFFICE: Level 7, 177 Pacific Highway, North Sydney		☐ Non Standard or urgent TAT (List due date):	Custody Seal intact? Yes No N/A
PROJECT:	**QUOTE NO.:** SY/224/20	COC SEQUENCE NUMBER (Circle)	Free ice, frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:		COC: 1 (2) 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: 153358800	**CONTACT PH:** 0402 536 796	OF: 1 2 (3) 4 5 6 7	Other comment: 1-7
SAMPLER: Kyle McLean	**SAMPLER MOBILE:** 0402 536 796	**RELINQUISHED BY:**	**RECEIVED BY:**
COC emailed? (YES / (NO)	**EDD FORMAT (or default):**	K. MCLEAN	Sep M.
Email Reports to (will default to PM if no other addresses are listed): Kyle.Mclean@jacobs.com		DATE/TIME: 18/8/20 @ 17:00	DATE/TIME: 19/8/2020 1720
Email Invoice to (will default to PM if no other addresses are listed):		**RELINQUISHED BY:**	**RECEIVED BY:** SOS
		DATE/TIME:	DATE/TIME: 19/8/20 1900

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-27	EP066	EA 2006	EP 3068				HOLD	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
13	BH20_3.4	18/8/20	S	n/a	3	X	X	X	X					
14	BH21_0.2				3								X	
15	BH21_0.6				3								X	
16	BH21_1.3				3	X	X	X	X					
17	BH21_4.3				2								X	
18	BH21_4.8				2	X	X	X	X					
19	BH22_0.2				3								X	
20	BH22_0.8				3	X	X	X	X					
21	BH22_1.4				3								X	
22	BH22_2.35-2.45				3	X	X	X	X					
23	QC101_200618				3	X	X	X	X					
24	QC201_200818		S		3	X	X		X					Send to Eurofins
				TOTAL										

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V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

CLIENT: JACOBS	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☑ Standard TAT (List due date):	**FOR LABORATORY USE ONLY (Circle)**
OFFICE: Level 7, 177 Pacific Highway, North Sydney		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes / No / N/A
PROJECT: IS335800	**QUOTE NO.:** SY/224/20	**COC SEQUENCE NUMBER (Circle)**	Cooling Method: Ice / Ice Bricks / Freezer Blocks / None Temperature on Receipt °C
ORDER NUMBER:		COC: 1 2 (3) 4 5 6 7	Other comments:
PROJECT MANAGER:	**CONTACT PH: 0402 536 796**	OF: 1 2 (3) 4 5 6 7	
SAMPLER: Kyle McLean	**SAMPLER MOBILE: 0402 536 796**	**RELINQUISHED BY:**	**RECEIVED BY:**
COC emailed? (YES / NO)	**EDD FORMAT (or default):**	K. MCLEAN	Sep M.
Email Reports to (will default to PM if no other addresses are listed):	Kyle.Mclean@jacobs.com	DATE/TIME: 19/8/20 @ 17:00	DATE/TIME: 19/8/2020 1720
Email Invoice to (will default to PM if no other addresses are listed):		**RELINQUISHED BY:**	**RECEIVED BY:**
		DATE/TIME:	DATE/TIME: 19/8/20/900

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	BTEX	W-27	EP074	EP090S	EP3008			HOLD	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
24	QC301-200818	18/8/20	W		5		X	X	X	X				
25	QC501-200818	17/8/20	S	n/a	1	X								Trip Blank
26	QC601-200817	17/8/20	S	n/a	1	X								Trip Spike
27	QC302-200819	17/8/20	W		5		X	X	X	X				
				TOTAL										

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V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2029204**	Page	: 1 of 19
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: KYLE MCLEAN	Contact	: Tyler Anderson
Address	: 177 Pacific Highway North Sydney 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 9928 2100	Telephone	: +61 2 8784 8555
Project	: 15335800	Date Samples Received	: 19-Aug-2020 17:20
Order number	: 1531	Date Analysis Commenced	: 21-Aug-2020
C-O-C number	: ----	Issue Date	: 31-Aug-2020 09:59
Sampler	: KYLE MCLEAN		
Site	: ----		
Quote number	: SY/224/20		
No. of samples received	: 29		
No. of samples analysed	: 18		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- **EA200 Legend**
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.
- EA200: N/A - Not Applicable

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				BH17_0.55	BH17_4.5	BH18_0.2	BH18_2.2	BH19_0.2
				17-Aug-2020 00:00	17-Aug-2020 00:00	17-Aug-2020 00:00	17-Aug-2020 00:00	18-Aug-2020 00:00
				ES2029204-002	ES2029204-004	ES2029204-006	ES2029204-008	ES2029204-009
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	12.6	40.7	15.5	11.2	15.8
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	No	No	No*	No
Asbestos (Trace)	1332-21-4	5	Fibres	----	No	No	No	No
Asbestos Type	1332-21-4	-	--	----	-	-	Ch	-
Sample weight (dry)	----	0.01	g	----	21.0	57.1	71.4	64.0
APPROVED IDENTIFIER:	----	-	--	----	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE
Synthetic Mineral Fibre	----	0.1	g/kg	----	No	No	No	No
Organic Fibre	----	0.1	g/kg	----	No	No	No	No
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	7	14	5	10	5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	12	7	9	19	22
Copper	7440-50-8	5	mg/kg	64	<5	17	32	26
Lead	7439-92-1	5	mg/kg	62	<5	14	82	27
Nickel	7440-02-0	2	mg/kg	7	<2	2	22	6
Zinc	7440-66-6	5	mg/kg	117	<5	13	216	52
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				BH17_0.55	BH17_4.5	BH18_0.2	BH18_2.2	BH19_0.2
				17-Aug-2020 00:00	17-Aug-2020 00:00	17-Aug-2020 00:00	17-Aug-2020 00:00	18-Aug-2020 00:00
				ES2029204-002	ES2029204-004	ES2029204-006	ES2029204-008	ES2029204-009
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	**0.6**	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	**0.8**	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	**0.6**	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	**0.5**	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	**2.5**	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	**0.6**	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.9**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				BH17_0.55	BH17_4.5	BH18_0.2	BH18_2.2	BH19_0.2
				17-Aug-2020 00:00	17-Aug-2020 00:00	17-Aug-2020 00:00	17-Aug-2020 00:00	18-Aug-2020 00:00
				ES2029204-002	ES2029204-004	ES2029204-006	ES2029204-008	ES2029204-009
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**118**	**119**	**111**	**98.6**	**124**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**102**	**98.2**	**98.1**	**101**	**99.3**
2-Chlorophenol-D4	93951-73-6	0.5	%	**102**	**102**	**106**	**105**	**102**
2.4.6-Tribromophenol	118-79-6	0.5	%	**80.7**	**93.5**	**75.3**	**85.6**	**67.7**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**109**	**110**	**113**	**119**	**114**
Anthracene-d10	1719-06-8	0.5	%	**119**	**114**	**113**	**114**	**115**
4-Terphenyl-d14	1718-51-0	0.5	%	**119**	**113**	**118**	**105**	**118**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**78.2**	**77.7**	**79.4**	**80.0**	**82.3**
Toluene-D8	2037-26-5	0.2	%	**96.4**	**87.4**	**86.8**	**88.7**	**90.7**
4-Bromofluorobenzene	460-00-4	0.2	%	**83.8**	**76.9**	**80.0**	**80.2**	**84.6**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				BH20_1.0	BH20_3.4	BH21_1.3	BH21_4.8	BH22_0.8
				18-Aug-2020 00:00	18-Aug-2020 00:00	18-Aug-2020 00:00	18-Aug-2020 00:00	18-Aug-2020 00:00
				ES2029204-011	ES2029204-013	ES2029204-016	ES2029204-018	ES2029204-020
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	5.9	18.0	10.9	18.0	13.7
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No
Asbestos (Trace)	1332-21-4	5	Fibres	No	No	No	No	No
Asbestos Type	1332-21-4	-	--	-	-	-	-	-
Sample weight (dry)	----	0.01	g	288	358	46.2	22.2	65.4
APPROVED IDENTIFIER:	----	-	--	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE
Synthetic Mineral Fibre	----	0.1	g/kg	No	No	No	No	No
Organic Fibre	----	0.1	g/kg	No	No	No	No	No
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	25	6	10	19	14
Copper	7440-50-8	5	mg/kg	<5	<5	77	<5	23
Lead	7439-92-1	5	mg/kg	<5	7	88	<5	59
Nickel	7440-02-0	2	mg/kg	2	<2	3	<2	12
Zinc	7440-66-6	5	mg/kg	<5	16	133	<5	48
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	<2	<2	<2

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				BH20_1.0	BH20_3.4	BH21_1.3	BH21_4.8	BH22_0.8
				18-Aug-2020 00:00	18-Aug-2020 00:00	18-Aug-2020 00:00	18-Aug-2020 00:00	18-Aug-2020 00:00
				ES2029204-011	ES2029204-013	ES2029204-016	ES2029204-018	ES2029204-020
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	**0.5**
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	**0.5**
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				BH20_1.0	BH20_3.4	BH21_1.3	BH21_4.8	BH22_0.8
				18-Aug-2020 00:00	18-Aug-2020 00:00	18-Aug-2020 00:00	18-Aug-2020 00:00	18-Aug-2020 00:00
				ES2029204-011	ES2029204-013	ES2029204-016	ES2029204-018	ES2029204-020
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**102**	**113**	**93.4**	**107**	**117**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**104**	**84.6**	**105**	**97.2**	**102**
2-Chlorophenol-D4	93951-73-6	0.5	%	**108**	**98.5**	**107**	**107**	**107**
2.4.6-Tribromophenol	118-79-6	0.5	%	**80.0**	**71.2**	**73.7**	**80.4**	**86.5**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**111**	**105**	**115**	**118**	**121**
Anthracene-d10	1719-06-8	0.5	%	**118**	**94.0**	**115**	**115**	**110**
4-Terphenyl-d14	1718-51-0	0.5	%	**105**	**126**	**119**	**121**	**119**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**83.4**	**91.8**	**76.4**	**82.3**	**87.6**
Toluene-D8	2037-26-5	0.2	%	**94.2**	**112**	**81.6**	**89.2**	**96.4**
4-Bromofluorobenzene	460-00-4	0.2	%	**83.5**	**95.8**	**74.4**	**85.0**	**84.3**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				BH22_2.35-2.45	QC101_200818	QC501_200817	QC601_200817	Trip Spike Control
				18-Aug-2020 00:00	18-Aug-2020 00:00	17-Aug-2020 00:00	17-Aug-2020 00:00	17-Aug-2020 00:00
				ES2029204-022	ES2029204-023	ES2029204-025	ES2029204-026	ES2029204-028
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**11.2**	**13.5**	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	**No**	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	**No**	**No**	----	----	----
Asbestos Type	1332-21-4	-	--	**-**	**-**	----	----	----
Sample weight (dry)	----	0.01	g	**54.9**	**48.5**	----	----	----
APPROVED IDENTIFIER:	----	-	--	**A. SMYLIE**	**A. SMYLIE**	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg	**No**	**No**	----	----	----
Organic Fibre	----	0.1	g/kg	**No**	**No**	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	**6**	**9**	----	----	----
Copper	7440-50-8	5	mg/kg	**7**	**68**	----	----	----
Lead	7439-92-1	5	mg/kg	**27**	**128**	----	----	----
Nickel	7440-02-0	2	mg/kg	**2**	**3**	----	----	----
Zinc	7440-66-6	5	mg/kg	**37**	**146**	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	**0.2**	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				BH22_2.35-2.45	QC101_200818	QC501_200817	QC601_200817	Trip Spike Control
				18-Aug-2020 00:00	18-Aug-2020 00:00	17-Aug-2020 00:00	17-Aug-2020 00:00	17-Aug-2020 00:00
				ES2029204-022	ES2029204-023	ES2029204-025	ES2029204-026	ES2029204-028
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	**0.9**	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	**0.9**	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	**0.5**	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	**0.6**	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg	<0.5	**2.9**	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg	<0.5	<0.5	----	----	----
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg	**0.6**	**0.6**	----	----	----
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg	**1.2**	**1.2**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	<50	<50	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				BH22_2.35-2.45	QC101_200818	QC501_200817	QC601_200817	Trip Spike Control
				18-Aug-2020 00:00	18-Aug-2020 00:00	17-Aug-2020 00:00	17-Aug-2020 00:00	17-Aug-2020 00:00
				ES2029204-022	ES2029204-023	ES2029204-025	ES2029204-026	ES2029204-028
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**101**	**106**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**104**	**104**	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**107**	**108**	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**79.1**	**65.4**	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**114**	**113**	----	----	----
Anthracene-d10	1719-06-8	0.5	%	**115**	**118**	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	**119**	**126**	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**76.8**	**89.3**	**76.7**	**77.9**	**82.4**
Toluene-D8	2037-26-5	0.2	%	**86.8**	**88.6**	**82.2**	**80.9**	**87.7**
4-Bromofluorobenzene	460-00-4	0.2	%	**77.6**	**82.2**	**75.1**	**74.1**	**84.2**

Analytical Results

Sub-Matrix: SOLID (Matrix: SOLID)				BH17_0.55	----	----	----	----
				17-Aug-2020 00:00	----	----	----	----
				ES2029204-029	--------	--------	--------	--------
				Result	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	**Yes**	----	----	----	----
Asbestos Type	1332-21-4	-	--	**Ch**	----	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	**N/A**	----	----	----	----
Sample weight (dry)	----	0.01	g	**2.87**	----	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg	**No**	----	----	----	----
Organic Fibre	----	0.1	g/kg	**No**	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	**B.SCHRADER**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				QC302_200819	QC301_200819	----	----	----
				18-Aug-2020 00:00	18-Aug-2020 00:00	----	----	----
				ES2029204-027	ES2029204-030	--------	--------	--------
				Result	Result	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----
Toluene	108-88-3	2	µg/L	<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	----	----
Styrene	100-42-5	5	µg/L	<5	<5	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	----	----
Isopropylbenzene	98-82-8	5	µg/L	<5	<5	----	----	----
n-Propylbenzene	103-65-1	5	µg/L	<5	<5	----	----	----
1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	----	----	----
sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	----	----	----
1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	----	----	----
tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	----	----	----
p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	----	----	----
n-Butylbenzene	104-51-8	5	µg/L	<5	<5	----	----	----
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	50	µg/L	<50	<50	----	----	----
2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	----	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	----	----	----
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	----	----	----
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	5	µg/L	<5	<5	----	----	----
EP074D: Fumigants								
2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	----	----	----
1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				QC302_200819	QC301_200819	----	----	----
				18-Aug-2020 00:00	18-Aug-2020 00:00	----	----	----
				ES2029204-027	ES2029204-030	--------	--------	--------
				Result	Result	----	----	----
EP074D: Fumigants - Continued								
cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	----	----	----
trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	----	----	----
1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	----	----	----
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	----	----	----
Chloromethane	74-87-3	50	µg/L	<50	<50	----	----	----
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	----	----
Bromomethane	74-83-9	50	µg/L	<50	<50	----	----	----
Chloroethane	75-00-3	50	µg/L	<50	<50	----	----	----
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	----	----	----
1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	----	----
Iodomethane	74-88-4	5	µg/L	<5	<5	----	----	----
trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	----	----
1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	----	----	----
cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	----	----
1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	----	----
1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	----	----	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	----	----
1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	----	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	----	----
Dibromomethane	74-95-3	5	µg/L	<5	<5	----	----	----
1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	----	----	----
1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	----	----	----
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	----	----	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	----	----	----
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	----	----	----
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	----	----	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	----	----	----
1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	----	----	----
Pentachloroethane	76-01-7	5	µg/L	<5	<5	----	----	----
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	----	----	----
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	----	----	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				QC302_200819	QC301_200819	----	----	----
				18-Aug-2020 00:00	18-Aug-2020 00:00	----	----	----
				ES2029204-027	ES2029204-030	--------	--------	--------
				Result	Result	----	----	----
EP074F: Halogenated Aromatic Compounds - Continued								
Bromobenzene	108-86-1	5	µg/L	<5	<5	----	----	----
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	----	----	----
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	----	----	----
1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	----	----	----
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	----	----	----
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	----	----	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	----	----	----
1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	----	----	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	----	----	----
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	----	----	----
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	----	----	----
Bromoform	75-25-2	5	µg/L	<5	<5	----	----	----
EP074H: Naphthalene								
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	----	----	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	----	----	----
2.4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	----	----	----
2.6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	----	----	----
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	----	----	----
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				QC302_200819	QC301_200819	----	----	----
				18-Aug-2020 00:00	18-Aug-2020 00:00	----	----	----
				ES2029204-027	ES2029204-030	--------	--------	--------
				Result	Result	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	µg/L	<0.5	<0.5	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	µg/L	<0.5	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	<100	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	<100	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----
Toluene	108-88-3	2	µg/L	<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				QC302_200819	QC301_200819	----	----	----
				18-Aug-2020 00:00	18-Aug-2020 00:00	----	----	----
				ES2029204-027	ES2029204-030	--------	--------	--------
				Result	Result	----	----	----
EP080: BTEXN - Continued								
^ **Total Xylenes**	----	2	µg/L	<2	<2	----	----	----
^ **Sum of BTEX**	----	1	µg/L	<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	5	%	**110**	**102**	----	----	----
Toluene-D8	2037-26-5	5	%	**110**	**109**	----	----	----
4-Bromofluorobenzene	460-00-4	5	%	**108**	**104**	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	**25.0**	**23.3**	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%	**57.2**	**54.6**	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%	**57.6**	**51.7**	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	**59.6**	**53.2**	----	----	----
Anthracene-d10	1719-06-8	1.0	%	**61.2**	**72.8**	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%	**74.4**	**95.4**	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**100**	**92.6**	----	----	----
Toluene-D8	2037-26-5	2	%	**93.5**	**93.4**	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	**96.5**	**93.4**	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	BH17_4.5 - 17-Aug-2020 00:00	Mid brown soil.
EA200: Description	BH18_0.2 - 17-Aug-2020 00:00	Mid brown soil.
EA200: Description	BH18_2.2 - 17-Aug-2020 00:00	Mid brown soil containing two asbestos fibre bundles.
EA200: Description	BH19_0.2 - 18-Aug-2020 00:00	Mid brown soil.
EA200: Description	BH20_1.0 - 18-Aug-2020 00:00	Mid brown soil.
EA200: Description	BH20_3.4 - 18-Aug-2020 00:00	Mid brown soil.
EA200: Description	BH21_1.3 - 18-Aug-2020 00:00	Mid brown soil.
EA200: Description	BH21_4.8 - 18-Aug-2020 00:00	Mid brown soil.
EA200: Description	BH22_0.8 - 18-Aug-2020 00:00	Mid brown soil.
EA200: Description	BH22_2.35-2.45 - 18-Aug-2020 00:00	Mid brown soil.
EA200: Description	QC101_200818 - 18-Aug-2020 00:00	Mid brown soil.

Sub-Matrix: **SOLID**

EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	BH17_0.55 - 17-Aug-2020 00:00	One piece of asbestos cement sheeting approximately 25x25x5mm.

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
		Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

Sub-Matrix: WATER		Recovery Limits (%)	
		Low	High
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	78	133
Toluene-D8	2037-26-5	79	129
4-Bromofluorobenzene	460-00-4	81	124
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2029204**	Page	: 1 of 24
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: KYLE MCLEAN	Contact	: Tyler Anderson
Address	: 177 Pacific Highway North Sydney 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 9928 2100	Telephone	: +61 2 8784 8555
Project	: 15335800	Date Samples Received	: 19-Aug-2020
Order number	: 1531	Date Analysis Commenced	: 21-Aug-2020
C-O-C number	: ----	Issue Date	: 31-Aug-2020
Sampler	: KYLE MCLEAN		
Site	: ----		
Quote number	: SY/224/20		
No. of samples received	: 29		
No. of samples analysed	: 18		

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

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

This Quality Control Report contains the following information:

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

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

Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3215114)									
ES2028260-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	17	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	29	26	9.72	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	10	13.8	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	14	14	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	27	17	48.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	118	115	2.04	0% - 20%
ES2029204-006	BH18_0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	9	5	58.8	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	17	13	28.5	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	14	17	18.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	13	8	52.1	No Limit
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3215116)									
EW2003834-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	29	32	10.8	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	12	6	67.4	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	9	7	31.4	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
ES2029464-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3215116) - continued									
ES2029464-002	Anonymous	EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	90	91	0.00	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3215121)									
ES2028260-003	Anonymous	EA055: Moisture Content	----	0.1	%	56.3	57.2	1.45	0% - 20%
ES2028260-014	Anonymous	EA055: Moisture Content	----	0.1	%	19.9	21.1	5.90	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3215122)									
ES2029204-016	BH21_1.3	EA055: Moisture Content	----	0.1	%	10.9	10.6	2.67	0% - 50%
EW2003834-001	Anonymous	EA055: Moisture Content	----	0.1	%	13.5	14.1	4.78	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3215115)									
ES2028260-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2029204-006	BH18_0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3211175)									
ES2029204-016	BH21_1.3	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2029204-002	BH17_0.55	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3211174)									
ES2029204-016	BH21_1.3	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.00	No Limit
ES2029204-002	BH17_0.55	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)A: Phenolic Compounds (QC Lot: 3211174) - continued									
ES2029204-002	BH17_0.55	EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3211174)									
ES2029204-016	BH21_1.3	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES2029204-002	BH17_0.55	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	0.6	<0.5	27.5	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	0.8	<0.5	47.6	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	0.6	<0.5	21.8	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3211174) - continued									
ES2029204-002	BH17_0.55	EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	2.5	<0.5	133	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	0.6	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3211173)									
ES2029204-016	BH21_1.3	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES2029204-002	BH17_0.55	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3212270)									
ES2029102-002	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES2029204-011	BH20_1.0	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3211173)									
ES2029204-016	BH21_1.3	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES2029204-002	BH17_0.55	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3212270)									
ES2029102-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES2029204-011	BH20_1.0	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 3212270)									
ES2029102-002	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
ES2029204-011	BH20_1.0	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 3219968)									
ES2029009-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
ES2029525-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.004	0.004	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 3219969)									
ES2029204-027	QC302_200819	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ES2029525-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3211483)									
ES2028838-016	Anonymous	EP074: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP074: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP074: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP074: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.00	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3219441)									
ES2029418-001	Anonymous	EP074: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP074: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP074: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP074: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 3219441) - continued									
ES2029418-001	Anonymous	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.00	No Limit
ES2029587-001	Anonymous	EP074: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP074: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP074: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP074: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.00	No Limit
EP074B: Oxygenated Compounds (QC Lot: 3211483)									
ES2028838-016	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.00	No Limit
EP074B: Oxygenated Compounds (QC Lot: 3219441)									
ES2029418-001	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.00	No Limit
ES2029587-001	Anonymous	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.00	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.00	No Limit
EP074C: Sulfonated Compounds (QC Lot: 3211483)									
ES2028838-016	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP074C: Sulfonated Compounds (QC Lot: 3219441)									
ES2029418-001	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.00	No Limit
ES2029587-001	Anonymous	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.00	No Limit
EP074D: Fumigants (QC Lot: 3211483)									
ES2028838-016	Anonymous	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.00	No Limit
EP074D: Fumigants (QC Lot: 3219441)									
ES2029418-001	Anonymous	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.00	No Limit
ES2029587-001	Anonymous	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3211483)									
ES2028838-016	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3211483) - continued									
ES2028838-016	Anonymous	EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.00	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3219441)									
ES2029418-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.00	No Limit
ES2029587-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP074E: Halogenated Aliphatic Compounds (QC Lot: 3219441) - continued									
ES2029587-001	Anonymous	EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.00	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.00	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.00	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.00	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.00	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.00	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 3211483)									
ES2028838-016	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.00	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 3219441)									
ES2029418-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP074F: Halogenated Aromatic Compounds (QC Lot: 3219441) - continued									
ES2029418-001	Anonymous	EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.00	No Limit
ES2029587-001	Anonymous	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.00	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 3211483)									
ES2028838-016	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.00	No Limit
EP074G: Trihalomethanes (QC Lot: 3219441)									
ES2029418-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.00	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.00	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.00	No Limit
ES2029587-001	Anonymous	EP074: Chloroform	67-66-3	5	µg/L	90	98	8.38	0% - 50%
		EP074: Bromodichloromethane	75-27-4	5	µg/L	41	45	9.28	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	18	20	6.82	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 3211483)									
ES2028838-016	Anonymous	EP074: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP074H: Naphthalene (QC Lot: 3219441)									
ES2029418-001	Anonymous	EP074: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
ES2029587-001	Anonymous	EP074: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3211482)									
ES2028838-016	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3219440)									
ES2029418-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
ES2029587-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	80	90	13.9	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3211482)									

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3211482) - continued									
ES2028838-016	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3219440)									
ES2029418-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
ES2029587-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	80	90	13.8	No Limit
EP080: BTEXN (QC Lot: 3211482)									
ES2028838-016	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP080: BTEXN (QC Lot: 3219440)									
ES2029418-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
ES2029587-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3215114)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	98 mg/kg	115	70.0	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	93.1	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	15.4 mg/kg	114	70.0	130
EG005T: Copper	7440-50-8	5	mg/kg	<5	48 mg/kg	114	70.0	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	50 mg/kg	109	70.0	130
EG005T: Nickel	7440-02-0	2	mg/kg	<2	12.4 mg/kg	109	70.0	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	115 mg/kg	98.4	70.0	130
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3215116)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	98 mg/kg	105	70.0	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	89.7	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	15.4 mg/kg	115	70.0	130
EG005T: Copper	7440-50-8	5	mg/kg	<5	48 mg/kg	111	70.0	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	50 mg/kg	110	70.0	130
EG005T: Nickel	7440-02-0	2	mg/kg	<2	12.4 mg/kg	110	70.0	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	115 mg/kg	102	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3215115)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.0847 mg/kg	92.9	70.0	105
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3211175)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	103	62.0	126
EP075(SIM)A: Phenolic Compounds (QCLot: 3211174)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	6 mg/kg	99.3	71.0	125
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	6 mg/kg	102	72.0	124
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	6 mg/kg	98.7	71.0	123
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	12 mg/kg	101	67.0	127
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	6 mg/kg	90.1	54.0	114
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	6 mg/kg	96.0	68.0	126
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	6 mg/kg	95.9	66.0	120
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	6 mg/kg	101	70.0	120
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	6 mg/kg	101	70.0	116
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	6 mg/kg	91.6	54.0	114
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	6 mg/kg	90.5	60.0	114
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	12 mg/kg	48.1	10.0	57.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3211174)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	105	77.0	125

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3211174) - continued								
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	102	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	97.4	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	102	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	105	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	104	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	108	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	113	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	104	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	102	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	96.9	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	101	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	96.7	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	97.0	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	95.0	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	97.9	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3211173)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	110	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	106	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	110	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3212270)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	84.0	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3211173)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	106	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	109	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	101	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3212270)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	85.4	68.4	128
EP080: BTEXN (QCLot: 3212270)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	83.6	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	88.4	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	83.0	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	85.1	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	86.3	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	91.5	63.0	119

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3219968)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	91.4	85.0	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	89.5	84.0	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	88.2	85.0	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	87.1	81.0	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	88.2	83.0	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	88.2	82.0	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	90.6	81.0	117
EG035F: Dissolved Mercury by FIMS (QCLot: 3219969)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	91.2	83.0	105
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3211483)								
EP074: Benzene	71-43-2	1	µg/L	<1	10 µg/L	110	77.0	119
EP074: Toluene	108-88-3	2	µg/L	<2	10 µg/L	101	69.0	129
EP074: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	102	76.0	118
EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	20 µg/L	99.3	77.0	119
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	97.5	73.0	119
EP074: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	99.8	79.0	117
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	100	76.0	118
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	94.7	69.0	119
EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	92.9	74.0	116
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	94.2	73.0	119
EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	90.8	74.0	116
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	93.9	72.0	116
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	90.9	71.0	119
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	91.2	65.0	123
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3219441)								
EP074: Benzene	71-43-2	1	µg/L	<1	10 µg/L	117	77.0	119
EP074: Toluene	108-88-3	2	µg/L	<2	10 µg/L	112	69.0	129
EP074: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	111	76.0	118
EP074: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	20 µg/L	109	77.0	119
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	103	73.0	119
EP074: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	109	79.0	117
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	109	76.0	118
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	104	69.0	119
EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	102	74.0	116
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	104	73.0	119
EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	100	74.0	116
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	106	72.0	116

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3219441) - continued								
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	99.8	71.0	119
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	97.1	65.0	123
EP074B: Oxygenated Compounds (QCLot: 3211483)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	104	61.4	134
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	88.6	73.6	130
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	98.0	66.0	132
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	94.0	65.0	137
EP074B: Oxygenated Compounds (QCLot: 3219441)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	92.1	61.4	134
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	85.6	73.6	130
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	101	66.0	132
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	91.6	65.0	137
EP074C: Sulfonated Compounds (QCLot: 3211483)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	114	72.8	127
EP074C: Sulfonated Compounds (QCLot: 3219441)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	105	72.8	127
EP074D: Fumigants (QCLot: 3211483)								
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	107	68.0	122
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	97.8	76.0	118
EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	97.2	62.0	120
EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	95.9	60.0	114
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	102	69.0	117
EP074D: Fumigants (QCLot: 3219441)								
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	114	68.0	122
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	104	76.0	118
EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	98.6	62.0	120
EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	96.1	60.0	114
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	108	69.0	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 3211483)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	89.4	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	120	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	126	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	114	56.0	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	113	61.0	139
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	111	69.0	131
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	118	70.0	124
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	96.7	70.2	128
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	110	74.0	118

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074E: Halogenated Aliphatic Compounds (QCLot: 3211483) - continued								
EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	110	74.0	120
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	113	77.0	119
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	115	67.0	119
EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	108	73.0	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	112	62.0	120
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	103	73.0	123
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	109	76.0	118
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	101	73.0	119
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	100	72.0	126
EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	102	71.0	129
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	107	72.0	124
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	96.8	66.0	114
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	96.5	60.0	120
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	99.0	70.6	128
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	101	70.0	124
EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	95.2	74.0	126
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	90.4	71.8	126
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	93.3	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	102	58.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3219441)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	61.0	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	103	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	126	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	113	56.0	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	117	61.0	139
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	110	69.0	131
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	123	70.0	124
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	109	70.2	128
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	116	74.0	118
EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	114	74.0	120
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	113	77.0	119
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	119	67.0	119
EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	115	73.0	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	113	62.0	120
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	109	73.0	123
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	115	76.0	118
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	107	73.0	119
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	107	72.0	126
EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	108	71.0	129

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074E: Halogenated Aliphatic Compounds (QCLot: 3219441) - continued								
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	120	72.0	124
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	101	66.0	114
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	90.6	60.0	120
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	94.6	70.6	128
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	105	70.0	124
EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	106	74.0	126
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	79.8	71.8	126
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	84.0	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	119	58.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 3211483)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	102	79.0	117
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	96.2	76.0	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	94.2	73.0	119
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	93.0	73.0	119
EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	91.8	75.0	117
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	93.7	74.0	118
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	93.5	75.0	117
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	89.3	61.0	125
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	89.5	67.0	123
EP074F: Halogenated Aromatic Compounds (QCLot: 3219441)								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	110	79.0	117
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	103	76.0	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	104	73.0	119
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	100	73.0	119
EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	100.0	75.0	117
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	98.1	74.0	118
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	99.6	75.0	117
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	95.6	61.0	125
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	95.8	67.0	123
EP074G: Trihalomethanes (QCLot: 3211483)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	104	72.0	120
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	97.9	64.0	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	95.2	65.0	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	92.3	73.5	126
EP074G: Trihalomethanes (QCLot: 3219441)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	113	72.0	120
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	96.6	64.0	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	88.8	65.0	115

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP074G: Trihalomethanes (QCLot: 3219441) - continued								
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	79.0	73.5	126
EP074H: Naphthalene (QCLot: 3211483)								
EP074: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	109	72.0	122
EP074H: Naphthalene (QCLot: 3219441)								
EP074: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	104	72.0	122
EP075(SIM)A: Phenolic Compounds (QCLot: 3211063)								
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	5 µg/L	37.0	24.5	61.9
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	5 µg/L	73.3	52.0	90.0
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	5 µg/L	70.2	51.0	91.0
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	10 µg/L	60.2	44.0	88.0
EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	5 µg/L	73.3	48.0	100
EP075(SIM): 2.4-Dimethylphenol	105-67-9	1	µg/L	<1.0	5 µg/L	69.0	49.0	99.0
EP075(SIM): 2.4-Dichlorophenol	120-83-2	1	µg/L	<1.0	5 µg/L	71.9	53.0	105
EP075(SIM): 2.6-Dichlorophenol	87-65-0	1	µg/L	<1.0	5 µg/L	76.5	57.0	105
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	5 µg/L	96.7	53.0	99.0
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1	µg/L	<1.0	5 µg/L	88.2	50.0	106
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1	µg/L	<1.0	5 µg/L	89.0	51.0	105
EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	10 µg/L	42.0	10.0	95.0
EP075(SIM)A: Phenolic Compounds (QCLot: 3212774)								
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	5 µg/L	43.3	24.5	61.9
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	5 µg/L	76.6	52.0	90.0
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	5 µg/L	70.7	51.0	91.0
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	10 µg/L	65.8	44.0	88.0
EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	5 µg/L	66.7	48.0	100
EP075(SIM): 2.4-Dimethylphenol	105-67-9	1	µg/L	<1.0	5 µg/L	67.1	49.0	99.0
EP075(SIM): 2.4-Dichlorophenol	120-83-2	1	µg/L	<1.0	5 µg/L	75.2	53.0	105
EP075(SIM): 2.6-Dichlorophenol	87-65-0	1	µg/L	<1.0	5 µg/L	84.4	57.0	105
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	5 µg/L	79.6	53.0	99.0
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1	µg/L	<1.0	5 µg/L	76.8	50.0	106
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1	µg/L	<1.0	5 µg/L	83.3	51.0	105
EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	10 µg/L	40.8	10.0	95.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3211063)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	78.6	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	96.1	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	94.8	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	95.0	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	88.8	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	80.7	64.3	116

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3211063) - continued								
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	100.0	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	101	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	95.0	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	92.9	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	86.1	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	84.7	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	95.2	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	91.6	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	92.4	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	94.7	59.1	118
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3212774)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	70.0	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	81.8	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	81.2	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	91.4	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	86.4	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	71.6	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	93.8	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	99.4	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	88.5	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	92.6	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	87.7	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	84.5	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	89.9	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	97.2	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	98.4	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	94.7	59.1	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3211062)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	65.0	55.8	112
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	85.2	71.6	113
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	75.7	56.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3211482)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	76.5	75.0	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3212775)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	65.9	55.8	112
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	96.6	71.6	113

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3212775) - continued								
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	101	56.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3219440)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	92.8	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3211062)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	70.6	57.9	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	85.4	62.5	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	75.7	61.5	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3211482)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	76.0	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3212775)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	70.1	57.9	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	105	62.5	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	99.9	61.5	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3219440)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	95.3	75.0	127
EP080: BTEXN (QCLot: 3211482)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	74.2	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	80.4	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	82.3	70.0	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	81.5	69.0	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	85.9	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	103	70.0	120
EP080: BTEXN (QCLot: 3219440)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	100	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	105	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	103	70.0	120
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	103	69.0	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	105	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	101	70.0	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Matrix Spike (MS) Report		
Spike	SpikeRecovery(%)	Recovery Limits (%)

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3215114)							
ES2028260-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	90.5	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	87.6	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	76.1	70.0	130
		EG005T: Copper	7440-50-8	250 mg/kg	101	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	84.9	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	77.8	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	71.2	70.0	130
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3215116)							
ES2029464-002	Anonymous	EG005T: Arsenic	7440-38-2	250 mg/kg	83.0	70.0	130
		EG005T: Cadmium	7440-43-9	250 mg/kg	75.2	70.0	130
		EG005T: Chromium	7440-47-3	250 mg/kg	79.5	70.0	130
		EG005T: Copper	7440-50-8	1250 mg/kg	88.8	70.0	130
		EG005T: Lead	7439-92-1	1250 mg/kg	76.3	70.0	130
		EG005T: Nickel	7440-02-0	250 mg/kg	77.0	70.0	130
		EG005T: Zinc	7440-66-6	1250 mg/kg	71.7	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3215115)							
ES2028260-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	72.3	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3211175)							
ES2029204-002	BH17_0.55	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	88.1	70.0	130
EP075(SIM)A: Phenolic Compounds (QCLot: 3211174)							
ES2029204-002	BH17_0.55	EP075(SIM): Phenol	108-95-2	10 mg/kg	99.5	70.0	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	102	70.0	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	61.4	60.0	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	93.5	70.0	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	27.8	20.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3211174)							
ES2029204-002	BH17_0.55	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	96.9	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	106	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3211173)							
ES2029204-002	BH17_0.55	EP071: C10 - C14 Fraction	----	523 mg/kg	104	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	114	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	131	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3212270)							
ES2029102-002	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	100	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3211173)							
ES2029204-002	BH17_0.55	EP071: >C10 - C16 Fraction	----	860 mg/kg	114	73.0	137

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3211173) - continued							
ES2029204-002	BH17_0.55	EP071: >C16 - C34 Fraction	----	3223 mg/kg	119	53.0	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	131	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3212270)							
ES2029102-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	97.1	70.0	130
EP080: BTEXN (QCLot: 3212270)							
ES2029102-002	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	95.1	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	86.7	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	84.8	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	84.5	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	87.4	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	96.4	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 3219968)							
ES2029204-030	QC301_200819	EG020A-F: Arsenic	7440-38-2	1 mg/L	87.0	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	90.2	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	86.9	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	84.9	70.0	130
		EG020A-F: Lead	7439-92-1	1 mg/L	85.9	70.0	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	86.6	70.0	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	88.6	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 3219969)							
ES2029009-002	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	80.4	70.0	130
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3211483)							
ES2028838-016	Anonymous	EP074: Benzene	71-43-2	25 µg/L	98.2	70.0	130
		EP074: Toluene	108-88-3	25 µg/L	93.8	70.0	130
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 3219441)							
ES2029418-001	Anonymous	EP074: Benzene	71-43-2	25 µg/L	123	70.0	130
		EP074: Toluene	108-88-3	25 µg/L	118	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3211483)							
ES2028838-016	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	113	70.0	130
		EP074: Trichloroethene	79-01-6	25 µg/L	92.4	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 3219441)							
ES2029418-001	Anonymous	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	127	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP074E: Halogenated Aliphatic Compounds (QCLot: 3219441) - continued							
ES2029418-001	Anonymous	EP074: Trichloroethene	79-01-6	25 µg/L	121	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 3211483)							
ES2028838-016	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	92.3	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 3219441)							
ES2029418-001	Anonymous	EP074: Chlorobenzene	108-90-7	25 µg/L	115	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3211482)							
ES2028838-016	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	86.5	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3219440)							
ES2029418-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	96.4	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3211482)							
ES2028838-016	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	88.0	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3219440)							
ES2029418-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	98.1	70.0	130
EP080: BTEXN (QCLot: 3211482)							
ES2028838-016	Anonymous	EP080: Benzene	71-43-2	25 µg/L	80.6	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	80.4	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	82.9	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	82.9	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	86.6	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	98.4	70.0	130
EP080: BTEXN (QCLot: 3219440)							
ES2029418-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	90.5	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	93.7	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	96.7	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	95.4	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	100	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	112	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2029204**	Page	: 1 of 11
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: KYLE MCLEAN	Telephone	: +61 2 8784 8555
Project	: 15335800	Date Samples Received	: 19-Aug-2020
Site	: ----	Issue Date	: 31-Aug-2020
Sampler	: KYLE MCLEAN	No. of samples received	: 29
Order number	: 1531	No. of samples analysed	: 18

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	11	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	13	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	11	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	13	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
BH17_0.55, BH17_4.5, BH18_0.2, BH18_2.2	**17-Aug-2020**	**----**	----	----	**24-Aug-2020**	31-Aug-2020	✓
Soil Glass Jar - Unpreserved (EA055)							
BH19_0.2, BH20_1.0, BH20_3.4, BH21_1.3, BH21_4.8, BH22_0.8, BH22_2.35-2.45, QC101_200818	**18-Aug-2020**	**----**	----	----	**24-Aug-2020**	01-Sep-2020	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200)							
BH17_4.5, BH18_0.2, BH18_2.2	**17-Aug-2020**	**----**	----	----	**21-Aug-2020**	13-Feb-2021	✓
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200)							
BH19_0.2, BH20_1.0, BH20_3.4, BH21_1.3, BH22_0.8, BH22_2.35-2.45, QC101_200818	**18-Aug-2020**	**----**	----	----	**21-Aug-2020**	14-Feb-2021	✓
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200)							
BH21_4.8	**18-Aug-2020**	**----**	----	----	**24-Aug-2020**	14-Feb-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
BH17_0.55,	BH17_4.5,	**17-Aug-2020**	**24-Aug-2020**	13-Feb-2021	✓	**24-Aug-2020**	13-Feb-2021	✓
BH18_0.2,	BH18_2.2							
Soil Glass Jar - Unpreserved (EG005T)								
BH19_0.2,	BH20_1.0,	**18-Aug-2020**	**24-Aug-2020**	14-Feb-2021	✓	**24-Aug-2020**	14-Feb-2021	✓
BH20_3.4,	BH21_1.3,							
BH21_4.8,	BH22_0.8,							
BH22_2.35-2.45,	QC101_200818							
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T)								
BH17_0.55,	BH17_4.5,	**17-Aug-2020**	**24-Aug-2020**	14-Sep-2020	✓	**25-Aug-2020**	14-Sep-2020	✓
BH18_0.2,	BH18_2.2							
Soil Glass Jar - Unpreserved (EG035T)								
BH19_0.2,	BH20_1.0,	**18-Aug-2020**	**24-Aug-2020**	15-Sep-2020	✓	**25-Aug-2020**	15-Sep-2020	✓
BH20_3.4,	BH21_1.3,							
BH21_4.8,	BH22_0.8,							
BH22_2.35-2.45,	QC101_200818							
EP066: Polychlorinated Biphenyls (PCB)								
Soil Glass Jar - Unpreserved (EP066)								
BH17_0.55,	BH17_4.5,	**17-Aug-2020**	**24-Aug-2020**	31-Aug-2020	✓	**27-Aug-2020**	03-Oct-2020	✓
BH18_0.2,	BH18_2.2							
Soil Glass Jar - Unpreserved (EP066)								
BH19_0.2,	BH20_1.0,	**18-Aug-2020**	**24-Aug-2020**	01-Sep-2020	✓	**27-Aug-2020**	03-Oct-2020	✓
BH20_3.4,	BH21_1.3,							
BH21_4.8,	BH22_0.8,							
BH22_2.35-2.45,	QC101_200818							
EP075(SIM)A: Phenolic Compounds								
Soil Glass Jar - Unpreserved (EP075(SIM))								
BH17_0.55,	BH17_4.5,	**17-Aug-2020**	**24-Aug-2020**	31-Aug-2020	✓	**27-Aug-2020**	03-Oct-2020	✓
BH18_0.2,	BH18_2.2							
Soil Glass Jar - Unpreserved (EP075(SIM))								
BH19_0.2,	BH20_1.0,	**18-Aug-2020**	**24-Aug-2020**	01-Sep-2020	✓	**27-Aug-2020**	03-Oct-2020	✓
BH20_3.4,	BH21_1.3,							
BH21_4.8,	BH22_0.8,							
BH22_2.35-2.45,	QC101_200818							

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
BH17_0.55, BH17_4.5, BH18_0.2, BH18_2.2	**17-Aug-2020**	**24-Aug-2020**	31-Aug-2020	✓	**27-Aug-2020**	03-Oct-2020	✓
Soil Glass Jar - Unpreserved (EP075(SIM))							
BH19_0.2, BH20_1.0, BH20_3.4, BH21_1.3, BH21_4.8, BH22_0.8, BH22_2.35-2.45, QC101_200818	**18-Aug-2020**	**24-Aug-2020**	01-Sep-2020	✓	**27-Aug-2020**	03-Oct-2020	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
BH17_0.55, BH17_4.5, BH18_0.2, BH18_2.2, QC501_200817, QC601_200817, Trip Spike Control	**17-Aug-2020**	**21-Aug-2020**	31-Aug-2020	✓	**26-Aug-2020**	31-Aug-2020	✓
Soil Glass Jar - Unpreserved (EP071)							
BH17_0.55, BH17_4.5, BH18_0.2, BH18_2.2	**17-Aug-2020**	**24-Aug-2020**	31-Aug-2020	✓	**27-Aug-2020**	03-Oct-2020	✓
Soil Glass Jar - Unpreserved (EP080)							
BH19_0.2, BH20_1.0, BH20_3.4, BH21_1.3, BH21_4.8, BH22_0.8, BH22_2.35-2.45, QC101_200818	**18-Aug-2020**	**21-Aug-2020**	01-Sep-2020	✓	**26-Aug-2020**	01-Sep-2020	✓
Soil Glass Jar - Unpreserved (EP071)							
BH19_0.2, BH20_1.0, BH20_3.4, BH21_1.3, BH21_4.8, BH22_0.8, BH22_2.35-2.45, QC101_200818	**18-Aug-2020**	**24-Aug-2020**	01-Sep-2020	✓	**27-Aug-2020**	03-Oct-2020	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
BH17_0.55, BH17_4.5, BH18_0.2, BH18_2.2, QC501_200817, QC601_200817, Trip Spike Control	**17-Aug-2020**	**21-Aug-2020**	31-Aug-2020	✓	**26-Aug-2020**	31-Aug-2020	✓
Soil Glass Jar - Unpreserved (EP071)							
BH17_0.55, BH17_4.5, BH18_0.2, BH18_2.2	**17-Aug-2020**	**24-Aug-2020**	31-Aug-2020	✓	**27-Aug-2020**	03-Oct-2020	✓
Soil Glass Jar - Unpreserved (EP080)							
BH19_0.2, BH20_1.0, BH20_3.4, BH21_1.3, BH21_4.8, BH22_0.8, BH22_2.35-2.45, QC101_200818	**18-Aug-2020**	**21-Aug-2020**	01-Sep-2020	✓	**26-Aug-2020**	01-Sep-2020	✓
Soil Glass Jar - Unpreserved (EP071)							
BH19_0.2, BH20_1.0, BH20_3.4, BH21_1.3, BH21_4.8, BH22_0.8, BH22_2.35-2.45, QC101_200818	**18-Aug-2020**	**24-Aug-2020**	01-Sep-2020	✓	**27-Aug-2020**	03-Oct-2020	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
BH17_0.55, BH17_4.5, BH18_0.2, BH18_2.2, QC501_200817, QC601_200817, Trip Spike Control	**17-Aug-2020**	**21-Aug-2020**	31-Aug-2020	✓	**26-Aug-2020**	31-Aug-2020	✓
Soil Glass Jar - Unpreserved (EP080)							
BH19_0.2, BH20_1.0, BH20_3.4, BH21_1.3, BH21_4.8, BH22_0.8, BH22_2.35-2.45, QC101_200818	**18-Aug-2020**	**21-Aug-2020**	01-Sep-2020	✓	**26-Aug-2020**	01-Sep-2020	✓

Matrix: **SOLID**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples							
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200)							
BH17_0.55	**17-Aug-2020**	**----**	----	----	**21-Aug-2020**	13-Feb-2021	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-F)							
QC302_200819, QC301_200819	**18-Aug-2020**	**----**	----	----	**26-Aug-2020**	14-Feb-2021	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035F)							
QC302_200819, QC301_200819	**18-Aug-2020**	**----**	----	----	**27-Aug-2020**	01-Sep-2020	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC302_200819	**18-Aug-2020**	**21-Aug-2020**	01-Sep-2020	✓	**21-Aug-2020**	01-Sep-2020	✓
Amber VOC Vial - Sulfuric Acid (EP074)							
QC301_200819	**18-Aug-2020**	**26-Aug-2020**	01-Sep-2020	✓	**26-Aug-2020**	01-Sep-2020	✓
EP074B: Oxygenated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC302_200819	**18-Aug-2020**	**21-Aug-2020**	01-Sep-2020	✓	**21-Aug-2020**	01-Sep-2020	✓
Amber VOC Vial - Sulfuric Acid (EP074)							
QC301_200819	**18-Aug-2020**	**26-Aug-2020**	01-Sep-2020	✓	**26-Aug-2020**	01-Sep-2020	✓
EP074C: Sulfonated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC302_200819	**18-Aug-2020**	**21-Aug-2020**	01-Sep-2020	✓	**21-Aug-2020**	01-Sep-2020	✓
Amber VOC Vial - Sulfuric Acid (EP074)							
QC301_200819	**18-Aug-2020**	**26-Aug-2020**	01-Sep-2020	✓	**26-Aug-2020**	01-Sep-2020	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC302_200819	**18-Aug-2020**	**21-Aug-2020**	01-Sep-2020	✓	**21-Aug-2020**	01-Sep-2020	✓
Amber VOC Vial - Sulfuric Acid (EP074)							
QC301_200819	**18-Aug-2020**	**26-Aug-2020**	01-Sep-2020	✓	**26-Aug-2020**	01-Sep-2020	✓
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC302_200819	**18-Aug-2020**	**21-Aug-2020**	01-Sep-2020	✓	**21-Aug-2020**	01-Sep-2020	✓
Amber VOC Vial - Sulfuric Acid (EP074)							
QC301_200819	**18-Aug-2020**	**26-Aug-2020**	01-Sep-2020	✓	**26-Aug-2020**	01-Sep-2020	✓
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC302_200819	**18-Aug-2020**	**21-Aug-2020**	01-Sep-2020	✓	**21-Aug-2020**	01-Sep-2020	✓
Amber VOC Vial - Sulfuric Acid (EP074)							
QC301_200819	**18-Aug-2020**	**26-Aug-2020**	01-Sep-2020	✓	**26-Aug-2020**	01-Sep-2020	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC302_200819	**18-Aug-2020**	**21-Aug-2020**	01-Sep-2020	✓	**21-Aug-2020**	01-Sep-2020	✓
Amber VOC Vial - Sulfuric Acid (EP074)							
QC301_200819	**18-Aug-2020**	**26-Aug-2020**	01-Sep-2020	✓	**26-Aug-2020**	01-Sep-2020	✓
EP074H: Naphthalene							
Amber VOC Vial - Sulfuric Acid (EP074)							
QC302_200819	**18-Aug-2020**	**21-Aug-2020**	01-Sep-2020	✓	**21-Aug-2020**	01-Sep-2020	✓
Amber VOC Vial - Sulfuric Acid (EP074)							
QC301_200819	**18-Aug-2020**	**26-Aug-2020**	01-Sep-2020	✓	**26-Aug-2020**	01-Sep-2020	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM)) QC301_200819	**18-Aug-2020**	**21-Aug-2020**	25-Aug-2020	✓	**26-Aug-2020**	30-Sep-2020	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) QC302_200819	**18-Aug-2020**	**24-Aug-2020**	25-Aug-2020	✓	**25-Aug-2020**	03-Oct-2020	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) QC301_200819	**18-Aug-2020**	**21-Aug-2020**	25-Aug-2020	✓	**26-Aug-2020**	30-Sep-2020	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) QC302_200819	**18-Aug-2020**	**24-Aug-2020**	25-Aug-2020	✓	**25-Aug-2020**	03-Oct-2020	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) QC301_200819	**18-Aug-2020**	**21-Aug-2020**	25-Aug-2020	✓	**26-Aug-2020**	30-Sep-2020	✓
Amber Glass Bottle - Unpreserved (EP071) QC302_200819	**18-Aug-2020**	**24-Aug-2020**	25-Aug-2020	✓	**25-Aug-2020**	03-Oct-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC302_200819	**18-Aug-2020**	**21-Aug-2020**	01-Sep-2020	✓	**21-Aug-2020**	01-Sep-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC301_200819	**18-Aug-2020**	**26-Aug-2020**	01-Sep-2020	✓	**26-Aug-2020**	01-Sep-2020	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) QC301_200819	**18-Aug-2020**	**21-Aug-2020**	25-Aug-2020	✓	**26-Aug-2020**	30-Sep-2020	✓
Amber Glass Bottle - Unpreserved (EP071) QC302_200819	**18-Aug-2020**	**24-Aug-2020**	25-Aug-2020	✓	**25-Aug-2020**	03-Oct-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC302_200819	**18-Aug-2020**	**21-Aug-2020**	01-Sep-2020	✓	**21-Aug-2020**	01-Sep-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC301_200819	**18-Aug-2020**	**26-Aug-2020**	01-Sep-2020	✓	**26-Aug-2020**	01-Sep-2020	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) QC302_200819	**18-Aug-2020**	**21-Aug-2020**	01-Sep-2020	✓	**21-Aug-2020**	01-Sep-2020	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC301_200819	**18-Aug-2020**	**26-Aug-2020**	01-Sep-2020	✓	**26-Aug-2020**	01-Sep-2020	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	12	16.67	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	4	36	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	15	13.33	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	36	5.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	15	6.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	11	0.00	10.00	×	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP) - Continued							
TRH - Semivolatile Fraction	EP071	0	13	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	25	**12.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	3	23	**13.04**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	11	**18.18**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	13	**15.38**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	25	**8.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	2	11	**18.18**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	13	**15.38**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	25	**8.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	11	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	13	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	25	**8.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	23	**8.70**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.
Asbestos Identification in Bulk Solids	EA200	SOLID	In house: Referenced to AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).

Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

CHAIN OF CUSTODY

Log as EB
Dioxins only.

Lab / Analyst:
Organised By / Date:
Relinquished By / Date:
Courier: Organofax + Dioxins → Brisbane
WO No: Asbestos → Newcastle:
Attach By PO / Internal Sheet

CLIENT: JACOBS	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☑ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Level 7, 177 Pacific Highway, North Sydney		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
PROJECT: IS335800	QUOTE NO.: SY/224/20	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7	Free Ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:		OF: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: 10.7 °C
PROJECT MANAGER:	CONTACT PH: 0402 536 796		Other comment:
SAMPLER: Kyle McLean	SAMPLER MOBILE: 0402 536 796		
COC emailed? (YES / NO)	EDD FORMAT (or default):		
Email Reports to (will default to PM if no other addresses are listed): Kyle.Mclean@jacobs.com			
Email Invoice to (will default to PM if no other addresses are listed):			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
K. MCLEAN	Sepm		SOFIA/ALS
DATE/TIME: 19/8/20 @ 17:00	DATE/TIME: 19/08/2020 1720	DATE/TIME:	DATE/TIME: 19/8/2019:00

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

17:00 21/8/20

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-27	EP066	EA200F	EP300B				HOLD	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	BH17-0.2	17/8/20	S	n/a	3								X	
2	1. BH17-0.55.				3	X	X	X	X					
3	BH17-1.5.				3								X	
4	2. BH17-4.5				3	X	X	X	X					
5	BH17-5.7				2								X	
6	3. BH18-0.2				3	X	X	X	X					
7	BH18-0.5.				3								X	
8	4. BH18-2.2	17/8/20			3	X	X	X	X					
9	5. BH19-0.2	18/8/20			2	X	X	X	X					
10	BH20-0.2				3								X	
11	6. BH20-1.0				3	X	X	X	X					
12	BH20-2.4		S	n/a	3								X	
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Environmental Division
Brisbane
Work Order
EB2090082

Telephone : +61-7-3243 7222

CHAIN OF CUSTODY

CLIENT: JACOBS	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☑ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Level 7, 177 Pacific Highway, North Sydney		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
PROJECT:	QUOTE NO.: SY/224/20	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:		COC: 1 (2) 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: 153358800	CONTACT PH: 0402 536 796	OF: 1 2 (3) 4 5 6 7	Other comment: 1-7
SAMPLER: Kyle McLean	SAMPLER MOBILE: 0402 536 796	RELINQUISHED BY:	RECEIVED BY:
COC emailed? (YES / (NO)	EDD FORMAT (or default):	K. MCLEAN	Sep M.
Email Reports to (will default to PM if no other addresses are listed): Kyle.Mclean@jacobs.com		DATE/TIME: 18/8/20 @ 17:00	DATE/TIME: 19/8/2020 1720
Email Invoice to (will default to PM if no other addresses are listed):		RELINQUISHED BY:	RECEIVED BY:
		DATE/TIME:	DATE/TIME: 19/8/20 1900

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: 11:00 JM/B 21/8/20

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	5-27	EP066	EA 200CT	EP 2008				HOLD	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
13	7. BH20_3.4	18/8/20	S	n/a	3	X	X	X	X					
14	BH21_0.2				3								X	
15	BH21_0.6				3								X	
16	8. BH21_1.3				3	X	X	X	X					
17	BH21_4.3				2								X	
18	9. BH21_4.8				2	X	X	X	X					
19	BH22_0.2				3								X	
20	10. BH22_0.8				3	X	X	X	X					
21	BH22_1.4				3								X	
22	11 BH22_2.35-2.45				3	X	X	X	X					
23	12 QC101_200818		V		3	X	X	X	X					
24	13 QC201_200818		S		3	X	X		X					Send to Eurofins
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

4/9.

CLIENT: JACOBS	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☑ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Level 7, 177 Pacific Highway, North Sydney		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
PROJECT: IS335800	QUOTE NO.: SY/224/20	COC SEQUENCE NUMBER (Circle) COC: 1 2 (3) 4 5 6 7	Free ice / frozen ice bricks present upon receipt? (Yes) No N/A
ORDER NUMBER:		OF: 1 2 (3) 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER:	CONTACT PH: 0402 536 796		Other comment: 17
SAMPLER: Kyle McLean	SAMPLER MOBILE: 0402 536 796		
COC emailed? (YES / NO)	EDD FORMAT (or default):		
Email Reports to (will default to PM if no other addresses are listed): Kyle.Mclean@jacobs.com			
Email Invoice to (will default to PM if no other addresses are listed):			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
K. MCLEAN	Sep M.		SOBHAN AS
DATE/TIME: 19/8/20 @ 17:00	DATE/TIME: 19/8/2020 1720	DATE/TIME:	DATE/TIME: 19/8/20/1900

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

JMills 11:00 21/8/20

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	BTEX	W-27	EP074	EP090S	EP300B			HOLD	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
24	SMRQC301-200818	18/8/20	W		5		X	X	X	X				
25	QC501-200817	17/8/20	S	n/a	1	X								Trip Blank
26	QC601-200817	17/8/20	S	n/a	1	X								Trip Spike
27	14.QC302-200819	19/8/20	W		5		X	X	X	X				
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Environmental Division

SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: **EB2090082**		
Amendment	: **1**		
Client	: **JACOBS GROUP (AUSTRALIA) PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: KYLE MCLEAN	Contact	: Customer Services Brisbane
Address	: 100 CHRISTIE STREET P O BOX 164 ST LEONARDS NSW, AUSTRALIA 2065	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: kyle.mclean@jacobs.com	E-mail	: ALSEnviro.Brisbane@alsglobal.com
Telephone	: +61 02 9928 2100	Telephone	: +61 7 3243 7222
Facsimile	: +61 02 9928 2272	Facsimile	: +61 7 3243 7218
Project	: IS335800	Page	: 1 of 3
Order number	: ----		
C-O-C number	: ----	Quote number	: ----
Site	: ----		
Sampler	: KYLE McLEAN	QC Level	: NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received	: 21-AUG-2020	Issue Date	: 07-SEP-2020
Client Requested Due Date	: 04-SEP-2020	Scheduled Reporting Date	: **04-SEP-2020**

Delivery Details

Mode of Delivery	: Carrier	Temperature	: 3.9°C - Ice present
No. of coolers/boxes	: 1	No. of samples received	: 14
Security Seal	: Intact.	No. of samples analysed	: 14

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Samples received in appropriately pretreated and preserved containers.**
- ***SRN Reissued 07/09/2020: Please be advised that the Project has been changed to "IS335800".**
- ***SRN Reissued 25/08/2020: Please be advised that sample QC301_200818 received 25/08/2020 has been added to this work order (ALS #15) and assigned analysis as per Chain of Custody**
- ***SRN Reissued 26/08/2020: Changes made to Project assigned.**
- **Please be advised that all other analysis shall be reported on ES2029204**
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' etc. suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Please direct any queries related to sample condition / numbering / breakages to John Pickering (Samples.Brisbane@alsglobal.com)
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958),
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - HRMS - Combined Dioxins and Furans (SOILS)
EB2090082-001	17-AUG-2020 00:00	BH17_0.55	✓
EB2090082-002	17-AUG-2020 00:00	BH17_4.5	✓
EB2090082-003	17-AUG-2020 00:00	BH18_0.2	✓
EB2090082-004	17-AUG-2020 00:00	BH18_2.2	✓
EB2090082-005	18-AUG-2020 00:00	BH19_0.2	✓
EB2090082-006	18-AUG-2020 00:00	BH20_1.0	✓
EB2090082-007	18-AUG-2020 00:00	BH20_3.4	✓
EB2090082-008	18-AUG-2020 00:00	BH21_1.3	✓
EB2090082-009	18-AUG-2020 00:00	BH21_4.8	✓
EB2090082-010	18-AUG-2020 00:00	BH22_0.8	✓
EB2090082-011	18-AUG-2020 00:00	BH22_2.35-2.45	✓
EB2090082-012	18-AUG-2020 00:00	QC101_200818	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - HRMS Dioxins and Furans (WATER)
EB2090082-014	19-AUG-2020 00:00	QC302_200819	✓
EB2090082-015	18-AUG-2020 00:00	QC301_200818	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ALL ACCOUNTS PAYABLE (Brisbane)

- A4 - AU Tax Invoice (INV)	Email	au-ap@jacobs.com

KYLE MCLEAN

- A4 - AU Sample Receipt Notification - Environmental HT (SRN	Email	kyle.mclean@jacobs.com
- A4 - AU Tax Invoice (INV)	Email	kyle.mclean@jacobs.com
- AU Certificate of Analysis - DIOXINS/HRMS (DIONA)	Email	kyle.mclean@jacobs.com
- AU QC Report - DIOXINS/HRMS (DQCNA)	Email	kyle.mclean@jacobs.com
- Chain of Custody (CoC) (COC)	Email	kyle.mclean@jacobs.com
- EDI Format - ENMRG (ENMRG)	Email	kyle.mclean@jacobs.com
- EDI Format - ESDAT (ESDAT)	Email	kyle.mclean@jacobs.com

CERTIFICATE OF ANALYSIS

Client	**JACOBS GROUP (AUSTRALIA) PTY LTD**	**Laboratory :**	Environmental Division Brisbane		
Contact	KYLE MCLEAN	**Contact**	CUSTOMER.SERVICES.EB	**Work Order:**	**EB2090082**
Address:	100 CHRISTIE STREET P O BOX 164 ST LEONARDS NSW, AUSTRALIA 2065	**Address:**	2 Byth Street Stafford QLD 4053 Australia	**Amendment No.**	**1**
Project	IS335800	**Quote #**	----	**Received:**	21 Aug 2020
Order #	- Not provided -			**Issued**	7 Sep 2020
C-O-C #	- Not provided -				
Site	- Not provided -				
E-mail	kyle.mclean@jacobs.com	**E-mail**	ALSEnviro.Brisbane@alsglobal.com	**Number of Samples**	
Phone	9928 2100	**Phone**	+61-7-3243 7222	**Received:**	14
Fax	9928 2272	**Fax**	+61-7-3243 7218	**Analysed:**	14

Notes

LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence

1 I -TEQ(zero) and WHO-TEQ(zero) calculated treating <LOR as zero concentration
2 I -TEQ(0.5 LOR) and WHO-TEQ(0.5 zero) calculated treating <LOR as 0.5 LoR concentration
3 I-TEQ(LOR) and WHO-TEQ(LOR) calculated treating <LOR as LoR concentration
4 Totals LORs are calculated by multiplying the number of peaks by the individual LOR per compound
5 13C12 Rec(%) = The absolute recovery of Isotopically labelled compound added by the Laboratory to both quantitate and measure extraction efficiency.

T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran

Work order specific comments

Samples analysed 'as received', results reported on 'dry weight' basis.
(07/09/2020): This report has been amended as a result of changing the Project ID to IS335800. All analysis results are as per the previous report.
Samples QC302_200819, QC301_200818: Lower than the standard sample volume was available for these samples. The LOR is raised based on the volume available.

ALSE - Excellence in Analytical Testing

NATA Accredited Laboratory - 825

This document is issued in accordance with NATA's accreditation requirements.

Accredited for compliance with ISO/IED 17025

This document has been digitally signed by those names that appear on this report and are the authorised signatories.
Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Client	: JACOBS GROUP (AUSTRALIA) PTY LTD	**Work Order**	: EB2090082
Project	: IS335800	**ALS Quote Reference**	: ----

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB2090082001
Client Sample ID: BH17 0.55

Qc Lot Number: 4542426
Sample Matrix: SOIL

Date Sampled: 16-Aug-2020
Date Extracted: 02-Sep-2020
Date Analysed: 02-Sep-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	**2.4**	**0.5**	**1**	**2.40**	**2.40**	**2.40**	**1**	**2.40**	**2.40**	**2.40**	**65.6**
12378-PeCDD	**9.2**	**2.5**	**1**	**9.21**	**9.21**	**9.21**	**0.5**	**4.61**	**4.61**	**4.61**	**114.4**
123478-HxCDD	**11.3**	**2.5**	**0.1**	**1.13**	**1.13**	**1.13**	**0.1**	**1.13**	**1.13**	**1.13**	**65.1**
123678-HxCDD	**46.3**	**2.5**	**0.1**	**4.63**	**4.63**	**4.63**	**0.1**	**4.63**	**4.63**	**4.63**	**77.1**
123789-HxCDD	**27.8**	**2.5**	**0.1**	**2.78**	**2.78**	**2.78**	**0.1**	**2.78**	**2.78**	**2.78**	**-**
1234678-HpCDD	**1250.0**	**2.5**	**0.01**	**12.50**	**12.50**	**12.50**	**0.01**	**12.50**	**12.50**	**12.50**	**68.7**
OCDD	**48400.0**	**10.0**	**0.0003**	**14.52**	**14.52**	**14.52**	**0.001**	**48.40**	**48.40**	**48.40**	**79.8**
2378-TCDF	**2.3**	**0.5**	**0.1**	**0.23**	**0.23**	**0.23**	**0.1**	**0.23**	**0.23**	**0.23**	**52.0**
12378-PeCDF	**3.3**	**2.5**	**0.03**	**0.10**	**0.10**	**0.10**	**0.05**	**0.16**	**0.16**	**0.16**	**100.2**
23478-PeCDF	**3.4**	**2.5**	**0.3**	**1.01**	**1.01**	**1.01**	**0.5**	**1.69**	**1.69**	**1.69**	**96.4**
123478-HxCDF	**10.9**	**2.5**	**0.1**	**1.09**	**1.09**	**1.09**	**0.1**	**1.09**	**1.09**	**1.09**	**66.4**
123678-HxCDF	**6.6**	**2.5**	**0.1**	**0.66**	**0.66**	**0.66**	**0.1**	**0.66**	**0.66**	**0.66**	**82.7**
234678-HxCDF	**7.3**	**2.5**	**0.1**	**0.73**	**0.73**	**0.73**	**0.1**	**0.73**	**0.73**	**0.73**	**76.2**
123789-HxCDF	**<2.5**	**2.5**	**0.1**	**0.00**	**0.13**	**0.25**	**0.1**	**0.00**	**0.13**	**0.25**	**93.5**
1234678-HpCDF	**172.0**	**2.5**	**0.01**	**1.72**	**1.72**	**1.72**	**0.01**	**1.72**	**1.72**	**1.72**	**64.5**
1234789-HpCDF	**14.5**	**2.5**	**0.01**	**0.15**	**0.15**	**0.15**	**0.01**	**0.15**	**0.15**	**0.15**	**85.8**
OCDF	**1050.0**	**5.0**	**0.0003**	**0.32**	**0.32**	**0.32**	**0.001**	**1.05**	**1.05**	**1.05**	**-**
Total TEQ	**-**	**-**	**-**	**53.17**	**53.29**	**53.42**	**-**	**83.92**	**84.04**	**84.17**	**-**

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	**158.0**	**6.5**	**13**
Penta-Dioxins	**222.0**	**17.5**	**7**
Hexa-Dioxins	**525.0**	**25.0**	**10**
Hepta-Dioxins	**2430.0**	**5.0**	**2**
Octa-Dioxin	**48400.0**	**10.0**	**1**
Tetra-Furans	**57.9**	**8.0**	**16**
Penta-Furans	**84.7**	**25.0**	**10**
Hexa-Furans	**254.0**	**22.5**	**9**
Hepta-Furans	**815.0**	**10.0**	**4**
Octa-Furan	**1050.0**	**5.0**	**1**
S **PCDD/Fs**	**53996.6**		

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ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300
Laboratory Sample ID: EB2090082002
Client Sample ID: BH17 4.5
Qc Lot Number: 4542426
Sample Matrix: SOIL
Date Sampled: 16-Aug-2020
Date Extracted: 02-Sep-2020
Date Analysed: 02-Sep-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	78.3
12378-PeCDD	<2.5	2.5	1	0.00	1.24	2.48	0.5	0.00	0.62	1.24	101.0
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	60.4
123678-HxCDD	2.7	2.5	0.1	0.27	0.27	0.27	0.1	0.27	0.27	0.27	98.9
123789-HxCDD	6.9	2.5	0.1	0.69	0.69	0.69	0.1	0.69	0.69	0.69	-
1234678-HpCDD	83.1	2.5	0.01	0.83	0.83	0.83	0.01	0.83	0.83	0.83	72.7
OCDD	3020.0	9.9	0.0003	0.91	0.91	0.91	0.001	3.02	3.02	3.02	70.4
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	52.2
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	91.3
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.62	1.24	100.3
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	60.2
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	87.5
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	75.5
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	64.3
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	67.0
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	60.3
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
Total TEQ	-	-	-	2.70	5.26	7.83	-	4.81	7.03	9.25	-

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	202.0	5.5	11
Penta-Dioxins	139.0	22.3	9
Hexa-Dioxins	733.0	17.4	7
Hepta-Dioxins	507.0	5.0	2
Octa-Dioxin	3020.0	9.9	1
Tetra-Furans	<0.5	0.5	1
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<9.9	9.9	4
Hepta-Furans	<7.4	7.4	3
Octa-Furan	<5.0	5.0	1
S **PCDD/Fs**	4601.0		

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Client	: JACOBS GROUP (AUSTRALIA) PTY LTD	**Work Order**	: EB2090082
Project	: IS335800	**ALS Quote Reference**	: ----

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB2090082003
Client Sample ID: BH18 0.2

Qc Lot Number: 4542427
Sample Matrix: SOIL

Date Sampled: 16-Aug-2020
Date Extracted: 02-Sep-2020
Date Analysed: 02-Sep-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.49	1	0.00	0.25	0.49	60.9
12378-PeCDD	<2.5	2.5	1	0.00	1.23	2.46	0.5	0.00	0.61	1.23	84.2
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	54.0
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	94.2
123789-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	-
1234678-HpCDD	58.2	2.5	0.01	0.58	0.58	0.58	0.01	0.58	0.58	0.58	50.3
OCDD	5070.0	9.8	0.0003	1.52	1.52	1.52	0.001	5.07	5.07	5.07	37.8
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	50.8
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	80.5
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.61	1.23	78.2
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	59.0
123678-HxCDF	3.1	2.5	0.1	0.31	0.31	0.31	0.1	0.31	0.31	0.31	84.7
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	73.0
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	49.6
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	53.7
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	42.8
OCDF	7.6	4.9	0.0003	0.00	0.00	0.00	0.001	0.01	0.01	0.01	-
Total TEQ	-	-	-	2.41	5.07	7.74	-	5.96	8.29	10.61	-

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	<0.5	0.5	1
Penta-Dioxins	<2.5	2.5	1
Hexa-Dioxins	<9.8	9.8	4
Hepta-Dioxins	159.0	4.9	2
Octa-Dioxin	5070.0	9.8	1
Tetra-Furans	40.2	4.4	9
Penta-Furans	46.5	19.6	8
Hexa-Furans	<14.7	14.7	6
Hepta-Furans	6.1	4.9	2
Octa-Furan	7.6	4.9	1
S **PCDD/Fs**	5329.4		

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ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300
Laboratory Sample ID: EB2090082004
Client Sample ID: BH18 2.2
Qc Lot Number: 4542426
Sample Matrix: SOIL
Date Sampled: 16-Aug-2020
Date Extracted: 02-Sep-2020
Date Analysed: 02-Sep-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	5.2	0.5	1	5.16	5.16	5.16	1	5.16	5.16	5.16	65.7
12378-PeCDD	43.3	2.5	1	43.30	43.30	43.30	0.5	21.65	21.65	21.65	97.7
123478-HxCDD	37.1	2.5	0.1	3.71	3.71	3.71	0.1	3.71	3.71	3.71	70.9
123678-HxCDD	159.0	2.5	0.1	15.90	15.90	15.90	0.1	15.90	15.90	15.90	99.9
123789-HxCDD	72.8	2.5	0.1	7.28	7.28	7.28	0.1	7.28	7.28	7.28	-
1234678-HpCDD	2550.0	2.5	0.01	25.50	25.50	25.50	0.01	25.50	25.50	25.50	74.5
OCDD	22000.0	10.0	0.0003	6.60	6.60	6.60	0.001	22.00	22.00	22.00	65.4
2378-TCDF	9.3	0.5	0.1	0.93	0.93	0.93	0.1	0.93	0.93	0.93	52.0
12378-PeCDF	11.3	2.5	0.03	0.34	0.34	0.34	0.05	0.57	0.57	0.57	100.7
23478-PeCDF	14.4	2.5	0.3	4.32	4.32	4.32	0.5	7.20	7.20	7.20	92.2
123478-HxCDF	65.8	2.5	0.1	6.58	6.58	6.58	0.1	6.58	6.58	6.58	71.0
123678-HxCDF	39.4	2.5	0.1	3.94	3.94	3.94	0.1	3.94	3.94	3.94	100.4
234678-HxCDF	42.1	2.5	0.1	4.21	4.21	4.21	0.1	4.21	4.21	4.21	80.7
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	67.5
1234678-HpCDF	637.0	2.5	0.01	6.37	6.37	6.37	0.01	6.37	6.37	6.37	75.9
1234789-HpCDF	39.1	2.5	0.01	0.39	0.39	0.39	0.01	0.39	0.39	0.39	70.1
OCDF	793.0	5.0	0.0003	0.24	0.24	0.24	0.001	0.79	0.79	0.79	-
Total TEQ	-	-	-	134.76	134.89	135.01	-	132.18	132.30	132.43	-

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	525.0	5.5	11
Penta-Dioxins	801.0	22.5	9
Hexa-Dioxins	1910.0	20.0	8
Hepta-Dioxins	5830.0	5.0	2
Octa-Dioxin	22000.0	10.0	1
Tetra-Furans	254.0	9.5	19
Penta-Furans	383.0	35.0	14
Hexa-Furans	1500.0	25.0	10
Hepta-Furans	1660.0	10.0	4
Octa-Furan	793.0	5.0	1
S **PCDD/Fs**	35656.0		

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ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300
Laboratory Sample ID: EB2090082005
Client Sample ID: BH19 0.2
Qc Lot Number: 4542426
Sample Matrix: SOIL
Date Sampled: 17-Aug-2020
Date Extracted: 02-Sep-2020
Date Analysed: 02-Sep-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	2.6	0.5	1	2.61	2.61	2.61	1	2.61	2.61	2.61	75.4
12378-PeCDD	7.3	2.5	1	7.26	7.26	7.26	0.5	3.63	3.63	3.63	80.1
123478-HxCDD	5.6	2.5	0.1	0.56	0.56	0.56	0.1	0.56	0.56	0.56	59.8
123678-HxCDD	15.1	2.5	0.1	1.51	1.51	1.51	0.1	1.51	1.51	1.51	99.2
123789-HxCDD	9.4	2.5	0.1	0.94	0.94	0.94	0.1	0.94	0.94	0.94	-
1234678-HpCDD	692.0	2.5	0.01	6.92	6.92	6.92	0.01	6.92	6.92	6.92	70.7
OCDD	70100.0	9.9	0.0003	21.03	21.03	21.03	0.001	70.10	70.10	70.10	97.9
2378-TCDF	1.8	0.5	0.1	0.18	0.18	0.18	0.1	0.18	0.18	0.18	58.9
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	74.4
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.75	0.5	0.00	0.62	1.24	70.4
123478-HxCDF	5.2	2.5	0.1	0.52	0.52	0.52	0.1	0.52	0.52	0.52	60.6
123678-HxCDF	5.1	2.5	0.1	0.51	0.51	0.51	0.1	0.51	0.51	0.51	84.6
234678-HxCDF	2.5	2.5	0.1	0.25	0.25	0.25	0.1	0.25	0.25	0.25	72.0
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	64.5
1234678-HpCDF	52.7	2.5	0.01	0.53	0.53	0.53	0.01	0.53	0.53	0.53	63.0
1234789-HpCDF	3.8	2.5	0.01	0.04	0.04	0.04	0.01	0.04	0.04	0.04	70.5
OCDF	147.0	5.0	0.0003	0.04	0.04	0.04	0.001	0.15	0.15	0.15	-
Total TEQ	-	-	-	42.88	43.42	43.95	-	88.43	89.24	90.04	-

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	213.0	5.0	10
Penta-Dioxins	239.0	19.9	8
Hexa-Dioxins	341.0	19.9	8
Hepta-Dioxins	1380.0	5.0	2
Octa-Dioxin	70100.0	9.9	1
Tetra-Furans	58.8	8.0	16
Penta-Furans	59.3	22.4	9
Hexa-Furans	102.0	19.9	8
Hepta-Furans	184.0	9.9	4
Octa-Furan	147.0	5.0	1
S **PCDD/Fs**	72824.1		

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ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300
Laboratory Sample ID: EB2090082006
Client Sample ID: BH20 1.0
Qc Lot Number: 4542427
Sample Matrix: SOIL
Date Sampled: 17-Aug-2020
Date Extracted: 02-Sep-2020
Date Analysed: 02-Sep-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.24	0.49	1	0.00	0.24	0.49	63.8
12378-PeCDD	<2.4	2.4	1	0.00	1.22	2.45	0.5	0.00	0.61	1.22	69.9
123478-HxCDD	<2.4	2.4	0.1	0.00	0.12	0.24	0.1	0.00	0.12	0.24	60.3
123678-HxCDD	<2.4	2.4	0.1	0.00	0.12	0.24	0.1	0.00	0.12	0.24	106.3
123789-HxCDD	<2.4	2.4	0.1	0.00	0.12	0.24	0.1	0.00	0.12	0.24	-
1234678-HpCDD	101.0	2.4	0.01	1.01	1.01	1.01	0.01	1.01	1.01	1.01	75.9
OCDD	11500.0	9.8	0.0003	3.45	3.45	3.45	0.001	11.50	11.50	11.50	97.4
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	47.0
12378-PeCDF	<2.4	2.4	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	69.8
23478-PeCDF	<2.4	2.4	0.3	0.00	0.37	0.73	0.5	0.00	0.61	1.22	67.9
123478-HxCDF	<2.4	2.4	0.1	0.00	0.12	0.24	0.1	0.00	0.12	0.24	64.8
123678-HxCDF	<2.4	2.4	0.1	0.00	0.12	0.24	0.1	0.00	0.12	0.24	95.9
234678-HxCDF	<2.4	2.4	0.1	0.00	0.12	0.24	0.1	0.00	0.12	0.24	78.9
123789-HxCDF	<2.4	2.4	0.1	0.00	0.12	0.24	0.1	0.00	0.12	0.24	58.0
1234678-HpCDF	<2.4	2.4	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	74.9
1234789-HpCDF	<2.4	2.4	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	67.1
OCDF	<4.9	4.9	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
Total TEQ	-	-	-	4.46	7.24	10.01	-	12.51	14.95	17.38	-

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	<0.5	0.5	1
Penta-Dioxins	<2.4	2.4	1
Hexa-Dioxins	20.3	12.2	5
Hepta-Dioxins	222.0	4.9	2
Octa-Dioxin	11500.0	9.8	1
Tetra-Furans	<0.5	0.5	1
Penta-Furans	<2.4	2.4	1
Hexa-Furans	<2.4	2.4	1
Hepta-Furans	<7.3	7.3	3
Octa-Furan	<4.9	4.9	1
S **PCDD/Fs**	11742.3		

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ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300
Laboratory Sample ID: EB2090082007
Client Sample ID: BH20 3.4
Qc Lot Number: 4542427
Sample Matrix: SOIL
Date Sampled: 17-Aug-2020
Date Extracted: 02-Sep-2020
Date Analysed: 02-Sep-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.24	0.49	1	0.00	0.24	0.49	62.9
12378-PeCDD	<2.4	2.4	1	0.00	1.22	2.44	0.5	0.00	0.61	1.22	120.0
123478-HxCDD	<2.4	2.4	0.1	0.00	0.12	0.24	0.1	0.00	0.12	0.24	60.5
123678-HxCDD	3.8	2.4	0.1	0.38	0.38	0.38	0.1	0.38	0.38	0.38	97.1
123789-HxCDD	7.4	2.4	0.1	0.74	0.74	0.74	0.1	0.74	0.74	0.74	-
1234678-HpCDD	111.0	2.4	0.01	1.11	1.11	1.11	0.01	1.11	1.11	1.11	77.3
OCDD	6230.0	9.8	0.0003	1.87	1.87	1.87	0.001	6.23	6.23	6.23	80.0
2378-TCDF	1.5	0.5	0.1	0.15	0.15	0.15	0.1	0.15	0.15	0.15	58.9
12378-PeCDF	<2.4	2.4	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	104.9
23478-PeCDF	<2.4	2.4	0.3	0.00	0.37	0.73	0.5	0.00	0.61	1.22	103.9
123478-HxCDF	<2.4	2.4	0.1	0.00	0.12	0.24	0.1	0.00	0.12	0.24	63.6
123678-HxCDF	<2.4	2.4	0.1	0.00	0.12	0.24	0.1	0.00	0.12	0.24	91.7
234678-HxCDF	<2.4	2.4	0.1	0.00	0.12	0.24	0.1	0.00	0.12	0.24	81.6
123789-HxCDF	<2.4	2.4	0.1	0.00	0.12	0.24	0.1	0.00	0.12	0.24	66.3
1234678-HpCDF	<2.4	2.4	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	75.0
1234789-HpCDF	<2.4	2.4	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	71.8
OCDF	<4.9	4.9	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
Total TEQ	-	-	-	4.25	6.75	9.26	-	8.61	10.77	12.94	-

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	12.1	4.4	9
Penta-Dioxins	27.6	22.0	9
Hexa-Dioxins	275.0	19.6	8
Hepta-Dioxins	436.0	4.9	2
Octa-Dioxin	6230.0	9.8	1
Tetra-Furans	17.9	5.9	12
Penta-Furans	<2.4	2.4	1
Hexa-Furans	<2.4	2.4	1
Hepta-Furans	<7.3	7.3	3
Octa-Furan	<4.9	4.9	1
S **PCDD/Fs**	6998.6		

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ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB2090082008
Client Sample ID: BH21 1.3
Qc Lot Number: 4542427
Sample Matrix: SOIL
Date Sampled: 17-Aug-2020
Date Extracted: 02-Sep-2020
Date Analysed: 02-Sep-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.49	1	0.00	0.25	0.49	74.4
12378-PeCDD	2.7	2.5	1	2.69	2.69	2.69	0.5	1.35	1.35	1.35	103.4
123478-HxCDD	5.2	2.5	0.1	0.52	0.52	0.52	0.1	0.52	0.52	0.52	58.1
123678-HxCDD	6.6	2.5	0.1	0.66	0.66	0.66	0.1	0.66	0.66	0.66	101.7
123789-HxCDD	4.3	2.5	0.1	0.43	0.43	0.43	0.1	0.43	0.43	0.43	-
1234678-HpCDD	235.0	2.5	0.01	2.35	2.35	2.35	0.01	2.35	2.35	2.35	78.5
OCDD	11500.0	9.8	0.0003	3.45	3.45	3.45	0.001	11.50	11.50	11.50	105.4
2378-TCDF	2.2	0.5	0.1	0.22	0.22	0.22	0.1	0.22	0.22	0.22	54.0
12378-PeCDF	2.6	2.5	0.03	0.08	0.08	0.08	0.05	0.13	0.13	0.13	93.6
23478-PeCDF	3.0	2.5	0.3	0.90	0.90	0.90	0.5	1.50	1.50	1.50	96.0
123478-HxCDF	3.4	2.5	0.1	0.34	0.34	0.34	0.1	0.34	0.34	0.34	56.9
123678-HxCDF	3.5	2.5	0.1	0.35	0.35	0.35	0.1	0.35	0.35	0.35	89.5
234678-HxCDF	2.7	2.5	0.1	0.27	0.27	0.27	0.1	0.27	0.27	0.27	72.0
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	68.1
1234678-HpCDF	30.5	2.5	0.01	0.31	0.31	0.31	0.01	0.31	0.31	0.31	67.7
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	71.0
OCDF	63.1	4.9	0.0003	0.02	0.02	0.02	0.001	0.06	0.06	0.06	-
Total TEQ	-	-	-	12.57	12.95	13.34	-	19.98	20.36	20.74	-

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	83.7	5.4	11
Penta-Dioxins	95.5	17.2	7
Hexa-Dioxins	210.0	27.0	11
Hepta-Dioxins	500.0	4.9	2
Octa-Dioxin	11500.0	9.8	1
Tetra-Furans	69.4	8.4	17
Penta-Furans	45.5	27.0	11
Hexa-Furans	47.6	22.1	9
Hepta-Furans	75.9	9.8	4
Octa-Furan	63.1	4.9	1
S **PCDD/Fs**	12690.7		

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ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300
Laboratory Sample ID: EB2090082009
Client Sample ID: BH21 4.8
Qc Lot Number: 4542426
Sample Matrix: SOIL
Date Sampled: 17-Aug-2020
Date Extracted: 02-Sep-2020
Date Analysed: 02-Sep-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	56.6
12378-PeCDD	<2.5	2.5	1	0.00	1.24	2.48	0.5	0.00	0.62	1.24	98.8
123478-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	61.0
123678-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	90.9
123789-HxCDD	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	-
1234678-HpCDD	65.0	2.5	0.01	0.65	0.65	0.65	0.01	0.65	0.65	0.65	66.6
OCDD	4920.0	9.9	0.0003	1.48	1.48	1.48	0.001	4.92	4.92	4.92	79.0
2378-TCDF	<0.5	0.5	0.1	0.00	0.02	0.05	0.1	0.00	0.02	0.05	53.1
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	82.2
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.62	1.24	80.3
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	55.2
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	81.8
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	69.8
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	52.8
1234678-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	62.9
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	55.6
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.00	-
Total TEQ	-	-	-	2.13	4.94	7.76	-	5.57	8.04	10.51	-

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	181.0	1.5	3
Penta-Dioxins	43.5	14.9	6
Hexa-Dioxins	154.0	9.9	4
Hepta-Dioxins	223.0	5.0	2
Octa-Dioxin	4920.0	9.9	1
Tetra-Furans	<0.5	0.5	1
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<2.5	2.5	1
Hepta-Furans	<2.5	2.5	1
Octa-Furan	<5.0	5.0	1
S **PCDD/Fs**	5521.5		

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ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300
Laboratory Sample ID: EB2090082010
Client Sample ID: BH22 0.8
Qc Lot Number: 4542427
Sample Matrix: SOIL
Date Sampled: 17-Aug-2020
Date Extracted: 02-Sep-2020
Date Analysed: 02-Sep-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	11.2	0.5	1	11.20	11.20	11.20	1	11.20	11.20	11.20	81.2
12378-PeCDD	3.9	2.5	1	3.93	3.93	3.93	0.5	1.97	1.97	1.97	129.5
123478-HxCDD	4.5	2.5	0.1	0.45	0.45	0.45	0.1	0.45	0.45	0.45	63.3
123678-HxCDD	15.3	2.5	0.1	1.53	1.53	1.53	0.1	1.53	1.53	1.53	97.2
123789-HxCDD	8.5	2.5	0.1	0.85	0.85	0.85	0.1	0.85	0.85	0.85	-
1234678-HpCDD	523.0	2.5	0.01	5.23	5.23	5.23	0.01	5.23	5.23	5.23	82.1
OCDD	31600.0	9.9	0.0003	9.48	9.48	9.48	0.001	31.60	31.60	31.60	99.7
2378-TCDF	2.1	0.5	0.1	0.21	0.21	0.21	0.1	0.21	0.21	0.21	68.0
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	107.7
23478-PeCDF	<2.5	2.5	0.3	0.00	0.37	0.74	0.5	0.00	0.62	1.24	102.0
123478-HxCDF	5.4	2.5	0.1	0.54	0.54	0.54	0.1	0.54	0.54	0.54	62.1
123678-HxCDF	3.9	2.5	0.1	0.39	0.39	0.39	0.1	0.39	0.39	0.39	82.0
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	74.6
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	64.8
1234678-HpCDF	41.0	2.5	0.01	0.41	0.41	0.41	0.01	0.41	0.41	0.41	72.3
1234789-HpCDF	3.3	2.5	0.01	0.03	0.03	0.03	0.01	0.03	0.03	0.03	78.8
OCDF	164.0	4.9	0.0003	0.05	0.05	0.05	0.001	0.16	0.16	0.16	-
Total TEQ	-	-	-	34.29	34.94	35.60	-	54.56	55.48	56.41	-

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	76.5	4.9	10
Penta-Dioxins	88.8	29.7	12
Hexa-Dioxins	227.0	19.8	8
Hepta-Dioxins	1080.0	4.9	2
Octa-Dioxin	31600.0	9.9	1
Tetra-Furans	71.9	8.9	18
Penta-Furans	49.3	22.3	9
Hexa-Furans	63.6	24.7	10
Hepta-Furans	127.0	9.9	4
Octa-Furan	164.0	4.9	1
S **PCDD/Fs**	33548.1		

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ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300
Laboratory Sample ID: EB2090082011
Client Sample ID: BH22 2.35-2.45
Qc Lot Number: 4542426
Sample Matrix: SOIL
Date Sampled: 17-Aug-2020
Date Extracted: 02-Sep-2020
Date Analysed: 02-Sep-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	**2.2**	**0.5**	**1**	**2.18**	**2.18**	**2.18**	**1**	**2.18**	**2.18**	**2.18**	**72.0**
12378-PeCDD	**8.9**	**2.4**	**1**	**8.94**	**8.94**	**8.94**	**0.5**	**4.47**	**4.47**	**4.47**	**100.4**
123478-HxCDD	**11.7**	**2.4**	**0.1**	**1.17**	**1.17**	**1.17**	**0.1**	**1.17**	**1.17**	**1.17**	**61.1**
123678-HxCDD	**19.5**	**2.4**	**0.1**	**1.95**	**1.95**	**1.95**	**0.1**	**1.95**	**1.95**	**1.95**	**97.3**
123789-HxCDD	**15.8**	**2.4**	**0.1**	**1.58**	**1.58**	**1.58**	**0.1**	**1.58**	**1.58**	**1.58**	**-**
1234678-HpCDD	**435.0**	**2.4**	**0.01**	**4.35**	**4.35**	**4.35**	**0.01**	**4.35**	**4.35**	**4.35**	**62.0**
OCDD	**26300.0**	**9.8**	**0.0003**	**7.89**	**7.89**	**7.89**	**0.001**	**26.30**	**26.30**	**26.30**	**61.1**
2378-TCDF	**4.5**	**0.5**	**0.1**	**0.45**	**0.45**	**0.45**	**0.1**	**0.45**	**0.45**	**0.45**	**62.3**
12378-PeCDF	**4.3**	**2.4**	**0.03**	**0.13**	**0.13**	**0.13**	**0.05**	**0.22**	**0.22**	**0.22**	**101.8**
23478-PeCDF	**5.5**	**2.4**	**0.3**	**1.66**	**1.66**	**1.66**	**0.5**	**2.77**	**2.77**	**2.77**	**98.3**
123478-HxCDF	**7.3**	**2.4**	**0.1**	**0.73**	**0.73**	**0.73**	**0.1**	**0.73**	**0.73**	**0.73**	**66.1**
123678-HxCDF	**5.3**	**2.4**	**0.1**	**0.53**	**0.53**	**0.53**	**0.1**	**0.53**	**0.53**	**0.53**	**105.8**
234678-HxCDF	**5.0**	**2.4**	**0.1**	**0.50**	**0.50**	**0.50**	**0.1**	**0.50**	**0.50**	**0.50**	**91.0**
123789-HxCDF	**<2.4**	**2.4**	**0.1**	**0.00**	**0.12**	**0.24**	**0.1**	**0.00**	**0.12**	**0.24**	**95.6**
1234678-HpCDF	**66.3**	**2.4**	**0.01**	**0.66**	**0.66**	**0.66**	**0.01**	**0.66**	**0.66**	**0.66**	**71.3**
1234789-HpCDF	**4.9**	**2.4**	**0.01**	**0.05**	**0.05**	**0.05**	**0.01**	**0.05**	**0.05**	**0.05**	**94.1**
OCDF	**290.0**	**4.9**	**0.0003**	**0.09**	**0.09**	**0.09**	**0.001**	**0.29**	**0.29**	**0.29**	**-**
Total TEQ	**-**	**-**	**-**	**32.86**	**32.98**	**33.10**	**-**	**48.19**	**48.32**	**48.44**	**-**

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	**213.0**	**5.9**	**12**
Penta-Dioxins	**272.0**	**22.0**	**9**
Hexa-Dioxins	**532.0**	**26.9**	**11**
Hepta-Dioxins	**996.0**	**4.9**	**2**
Octa-Dioxin	**26300.0**	**9.8**	**1**
Tetra-Furans	**103.0**	**7.8**	**16**
Penta-Furans	**88.2**	**31.8**	**13**
Hexa-Furans	**106.0**	**26.9**	**11**
Hepta-Furans	**189.0**	**9.8**	**4**
Octa-Furan	**290.0**	**4.9**	**1**
S **PCDD/Fs**	**29089.2**		

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ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB2090082012
Client Sample ID: QC101 200818
Qc Lot Number: 4542427
Sample Matrix: SOIL
Date Sampled: 17-Aug-2020
Date Extracted: 02-Sep-2020
Date Analysed: 02-Sep-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	1.1	0.5	1	1.14	1.14	1.14	1	1.14	1.14	1.14	53.8
12378-PeCDD	3.2	2.5	1	3.23	3.23	3.23	0.5	1.62	1.62	1.62	70.9
123478-HxCDD	3.3	2.5	0.1	0.33	0.33	0.33	0.1	0.33	0.33	0.33	52.1
123678-HxCDD	6.2	2.5	0.1	0.62	0.62	0.62	0.1	0.62	0.62	0.62	68.3
123789-HxCDD	4.7	2.5	0.1	0.47	0.47	0.47	0.1	0.47	0.47	0.47	-
1234678-HpCDD	168.0	2.5	0.01	1.68	1.68	1.68	0.01	1.68	1.68	1.68	60.2
OCDD	8060.0	9.8	0.0003	2.42	2.42	2.42	0.001	8.06	8.06	8.06	75.5
2378-TCDF	1.2	0.5	0.1	0.12	0.12	0.12	0.1	0.12	0.12	0.12	39.0
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.07	0.05	0.00	0.06	0.12	68.5
23478-PeCDF	2.6	2.5	0.3	0.79	0.79	0.79	0.5	1.32	1.32	1.32	66.1
123478-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	49.7
123678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	63.7
234678-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	59.2
123789-HxCDF	<2.5	2.5	0.1	0.00	0.12	0.25	0.1	0.00	0.12	0.25	63.9
1234678-HpCDF	27.4	2.5	0.01	0.27	0.27	0.27	0.01	0.27	0.27	0.27	53.0
1234789-HpCDF	<2.5	2.5	0.01	0.00	0.01	0.02	0.01	0.00	0.01	0.02	59.4
OCDF	62.4	4.9	0.0003	0.02	0.02	0.02	0.001	0.06	0.06	0.06	-
Total TEQ	-	-	-	11.09	11.63	12.17	-	15.68	16.25	16.81	-

Group Totals	Conc pg/g	LOR$_4$ pg/g	No. of Peaks
Tetra-Dioxins	40.2	4.9	10
Penta-Dioxins	72.8	19.7	8
Hexa-Dioxins	128.0	22.1	9
Hepta-Dioxins	337.0	4.9	2
Octa-Dioxin	8060.0	9.8	1
Tetra-Furans	40.8	8.8	18
Penta-Furans	40.1	27.0	11
Hexa-Furans	35.1	22.1	9
Hepta-Furans	71.4	9.8	4
Octa-Furan	62.4	4.9	1
S **PCDD/Fs**	8887.8		

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Client	: JACOBS GROUP (AUSTRALIA) PTY LTD	**Work Order**	: EB2090082
Project	: IS335800	**ALS Quote Reference**	: ----

ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300

Laboratory Sample ID: EB2090082014
Client Sample ID: QC302 200819

Qc Lot Number: 4542343
Sample Matrix: WATER

Date Sampled: 18-Aug-2020
Date Extracted: 25-Aug-2020
Date Analysed: 25-Aug-2020

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<9.3	9.3	1	0.00	4.63	9.26	1	0.00	4.63	9.26	113.3
12378-PeCDD	<46.3	46.3	1	0.00	23.15	46.30	0.5	0.00	11.57	23.15	107.8
123478-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	75.0
123678-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	98.5
123789-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	-
1234678-HpCDD	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	86.7
OCDD	<185.2	185.2	0.0003	0.00	0.03	0.06	0.001	0.00	0.09	0.19	88.3
2378-TCDF	<9.3	9.3	0.1	0.00	0.46	0.93	0.1	0.00	0.46	0.93	90.0
12378-PeCDF	<46.3	46.3	0.03	0.00	0.69	1.39	0.05	0.00	1.16	2.31	104.8
23478-PeCDF	<46.3	46.3	0.3	0.00	6.94	13.89	0.5	0.00	11.57	23.15	105.7
123478-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	73.8
123678-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	91.6
234678-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	85.8
123789-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	86.1
1234678-HpCDF	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	78.2
1234789-HpCDF	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	95.8
OCDF	<92.6	92.6	0.0003	0.00	0.01	0.03	0.001	0.00	0.05	0.09	-
Total TEQ	-	-	-	0.00	52.82	105.64	-	0.00	46.44	92.87	-

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<9.3	9.3	1
Penta-Dioxins	<46.3	46.3	1
Hexa-Dioxins	<46.3	46.3	1
Hepta-Dioxins	<46.3	46.3	1
Octa-Dioxin	<185.2	185.2	1
Tetra-Furans	<9.3	9.3	1
Penta-Furans	<46.3	46.3	1
Hexa-Furans	<46.3	46.3	1
Hepta-Furans	<46.3	46.3	1
Octa-Furan	<92.6	92.6	1
S **PCDD/Fs**	0.0		

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ANALYTICAL RESULTS FOR DIOXINS AND FURANS

Method Code EP300
Laboratory Sample ID: EB2090082015
Client Sample ID: QC301 200818
Qc Lot Number: 4542343
Sample Matrix: WATER
Date Sampled: 17-Aug-2020
Date Extracted: 25-Aug-2020
Date Analysed: 25-Aug-2020

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ$_1$ (zero)	WHO-TEQ$_2$ (0.5 LOR)	WHO-TEQ$_3$ (LOR)	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<9.3	9.3	1	0.00	4.63	9.26	1	0.00	4.63	9.26	113.1
12378-PeCDD	<46.3	46.3	1	0.00	23.15	46.30	0.5	0.00	11.57	23.15	112.4
123478-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	69.7
123678-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	96.6
123789-HxCDD	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	-
1234678-HpCDD	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	84.5
OCDD	<185.2	185.2	0.0003	0.00	0.03	0.06	0.001	0.00	0.09	0.19	83.2
2378-TCDF	<9.3	9.3	0.1	0.00	0.46	0.93	0.1	0.00	0.46	0.93	91.0
12378-PeCDF	<46.3	46.3	0.03	0.00	0.69	1.39	0.05	0.00	1.16	2.31	108.4
23478-PeCDF	<46.3	46.3	0.3	0.00	6.94	13.89	0.5	0.00	11.57	23.15	106.9
123478-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	67.9
123678-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	90.1
234678-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	81.3
123789-HxCDF	<46.3	46.3	0.1	0.00	2.31	4.63	0.1	0.00	2.31	4.63	81.1
1234678-HpCDF	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	77.6
1234789-HpCDF	<46.3	46.3	0.01	0.00	0.23	0.46	0.01	0.00	0.23	0.46	89.5
OCDF	<92.6	92.6	0.0003	0.00	0.01	0.03	0.001	0.00	0.05	0.09	-
Total TEQ	-	-	-	0.00	52.82	105.64	-	0.00	46.44	92.87	-

Group Totals	Conc pg/L	LOR$_4$ pg/L	No. of Peaks
Tetra-Dioxins	<9.3	9.3	1
Penta-Dioxins	<46.3	46.3	1
Hexa-Dioxins	<46.3	46.3	1
Hepta-Dioxins	<46.3	46.3	1
Octa-Dioxin	<185.2	185.2	1
Tetra-Furans	<9.3	9.3	1
Penta-Furans	<46.3	46.3	1
Hexa-Furans	<46.3	46.3	1
Hepta-Furans	<46.3	46.3	1
Octa-Furan	<92.6	92.6	1
S **PCDD/Fs**	0.0		

QUALITY CONTROL REPORT

Client	**JACOBS GROUP (AUSTRALIA) PTY L**	**Laboratory :**	Environmental Division Brisbane		
Contact	KYLE MCLEAN	**Contact**	CUSTOMER.SERVICES.EB	**Work Order:**	**EB2090082**
Address:	100 CHRISTIE STREET P O BOX 164 ST LEONARDS NSW, AUSTRALIA 2065	**Address:**	Stafford QLD 4053 Australia	**Amendment No.**	**1**

Project	IS335800	**Quote #**	----	**Received:**	21 Aug 2020
Order #	- Not provided -			**Issued**	7 Sep 2020
C-O-C #	- Not provided -				
Site	- Not provided -				
E-mail	kyle.mclean@jacobs.com	**E-mail**	ALSEnviro.Brisbane@alsglobal.	**Number of Samples**	
Phone	9928 2100	**Phone**	+61-7-3243 7222	**Received:**	14
Fax	9928 2272	**Fax**	+61-7-3243 7218	**Analysed:**	14

Work order specific comments

(07/09/2020): This report has been amended as a result of changing the Project ID to IS335800. All analysis results are as per the previous report.

Samples QC302_200819, QC301_200818: Lower than the standard sample volume was available for these samples. The LOR is raised based on the volume available.

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This document has been digitally signed by those names that appear on this report and are the authorised signatories. Digital signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

Signatory	Position	Department
Peter Blow	HRMS Chemist	GC/HR-MS - NATA 825 (818 - Brisbane)

Quality Control Report
Laboratory Duplicates (DUP)

	Original Result	Duplicate Result
Laboratory Sample Id :	EB2090082001	5600269-007
Client Sample Id :	BH17 0.55	BH17 0.55
Sample Mass (g) :	10.0	10.0
Qc Lot Number :	4542427	4542427
Moisture Content (%) :		

Compound	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
2378-TCDD	2.4	0.5	1.9	0.5	23.3
12378-PeCDD	9.2	2.5	8.0	2.5	14.0
123478-HxCDD	11.3	2.5	9.1	2.5	21.6
123678-HxCDD	46.3	2.5	43.0	2.5	7.4
123789-HxCDD	27.8	2.5	25.2	2.5	9.8
1234678-HpCDD	1250.0	2.5	1160.0	2.5	7.5
OCDD	48400.0	10.0	58200.0	9.9	18.4
2378-TCDF	2.3	0.5	2.0	0.5	14.0
12378-PeCDF	3.3	2.5	2.8	2.5	16.4
23478-PeCDF	3.4	2.5	3.0	2.5	12.5
123478-HxCDF	10.9	2.5	11.9	2.5	8.8
123678-HxCDF	6.6	2.5	7.1	2.5	7.3
234678-HxCDF	7.3	2.5	6.3	2.5	14.7
123789-HxCDF	<2.5	2.5	<2.5	2.5	-
1234678-HpCDF	172.0	2.5	183.0	2.5	6.2
1234789-HpCDF	14.5	2.5	13.9	2.5	4.2
OCDF	1050.0	5.0	988.0	5.0	6.1

Group Totals	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
Tetra-Dioxins	158.0	6.5	103.0	6.0	42.1
Penta-Dioxins	222.0	17.5	131.0	24.8	51.6
Hexa-Dioxins	525.0	25.0	476.0	29.8	9.8
Hepta-Dioxins	2430.0	5.0	2230.0	5.0	8.6
Octa-Dioxin	48400.0	10.0	58200.0	9.9	18.4
Tetra-Furans	57.9	8.0	51.9	7.9	10.9
Penta-Furans	84.7	25.0	62.5	27.3	30.2
Hexa-Furans	254.0	22.5	218.0	24.8	15.3
Hepta-Furans	815.0	10.0	783.0	9.9	4.0
Octa-Furan	1050.0	5.0	988.0	5.0	6.1
Σ **PCDD/Fs**	**53996.6**		**63243.4**		**15.8**

Notes

LOR = Limit of reporting
T = tetra
Pe = penta
Hx = hexa
Hp = hepta
O = octa
CDD, dioxin = chlorinated debenzo-p-dioxin
CDF, furan = chlorinated debenzofuran
RPD = relative per cent difference
Permitted ranges for RPD are depencant upon the magnitude of the result in comparison to the LOR.
Result < 10x LOR, no limit, result between 10x and 20x LOR, 50%; result > 20x LOR, 20%

An ALS Limited Company

Quality Control Report
Laboratory Duplicates (DUP)

	Original Result	Duplicate Result
Laboratory Sample Id :	EB2090082011	5600269-026
Client Sample Id :	BH22 2.35-2.45	BH22 2.35-2.45
Sample Mass (g) :	10.0	10.0
Qc Lot Number :	4542427	4542427
Moisture Content (%) :		

Compound	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
2378-TCDD	2.2	0.5	2.2	0.5	0.0
12378-PeCDD	8.9	2.4	8.1	2.4	9.4
123478-HxCDD	11.7	2.4	9.2	2.4	23.9
123678-HxCDD	19.5	2.4	19.5	2.4	0.0
123789-HxCDD	15.8	2.4	14.6	2.4	7.9
1234678-HpCDD	435.0	2.4	453.0	2.4	4.1
OCDD	26300.0	9.8	27100.0	9.7	3.0
2378-TCDF	4.5	0.5	4.4	0.5	2.2
12378-PeCDF	4.3	2.4	3.8	2.4	12.3
23478-PeCDF	5.5	2.4	4.7	2.4	15.7
123478-HxCDF	7.3	2.4	6.7	2.4	8.6
123678-HxCDF	5.3	2.4	5.5	2.4	3.7
234678-HxCDF	5.0	2.4	5.1	2.4	2.0
123789-HxCDF	<2.4	2.4	<2.4	2.4	-
1234678-HpCDF	66.3	2.4	66.4	2.4	0.2
1234789-HpCDF	4.9	2.4	4.1	2.4	17.8
OCDF	290.0	4.9	207.0	4.8	33.4

Group Totals	Conc pg/g	LOR pg/g	Conc pg/g	LOR pg/g	RPD (%)
Tetra-Dioxins	213.0	5.9	239.0	5.8	11.5
Penta-Dioxins	272.0	22.0	242.0	21.8	11.7
Hexa-Dioxins	532.0	26.9	530.0	24.2	0.4
Hepta-Dioxins	996.0	4.9	991.0	4.8	0.5
Octa-Dioxin	26300.0	9.8	27100.0	9.7	3.0
Tetra-Furans	103.0	7.8	110.0	8.2	6.6
Penta-Furans	88.2	31.8	77.0	26.6	13.6
Hexa-Furans	106.0	26.9	102.0	24.2	3.8
Hepta-Furans	189.0	9.8	182.0	9.7	3.8
Octa-Furan	290.0	4.9	207.0	4.8	33.4
Σ **PCDD/Fs**	**29089.2**		**29780.0**		**2.3**

Notes

LOR = Limit of reporting
T = tetra
Pe = penta
Hx = hexa
Hp = hepta
O = octa
CDD, dioxin = chlorinated debenzo-p-dioxin
CDF, furan = chlorinated debenzofuran
RPD = relative per cent difference
Permitted ranges for RPD are depencant upon the magnitude of the result in comparison to the LOR.
Result < 10x LOR, no limit, result between 10x and 20x LOR, 50%; result > 20x LOR, 20%

An ALS Limited Company

Quality Control Results

Laboratory Control Samples(LCS)

Laboratory Sample Id : 5600033-002
QC Lot Number : 4542342
Sample Name : Ongoing Precision and Recovery (OPR)

Compound	Conc pg/L	Lower pg/L	Upper pg/L	$^{13}C_{12}$ Rec(%)	Lower 2 (%)	Upper 2 (%)
2378-TCDD	907.0	536	1264	103.4	25	164
12378-PeCDD	4100.0	2800	5680	122.3	25	181
123478-HxCDD	3810.0	2800	6560	76.2	32	141
123678-HxCDD	4200.0	3040	5360	91.7	28	130
123789-HxCDD	4690.0	2560	6480	-	-	-
1234678-HpCDD	4220.0	2800	5600	80.9	23	140
OCDD	9160.0	6240	11520	73.5	17	157
2378-TCDF	928.0	600	1264	93.9	24	169
12378-PeCDF	3840.0	3200	5360	114.9	24	185
23478-PeCDF	3940.0	2720	6400	109.7	21	178
123478-HxCDF	3670.0	2880	5360	74.1	26	152
123678-HxCDF	3970.0	3360	5200	91.6	26	123
234678-HxCDF	3630.0	3120	5200	85.6	28	136
123789-HxCDF	4020.0	2800	6240	82.4	29	147
1234678-HpCDF	3670.0	3280	4880	75.9	28	143
1234789-HpCDF	3820.0	3120	5520	81.2	26	138
OCDF	7530.0	5040	13600			

Notes

1. Acceptable concentration limits are as quoted on the analytical certificate for the cerified reference material
2. Acceptable recovery limits are derived from EPA1613 Revision B

T = tetra
Pe = penta
Hx = hexa
Hp = hepta

An ALS Limited Company

Quality Control Results

Laboratory Control Samples(LCS)

Laboratory Sample Id : 5600269-010
QC Lot Number : 4542427
Sample Name : BCR 529 Sandy soil

Compound	Conc pg/g	Lower 1 pg/g	Upper 1 pg/g	$^{13}C_{12}$ Rec(%)	Lower 2 (%)	Upper 2 (%)
2378-TCDD	4070.0	3900	5100	52.3	25	164
12378-PeCDD	488.0	390	490	73.3	25	181
123478-HxCDD	1380.0	900	1500	82.2	32	141
123678-HxCDD	4590.0	4500	6300	84.0	28	130
123789-HxCDD	3100.0	2600	3400	-	-	-
2378-TCDF	81.2	65	91	39.9	24	169
12378-PeCDF	158.0	110	170	79.8	24	185
23478-PeCDF	423.0	290	430	74.8	21	178
123478-HxCDF	3190.0	2900	3900	75.7	26	152
123678-HxCDF	1200.0	940	1240	89.5	26	123
234678-HxCDF	366.0	330	410	92.1	28	136
123789-HxCDF	758.0	12	32	74.3	29	147

Notes

1. Acceptable concentration limits are as quoted on the analytical certificate for the cerified reference material
2. Acceptable recovery limits are derived from EPA1613 Revision B

T = tetra
Pe = penta
Hx = hexa
Hp = hepta

An ALS Limited Company

Client	: JACOBS GROUP (AUSTRALIA) PTY LTD	**Work Order**	:	EB2090082	
Project	: IS335800	**ALS Quote Reference**	:	----	

Quality Control Report
Method Blank (MB)

Laboratory Sample ID: 5600033-001
Qc Lot Number : 4542342

Sample Matrix: WATER
Date Extracted: 25-Aug-2020
Date Analysed: 25-Aug-2020

Compound	Conc pg/L	LOR pg/L	WHO-TEF	WHO-TEQ [1]	WHO-TEQ [2]	WHO-TEQ [3]	I-TEF	I-TEQ$_1$ (zero)	I-TEQ$_2$ (0.5 LOR)	I-TEQ$_3$ (LOR)	$^{13}C_{12}$ Rec(%)
2378-TCDD	<5.0	5.0	1	0.00	2.50	5.00	1	0.00	2.50	5.00	104.0
12378-PeCDD	<25.0	25.0	1	0.00	12.50	25.00	0.5	0.00	6.25	12.50	102.2
123478-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	66.4
123678-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	85.6
123789-HxCDD	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	-
1234678-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	78.2
OCDD	<100.0	100.0	0.0003	0.00	0.02	0.03	0.001	0.00	0.05	0.10	77.3
2378-TCDF	<5.0	5.0	0.1	0.00	0.25	0.50	0.1	0.00	0.25	0.50	85.6
12378-PeCDF	<25.0	25.0	0.03	0.00	0.38	0.75	0.05	0.00	0.63	1.25	99.9
23478-PeCDF	<25.0	25.0	0.3	0.00	3.75	7.50	0.5	0.00	6.25	12.50	97.8
123478-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	65.7
123678-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	84.2
234678-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	80.4
123789-HxCDF	<25.0	25.0	0.1	0.00	1.25	2.50	0.1	0.00	1.25	2.50	79.6
1234678-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	67.8
1234789-HpCD	<25.0	25.0	0.01	0.00	0.13	0.25	0.01	0.00	0.13	0.25	82.2
OCDF	<50.0	50.0	0.0003	0.00	0.01	0.02	0.001	0.00	0.03	0.05	-
			Σ **TEQ(WHO)**	0.00	28.55	57.05	Σ **TEQ(I)**	0.00	25.10	50.15	

Group Totals	Conc pg/L	LOR[4] pg/L	No. of Peaks
Tetra-Dioxins	<5.0	5.0	1
Penta-Dioxins	<25.0	25.0	1
Hexa-Dioxins	<25.0	25.0	1
Hepta-Dioxins	<25.0	25.0	1
Octa-Dioxin	<100.0	100.0	1
Tetra-Furans	<5.0	5.0	1
Penta-Furans	<25.0	25.0	1
Hexa-Furans	<25.0	25.0	1
Hepta-Furans	<25.0	25.0	1
Octa-Furan	<50.0	50.0	1
Σ **PCDD/Fs**	0.00		

Notes
LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence (pg/L)
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence (pg/L)
T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran
1 I -TEQ(zero) and WHO-TEQ(zero) calculated treating <LOR as zero concentration (pg/L)
2 I-TEQ(0.5 LOR) and WHO-TEQ(0.5 LOR) calculated treating <LOR as 50% LoR concentration (pg/L)
3 I-TEQ(LOR) and WHO-TEQ(LOR) calculated treating <LOR as LoR concentration (pg/L)
4 Totals LORs are calculated by mutiplying the number of peaks by the individual LOR per compound

An ALS Limited Company

Quality Control Report
Method Blank (MB)

Laboratory Sample ID: 5600269-001
Qc Lot Number : 4542427

Sample Matrix: SOIL
Date Extracted: 02-Sep-2020
Date Analysed: 02-Sep-2020

Compound	Conc pg/g	LOR pg/g	WHO-TEF	WHO-TEQ 1	WHO-TEQ 2	WHO-TEQ 3	I-TEF	I-TEQ1 (zero)	I-TEQ2 (0.5 LOR)	I-TEQ3 (LOR)	13C12 Rec(%)
2378-TCDD	<0.5	0.5	1	0.00	0.25	0.50	1	0.00	0.25	0.50	64.3
12378-PeCDD	<2.5	2.5	1	0.00	1.25	2.50	0.5	0.00	0.63	1.25	82.2
123478-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	57.5
123678-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	97.0
123789-HxCDD	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	-
1234678-HpCD	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	74.8
OCDD	<10.0	10.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.01	0.01	89.6
2378-TCDF	<0.5	0.5	0.1	0.00	0.03	0.05	0.1	0.00	0.03	0.05	49.7
12378-PeCDF	<2.5	2.5	0.03	0.00	0.04	0.08	0.05	0.00	0.06	0.13	82.9
23478-PeCDF	<2.5	2.5	0.3	0.00	0.38	0.75	0.5	0.00	0.63	1.25	80.6
123478-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	61.2
123678-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	90.6
234678-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	77.2
123789-HxCDF	<2.5	2.5	0.1	0.00	0.13	0.25	0.1	0.00	0.13	0.25	65.1
1234678-HpCD	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	77.8
1234789-HpCD	<2.5	2.5	0.01	0.00	0.01	0.03	0.01	0.00	0.01	0.03	74.8
OCDF	<5.0	5.0	0.0003	0.00	0.00	0.00	0.001	0.00	0.00	0.01	-
			S **TEQ(WHO)**	0.00	2.89	5.72	S **TEQ(I)**	0.00	2.55	5.04	

Group Totals	Conc pg/g	LOR4 pg/g	No. of Peaks
Tetra-Dioxins	<0.5	0.5	1
Penta-Dioxins	<2.5	2.5	1
Hexa-Dioxins	<2.5	2.5	1
Hepta-Dioxins	<2.5	2.5	1
Octa-Dioxin	<10.0	10.0	1
Tetra-Furans	<0.5	0.5	1
Penta-Furans	<2.5	2.5	1
Hexa-Furans	<2.5	2.5	1
Hepta-Furans	<2.5	2.5	1
Octa-Furan	<5.0	5.0	1
S **PCDD/Fs**	0.00		

Notes
LOR = Limit of reporting
I-TEF = International toxic equivalency factor
I-TEQ = International toxic equivalence (pg/g)
WHO-TEF = World Health Organistaion toxic equivalency factor
WHO-TEQ = World Health Organisation toxic equivalence (pg/g)
T = tetra
Pe = penta
Hx = hexa
Hp =hepta
O = octa
CDD, dioxin = chlorinated dibenzo-p-dioxin
CDF, furan = chlorinated dibenzofuran
1 I -TEQ(zero) and WHO-TEQ(zero) calculated treating <LOR as zero concentration (pg/g)
2 I-TEQ(0.5 LOR) and WHO-TEQ(0.5 LOR) calculated treating <LOR as 50% LoR concentration (pg/g)
3 I-TEQ(LOR) and WHO-TEQ(LOR) calculated treating <LOR as LoR concentration (pg/g)
4 Totals LORs are calculated by mutiplying the number of peaks by the individual LOR per compound

Anson Lee [signature] 24/8/20 4:40PM 16.20°C #73960

CHAIN OF CUSTODY

CLIENT: JACOBS
OFFICE: Level 7, 177 Pacific Highway, North Sydney
PROJECT: IS335800
ORDER NUMBER:
PROJECT MANAGER:
CONTACT PH: 0402 536 796
SAMPLER: Kyle McLean
SAMPLER MOBILE: 0402 536 796
COC emailed? (YES / NO)
EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): Kyle.Mclean@jacobs.com
Email Invoice to (will default to PM if no other addresses are listed):

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)
☑ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
QUOTE NO.: SY/224/20

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: 16.7 °C
Other comment:

RELINQUISHED BY: K. MCLEAN
DATE/TIME: 19/8/20 @ 17:00

RECEIVED BY: [signature]
DATE/TIME: 19/08/2020 1720

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY: [signature]
DATE/TIME: 19/8/20 1900

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-27	EP066	EA 200S	EP 300S				HOLD	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	BH17-0.2	17/8/20	S	n/a	3								X	
2	BH17-0.55				3	X	X	X	X					
3	BH17-1.5				3								X	
4	BH17-4.5				3	X	X	X	X					
5	BH17-5.7				2								X	
6	BH18-0.2				3	X	X	X	X					
7	BH18-0.5				3								X	
8	BH18-2.2	17/8/20			3	X	X	X	X					
9	BH19-0.2	18/8/20			2	X	X	X	X					
10	BH20-0.2				3								X	
11	BH20-1.0				3	X	X	X	X					
12	BH20-2.4		S	n/a	3								X	

Environmental Division Sydney
Work Order Reference
ES2029204

Telephone : +61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Anson Lee 24/8/20 16.20°C 4:40pm #739600

CHAIN OF CUSTODY

CLIENT: JACOBS	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☑ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Level 7, 177 Pacific Highway, North Sydney		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
PROJECT:	QUOTE NO.: SY/224/20	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:			Random Sample Temperature on Receipt: °C
PROJECT MANAGER: 153358000	CONTACT PH: 0402 536 796		Other comment: 1-7
SAMPLER: Kyle McLean	SAMPLER MOBILE: 0402 536 796		
COC emailed? (YES / NO)	EDD FORMAT (or default):		
Email Reports to (will default to PM if no other addresses are listed): Kyle.Mclean@jacobs.com			
Email Invoice to (will default to PM if no other addresses are listed):			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
K. MCLEAN	Sep M		
DATE/TIME: 19/8/20 @ 17:00	DATE/TIME: 19/8/20 17:20	DATE/TIME:	DATE/TIME: 19/8/20 19:00

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-27	EP066	EA 200CT	EP 3008				HOLD	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
13	BH20_3.4	18/8/20	S	N/A	3	X	X	X	X					
14	BH21_0.2				3								X	
15	BH21_0.6				3								X	
16	BH21_1.3				3	X	X	X	X					
17	BH21_4.3				2								X	
18	BH21_4.8				2	X	X	X	X					
19	BH22_0.2				3								X	
20	BH22_0.8				3	X	X	X	X					
21	BH22_1.4				3								X	
22	BH22_2.35-2.45				3	X	X	X	X					
23	QC101_200818				3	X	X	X	X					
24	QC201_200818		S		3	X	X		X					Send to Eurofins

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Anson Lee 24/8/20 16-20°C #739600 4:40 pm

CHAIN OF CUSTODY

CLIENT: JACOBS	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☑ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Level 7, 177 Pacific Highway, North Sydney		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
PROJECT: IS335800	QUOTE NO.: SY/224/20	COC SEQUENCE NUMBER (Circle) COC: 1 2 (3) 4 5 6 7 OF: 1 2 (3) 4 5 6 7	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:			Random Sample Temperature on Receipt: °C
PROJECT MANAGER:	CONTACT PH: 0402 536 796		Other comment: 1-7
SAMPLER: Kyle McLean	SAMPLER MOBILE: 0402 536 796		
COC emailed? (YES / NO)	EDD FORMAT (or default):		
Email Reports to (will default to PM if no other addresses are listed): Kyle.Mclean@jacobs.com			
Email Invoice to (will default to PM if no other addresses are listed):			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
K. MCLEAN	Sep M.		
DATE/TIME: 19/8/20 @ 17:00	DATE/TIME: 19/8/2020 1720	DATE/TIME:	DATE/TIME: 19/8/20 1720

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	BTEX	W-27	EP074	EP090S	EP300S			HOLD	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
24	QC301_200818	18/8/20	W		S		X	X	X	X				
25	QC501_200817	17/8/20	S	n/a	1	X								Trip Blank
26	QC601_200817	17/8/20	S	n/a	1	X								Trip Spike
27	QC302_200819	19/8/20	W		S		X	X	X	X				
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle: E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils: B = Unpreserved Bag.

eurofins | Environment Testing

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NATA # 1261 Site # 20794

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Phone : 0800 856 450
IANZ # 1290

Company Name: Jacobs Group (Australia) P/L NSW
Address: Level 7, 177 Pacific Highway
North Sydney
NSW 2065

Project Name:
Project ID: IS335800

Order No.:
Report #: 739600
Phone: 02 9928 2100
Fax: 02 9928 2504

Received: Aug 24, 2020 4:40 PM
Due: Aug 31, 2020
Priority: 5 Day
Contact Name: Kyle McLean

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Polychlorinated Biphenyls	Moisture Set	Eurofins Suite B7A	Polychlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans(PCDFs)
Melbourne Laboratory - NATA Site # 1254 & 14271									
Sydney Laboratory - NATA Site # 18217						X	X	X	
Brisbane Laboratory - NATA Site # 20794									X
Perth Laboratory - NATA Site # 23736									
Newcastle Laboratory									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	QC201_200818	Aug 18, 2020		Soil	S20-Au37003	X	X	X	X
Test Counts						1	1	1	1

Jacobs Group (Australia) P/L NSW
Level 7, 177 Pacific Highway
North Sydney
NSW 2065

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.

Attention: **Kyle McLean**

Report **739600-S**
Project name
Project ID IS335800
Received Date Aug 24, 2020

Client Sample ID			**QC201_200818**
Sample Matrix			**Soil**
Eurofins Sample No.			**S20-Au37003**
Date Sampled			**Aug 18, 2020**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	132
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5

Client Sample ID			QC201_200818
Sample Matrix			Soil
Eurofins Sample No.			S20-Au37003
Date Sampled			Aug 18, 2020
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	87
p-Terphenyl-d14 (surr.)	1	%	88
Polychlorinated Biphenyls			
Aroclor-1016	0.5	mg/kg	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5
Total PCB*	0.5	mg/kg	< 0.5
Dibutylchlorendate (surr.)	1	%	110
Tetrachloro-m-xylene (surr.)	1	%	92
Phenols (Halogenated)			
2-Chlorophenol	0.5	mg/kg	< 0.5
2.4-Dichlorophenol	0.5	mg/kg	< 0.5
2.4.5-Trichlorophenol	1	mg/kg	< 1
2.4.6-Trichlorophenol	1	mg/kg	< 1
2.6-Dichlorophenol	0.5	mg/kg	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	< 1
Pentachlorophenol	1	mg/kg	< 1
Tetrachlorophenols - Total	10	mg/kg	< 10
Total Halogenated Phenol*	1	mg/kg	< 1
Phenols (non-Halogenated)			
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	< 20
2-Methyl-4.6-dinitrophenol	5	mg/kg	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2
2-Nitrophenol	1	mg/kg	< 1
2.4-Dimethylphenol	0.5	mg/kg	< 0.5
2.4-Dinitrophenol	5	mg/kg	< 5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4
4-Nitrophenol	5	mg/kg	< 5
Dinoseb	20	mg/kg	< 20
Phenol	0.5	mg/kg	< 0.5
Total Non-Halogenated Phenol*	20	mg/kg	< 20
Phenol-d6 (surr.)	1	%	72
Heavy Metals			
Arsenic	2	mg/kg	5.1
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	18
Copper	5	mg/kg	56

Client Sample ID			QC201_200818
Sample Matrix			**Soil**
Eurofins Sample No.			**S20-Au37003**
Date Sampled			**Aug 18, 2020**
Test/Reference	LOR	Unit	
Heavy Metals			
Lead	5	mg/kg	97
Mercury	0.1	mg/kg	0.2
Nickel	5	mg/kg	6.5
Zinc	5	mg/kg	140
% Moisture	1	%	11

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.

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	Aug 27, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Aug 27, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Aug 27, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Aug 27, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Aug 27, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (Halogenated)	Sydney	Aug 27, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Sydney	Aug 27, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Sydney	Aug 27, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Polychlorinated Biphenyls	Sydney	Aug 27, 2020	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
% Moisture	Sydney	Aug 24, 2020	14 Days
- Method: LTM-GEN-7080 Moisture			

eurofins | Environment Testing

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NSW 2065

Project Name:
Project ID: IS335800

Order No.:
Report #: 739600
Phone: 02 9928 2100
Fax: 02 9928 2504

Received: Aug 24, 2020 4:40 PM
Due: Aug 31, 2020
Priority: 5 Day
Contact Name: Kyle McLean

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Polychlorinated Biphenyls	Moisture Set	Eurofins Suite B7A	Polychlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans(PCDFs)
Melbourne Laboratory - NATA Site # 1254 & 14271									
Sydney Laboratory - NATA Site # 18217						X	X	X	
Brisbane Laboratory - NATA Site # 20794									X
Perth Laboratory - NATA Site # 23736									
Newcastle Laboratory									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	QC201_200818	Aug 18, 2020		Soil	S20-Au37003	X	X	X	X
Test Counts						1	1	1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food 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. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

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

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

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands 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	US Department of Defense Quality Systems Manual Version 5.3
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 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

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							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.5			0.5	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.5			0.5	Pass	
Aroclor-1242	mg/kg	< 0.5			0.5	Pass	
Aroclor-1248	mg/kg	< 0.5			0.5	Pass	
Aroclor-1254	mg/kg	< 0.5			0.5	Pass	
Aroclor-1260	mg/kg	< 0.5			0.5	Pass	
Total PCB*	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2.4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2.4.5-Trichlorophenol	mg/kg	< 1			1	Pass	
2.4.6-Trichlorophenol	mg/kg	< 1			1	Pass	
2.6-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 1			1	Pass	
Pentachlorophenol	mg/kg	< 1			1	Pass	
Tetrachlorophenols - Total	mg/kg	< 10			10	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	mg/kg	< 20			20	Pass	
2-Methyl-4.6-dinitrophenol	mg/kg	< 5			5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	Pass	
2-Nitrophenol	mg/kg	< 1			1	Pass	
2.4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dinitrophenol	mg/kg	< 5			5	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4			0.4	Pass	
4-Nitrophenol	mg/kg	< 5			5	Pass	
Dinoseb	mg/kg	< 20			20	Pass	
Phenol	mg/kg	< 0.5			0.5	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	%	96			70-130	Pass	
TRH C10-C14	%	108			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	124			70-130	Pass	
Toluene	%	100			70-130	Pass	
Ethylbenzene	%	107			70-130	Pass	
m&p-Xylenes	%	112			70-130	Pass	
o-Xylene	%	116			70-130	Pass	
Xylenes - Total*	%	113			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	124			70-130	Pass	
TRH C6-C10	%	99			70-130	Pass	
TRH >C10-C16	%	108			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	77			70-130	Pass	
Acenaphthylene	%	96			70-130	Pass	
Anthracene	%	89			70-130	Pass	
Benz(a)anthracene	%	77			70-130	Pass	
Benzo(a)pyrene	%	82			70-130	Pass	
Benzo(b&j)fluoranthene	%	74			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(g.h.i)perylene	%	92			70-130	Pass	
Benzo(k)fluoranthene	%	96			70-130	Pass	
Chrysene	%	82			70-130	Pass	
Dibenz(a.h)anthracene	%	98			70-130	Pass	
Fluoranthene	%	87			70-130	Pass	
Fluorene	%	81			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	97			70-130	Pass	
Naphthalene	%	91			70-130	Pass	
Phenanthrene	%	81			70-130	Pass	
Pyrene	%	97			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1016	%	83			70-130	Pass	
Aroclor-1260	%	97			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	100			80-120	Pass	
Cadmium	%	94			80-120	Pass	
Chromium	%	91			80-120	Pass	
Copper	%	87			80-120	Pass	
Lead	%	98			80-120	Pass	
Mercury	%	94			80-120	Pass	
Nickel	%	87			80-120	Pass	
Zinc	%	91			80-120	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	W20-Au35867	NCP	%	72			70-130	Pass	
TRH C10-C14	S20-Au27655	NCP	%	85			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S20-Au34997	NCP	%	84			70-130	Pass	
Toluene	W20-Au35867	NCP	%	81			70-130	Pass	
Ethylbenzene	S20-Au34997	NCP	%	72			70-130	Pass	
m&p-Xylenes	S20-Au34997	NCP	%	83			70-130	Pass	
o-Xylene	S20-Au34997	NCP	%	83			70-130	Pass	
Xylenes - Total*	S20-Au34997	NCP	%	83			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S20-Au34997	NCP	%	86			70-130	Pass	
TRH C6-C10	W20-Au35867	NCP	%	75			70-130	Pass	
TRH >C10-C16	S20-Au27655	NCP	%	85			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S20-Au32499	NCP	%	76			70-130	Pass	
Acenaphthylene	S20-Au32499	NCP	%	85			70-130	Pass	
Anthracene	S20-Au32499	NCP	%	85			70-130	Pass	
Benz(a)anthracene	S20-Au32499	NCP	%	75			70-130	Pass	
Benzo(a)pyrene	S20-Au32499	NCP	%	79			70-130	Pass	
Benzo(b&j)fluoranthene	N20-Au37758	NCP	%	90			70-130	Pass	
Benzo(g.h.i)perylene	S20-Au32499	NCP	%	83			70-130	Pass	
Benzo(k)fluoranthene	S20-Au32499	NCP	%	90			70-130	Pass	
Chrysene	S20-Au32499	NCP	%	79			70-130	Pass	
Dibenz(a.h)anthracene	S20-Au32499	NCP	%	84			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Fluoranthene	S20-Au32499	NCP	%	83			70-130	Pass	
Fluorene	S20-Au32499	NCP	%	75			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S20-Au32499	NCP	%	86			70-130	Pass	
Naphthalene	S20-Au32499	NCP	%	84			70-130	Pass	
Phenanthrene	S20-Au32499	NCP	%	73			70-130	Pass	
Pyrene	S20-Au32499	NCP	%	89			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1016	S20-Au32499	NCP	%	85			70-130	Pass	
Aroclor-1260	S20-Au32499	NCP	%	97			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S20-Au47611	NCP	%	105			75-125	Pass	
Cadmium	S20-Au47611	NCP	%	100			75-125	Pass	
Chromium	S20-Au47611	NCP	%	95			75-125	Pass	
Copper	S20-Au47611	NCP	%	89			75-125	Pass	
Lead	S20-Au47611	NCP	%	100			75-125	Pass	
Mercury	S20-Au47611	NCP	%	98			75-125	Pass	
Nickel	S20-Au47611	NCP	%	87			75-125	Pass	
Zinc	S20-Au47611	NCP	%	94			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S20-Au34996	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S20-Au45465	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S20-Au45465	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S20-Au45465	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S20-Au34996	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S20-Au34996	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S20-Au34996	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S20-Au34996	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S20-Au34996	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S20-Au34996	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S20-Au34996	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S20-Au34996	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S20-Au45465	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S20-Au45465	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S20-Au45465	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S20-Au42408	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S20-Au42408	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S20-Au42408	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S20-Au42408	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S20-Au42408	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S20-Au42408	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S20-Au42408	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S20-Au42408	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S20-Au42408	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S20-Au42408	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Fluoranthene	S20-Au42408	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S20-Au42408	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S20-Au42408	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S20-Au42408	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S20-Au42408	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S20-Au42408	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	S20-Au34892	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1221	S20-Au34892	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	S20-Au34892	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S20-Au34892	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S20-Au34892	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S20-Au34892	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S20-Au34892	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Total PCB*	S20-Au34892	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Phenols (Halogenated)				Result 1	Result 2	RPD			
2-Chlorophenol	S20-Au32487	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-Dichlorophenol	S20-Au32487	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4.5-Trichlorophenol	S20-Au32487	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2.4.6-Trichlorophenol	S20-Au32487	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2.6-Dichlorophenol	S20-Au32487	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chloro-3-methylphenol	S20-Au32487	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Pentachlorophenol	S20-Au32487	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Tetrachlorophenols - Total	S20-Au32487	NCP	mg/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Phenols (non-Halogenated)				Result 1	Result 2	RPD			
2-Cyclohexyl-4.6-dinitrophenol	S20-Au32487	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
2-Methyl-4.6-dinitrophenol	S20-Au32487	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Methylphenol (o-Cresol)	S20-Au32487	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
2-Nitrophenol	S20-Au32487	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
2.4-Dimethylphenol	S20-Au32487	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-Dinitrophenol	S20-Au32487	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	S20-Au32487	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
4-Nitrophenol	S20-Au32487	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Dinoseb	S20-Au32487	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Phenol	S20-Au32487	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S20-Au37729	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium	S20-Au37729	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S20-Au37729	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	S20-Au37729	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S20-Au37729	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	S20-Au37729	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S20-Au37729	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S20-Au37729	NCP	mg/kg	12	9.0	32	30%	Fail	Q15
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S20-Au37142	NCP	%	20	20	1.0	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
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 Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Andrew Black	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)
Jonathon Angell	Senior Analyst-Organic (QLD)



Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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

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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.

Attention: **Kyle McLean**

Report **739600-DX-S**
Project name
Project ID IS335800
Received Date Aug 24, 2020

Client Sample ID			**QC201_200818**
Sample Matrix			**Soil**
Eurofins Sample No.			**S20-Au37003**
Date Sampled			**Aug 18, 2020**
Test/Reference	LOR	Unit	
Polychlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans(PCDFs)			
2.3.7.8-TCDD	1	pg/g	< 1
13C12-2.3.7.8-TCDD	1	%	56
Total-TCDD	1	pg/g	65
2.3.7.8-TCDF	1	pg/g	2.8
13C12-2.3.7.8-TCDF	1	%	61
Total-TCDF	1	pg/g	68
1.2.3.7.8-PeCDD	5	pg/g	< 5
13C12-1.2.3.7.8-PeCDD	1	%	62
Total PeCDD	5	pg/g	86
1.2.3.7.8-PeCDF	5	pg/g	< 5
13C12-1.2.3.7.8-PeCDF	1	%	60
2.3.4.7.8-PeCDF	5	pg/g	< 5
13C12-2.3.4.7.8-PeCDF	1	%	61
Total-PeCDF	10	pg/g	89
1.2.3.4.7.8-HxCDD	5	pg/g	< 5
13C12-1.2.3.4.7.8-HxCDD	1	%	49
1.2.3.6.7.8-HxCDD	5	pg/g	11
13C12-1.2.3.6.7.8-HxCDD	1	%	47
1.2.3.7.8.9-HxCDD	5	pg/g	5.6
Total HxCDD	5	pg/g	140
1.2.3.4.7.8-HxCDF	5	pg/g	< 5
13C12-1.2.3.4.7.8-HxCDF	1	%	52
2.3.4.6.7.8-HxCDF	5	pg/g	< 5
13C12-2.3.4.6.7.8-HxCDF	1	%	45
1.2.3.6.7.8-HxCDF	5	pg/g	< 5
13C12-1.2.3.6.7.8-HxCDF	1	%	45
1.2.3.7.8.9-HxCDF	5	pg/g	< 5
13C12-1.2.3.7.8.9-HxCDF	1	%	41
Total-HxCDF	20	pg/g	49
1.2.3.4.6.7.8-HpCDD	5	pg/g	390
13C12-1.2.3.4.6.7.8-HpCDD	1	%	27
Total-HpCDD	15	pg/g	770
1.2.3.4.6.7.8-HpCDF	5	pg/g	43
13C12-1.2.3.4.6.7.8-HpCDF	1	%	28
1.2.3.4.7.8.9-HpCDF	5	pg/g	< 5

Client Sample ID			QC201_200818
Sample Matrix			**Soil**
Eurofins Sample No.			**S20-Au37003**
Date Sampled			**Aug 18, 2020**
Test/Reference	LOR	Unit	
Polychlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans(PCDFs)			
13C12-1.2.3.4.7.8.9-HpCDF	1	%	28
Total-HpCDF	20	pg/g	190
OCDD	10	pg/g	8800
13C12-OCDD	1	%	33
OCDF	10	pg/g	130
Lower bound TEQ (WHO) based on PCDD/F*	0.1	pg/g	11
Medium bound TEQ (WHO) based on PCDD/F*	0.3	pg/g	12
Upper bound TEQ (WHO) based on PCDD/F*		pg/g	12
Lower bound TEQ (International) based on PCDD/F*		pg/g	13
Medium bound TEQ (International) based on PCDD/F*		pg/g	13
Upper bound TEQ (International) based on PCDD/F*		pg/g	14

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.

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
Polychlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans(PCDFs)	Brisbane	Aug 27, 2020	1 Year

- Method: LTM-ORG-2330 Determination of PCDDs, PCDFs and DL-PCBs in Aqueous, Wipe, Air and Solid Samples by GC-MS/MS

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North Sydney
NSW 2065

Project Name:
Project ID: IS335800

Order No.:
Report #: 739600
Phone: 02 9928 2100
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Received: Aug 24, 2020 4:40 PM
Due: Aug 31, 2020
Priority: 5 Day
Contact Name: Kyle McLean

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Polychlorinated Biphenyls	Moisture Set	Eurofins Suite B7A	Polychlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans(PCDFs)
Melbourne Laboratory - NATA Site # 1254 & 14271									
Sydney Laboratory - NATA Site # 18217						X	X	X	
Brisbane Laboratory - NATA Site # 20794									X
Perth Laboratory - NATA Site # 23736									
Newcastle Laboratory									
External Laboratory									
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**				
1	QC201_200818	Aug 18, 2020		Soil	S20-Au37003	X	X	X	X
Test Counts						1	1	1	1

Internal Quality Control Review and Glossary - DIOXINS

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
4. Results are corrected for surrogate recoveries for PCDDs/PCDFs and DL-PCBs compounds.
5. Analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
6. Aqueous samples containing visible particles and containing greater than one percent suspended solids are prepared by filtering solids and extracting the solids separately.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

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

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

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

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

There are no demonstrated maximum holding times associated with PCDDs/PCDFs in aqueous, solid, semi-solid, tissues, or other sample matrices. If stored in the dark at 0-6°C and preserved as per QS3001 (if required), aqueous samples may be stored for up to one year. Similarly, if stored in the dark at <-10°C, solid, semi-solid, multi-phase, and tissue samples may be stored for up to one year.

Units

ug/kg: micrograms per kilogram **ng/L:** nanograms per litre **ppb:** parts per billion **ppq:** parts per quadrillion
pg/g: picogram per gram **pg/L:** picograms per litre **ppt:** Parts per trillion

Terms

APHA	American Public Health Association
CARB	California Air Resources Board
COC	Chain of Custody
CRM	Certified Reference Material - reported as percent recovery.
CP	Client Parent - QC was performed on samples pertaining to this report.
DL-PCB	Dioxin-like Polychlorinated Biphenyls.
Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
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.
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.
NEPM	National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013
LCS	Laboratory Control Sample - reported as percent recovery.
LOR/LOQ	Limit of Reporting/Limit of Quantification.
PAHs	Polycyclic aromatic hydrocarbons
PCDD/PCDF	Polychlorinated dibenzo-p-dioxins/Polychlorinated dibenzofurans
PEF	Potency equivalency factors (CARB)
QSM	US Department of Defense Quality Systems Manual Version 5.3
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
Spike	Addition of the analyte to the sample and reported as percentage recovery..
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery
TCLP	Toxicity Characteristic Leaching Procedure
TEF/TEQ	Toxicity Equivalent Factor/Toxic Equivalency Quotient
I-TEQ$_{DF}$	International Toxic Equivalents - Kutz et al., 1990 (Polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans)
WHO-TEF$_{DF}$	WHO Toxic Equivalents - Van den Berg et al., 2005 (Polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans)
WHO-TEF$_{P}$	WHO Toxic Equivalents - Van den Berg et al., 2005 (dioxin-like PCBs)
USEPA	United States Environmental Protection Agency
WHO	World Health Organisation

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. Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

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 30-140%

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Polychlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans(PCDFs)							
2.3.7.8-TCDD	pg/g	< 1			1	Pass	
2.3.7.8-TCDF	pg/g	< 1			1	Pass	
1.2.3.7.8-PeCDD	pg/g	< 5			5	Pass	
1.2.3.7.8-PeCDF	pg/g	< 5			5	Pass	
2.3.4.7.8-PeCDF	pg/g	< 5			5	Pass	
1.2.3.4.7.8-HxCDD	pg/g	< 5			5	Pass	
1.2.3.6.7.8-HxCDD	pg/g	< 5			5	Pass	
1.2.3.7.8.9-HxCDD	pg/g	< 5			5	Pass	
1.2.3.4.7.8-HxCDF	pg/g	< 5			5	Pass	
2.3.4.6.7.8-HxCDF	pg/g	< 5			5	Pass	
1.2.3.6.7.8-HxCDF	pg/g	< 5			5	Pass	
1.2.3.7.8.9-HxCDF	pg/g	< 5			5	Pass	
1.2.3.4.6.7.8-HpCDD	pg/g	< 5			5	Pass	
1.2.3.4.6.7.8-HpCDF	pg/g	< 5			5	Pass	
1.2.3.4.7.8.9-HpCDF	pg/g	< 5			5	Pass	
OCDD	pg/g	< 10			10	Pass	
OCDF	pg/g	< 10			10	Pass	
LCS - % Recovery							
Polychlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans(PCDFs)							
2.3.7.8-TCDD	%	104			25-150	Pass	
2.3.7.8-TCDF	%	106			25-150	Pass	
1.2.3.7.8-PeCDD	%	106			25-150	Pass	
1.2.3.7.8-PeCDF	%	104			25-150	Pass	
2.3.4.7.8-PeCDF	%	113			25-150	Pass	
1.2.3.4.7.8-HxCDD	%	106			25-150	Pass	
1.2.3.6.7.8-HxCDD	%	113			25-150	Pass	
1.2.3.7.8.9-HxCDD	%	101			25-150	Pass	
1.2.3.4.7.8-HxCDF	%	103			25-150	Pass	
2.3.4.6.7.8-HxCDF	%	104			25-150	Pass	
1.2.3.6.7.8-HxCDF	%	105			25-150	Pass	
1.2.3.7.8.9-HxCDF	%	105			25-150	Pass	
1.2.3.4.6.7.8-HpCDD	%	104			25-150	Pass	
1.2.3.4.6.7.8-HpCDF	%	105			25-150	Pass	
1.2.3.4.7.8.9-HpCDF	%	102			25-150	Pass	
OCDD	%	105			25-150	Pass	
OCDF	%	102			25-150	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Andrew Black	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)
Jonathon Angell	Senior Analyst-Organic (QLD)



Glenn Jackson
General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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

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Appendix I. Field Data Forms

Sample Details			
ID	Location		Description
	Easting	Northing	
SD01	323413	6255789	0.0 Silty SAND dark brown/grey, fine grained sands, moist, small fragments of shell. 0.1m As above dark grey some small - medium fragments of shell
			0.2m Sandy Silt, dark grey, fine grained sands, minor small fragments of wood. Water depth 1.8m.
SD02	323416	6255809	Water depth 2.3m Core Length 0.85m
			0m Silt, dark grey, trace fine grain sands, trace small fragments of shell + small shells.
			0.6m Dark grey to black, no sand or shells, minor hydrocarbon odour.
SD03	323406	6255838	Water depth 2.3m Core Length 0.80m
SD_QC01 SC_QC02			0m Silt, dark grey, trace fine grain sands, trace small fragments of shell + small shells.
			0.6m as above trace organic material
SD04	323415	6255840	Water depth 2.8m Core length 0.70m
			0.0m SILT, dark grey, trace fine grain sands, small fragments and small shells. Trace Organics
SD05	323416	6255834	Water depth 2.9m Core length 0.77m
			0.0m SILT, dark grey, trace fine grain sands, trace small fragments of shell + small shells. Soft.
SD06	323439	6255834	Water depth 3.2m Core Length 0.81m
			0.0m SILT, dark grey, minor fine grain sands, trace small fragments of shell and small shells.
			0.5m trace sands and minor small fragments of shell and small shells.
			0.7m trace clay
SD07	323435	6255828	Water depth 3.2m Core Length 0.78m
			0.0m SILT, dark grey, very soft, some fine grained sands, trace small fragments of shell and small shells.
			0.4m minor fine grain sands, minor shells
			0.6m trace fine grained sands
SD08	323449	6255828	Water Depth 3.5m Core Length 0.83m
			0.0m SILT dark grey, very soft - soft, moist, fine grained sands, trace small fragments of shell and small shells. No odour

Multi Parameter Water Meter

Instrument YSI Quatro Pro Plus
Serial No. 18J104311

airmet
Air-Met Scientific Pty Ltd
1300 137 067

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

Certificate of Calibration

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

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. pH 10.00		pH 10.00		352607	pH 9.54
2. pH 7.00		pH 7.00		330737	pH 6.88
3. pH 4.00		pH 4.00		347027	pH 4.15
4. mV		238.4mV		357172/357173	238.3mV
5. EC		2.76mS		343511	2.74mS
6. D.O		0.00 ppm		1904288592	0.06ppm
7. Temp		18.2°C		MultiTherm 09000528	18.9°C

Calibrated by: **Sarah Lian**

Calibration date: **24-Aug-20**

Next calibration due: **20-Feb-21**

Oil / Water Interface Meter

Instrument Geotech Interface Meter (30M)
Serial No. 3983

airmet
Air-Met Scientific Pty Ltd
1300 137 067

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

Certificate of Calibration

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

Calibrated by: **Ashok Hettigama**

Calibration date: **21/08/2020**

Next calibration due: **20/10/2020**

WELL DEVELOPMENT, GAUGING AND SAMPLING DATA SHEET

WELL No : MW04

Jacobs

Project No : IS335800 **Project Name :** Rhodes Planned Precinct

Gauging

Date : 25·8·20 Performed By : KM

Gauging Method : Geotech IM Well Diameter : 50

Time : 11:15 Bore Depth : 7.945. LNAPL Present : Y / (N)

SWL : 2.967 Depth to LNAPL : — (If yes, thickness) :

Comments : DNAPL Present : Y / (N)

(If yes, thickness) :

Maintainance required : Visual confirmation with bailer : Y / (N)

Photo Number :

Purging / Development

Date : 25·8·20 Performed By : KM Well Diameter : 50

Purge Method : Peristaltic

Time Started : 11:26 SWL (start) : 2.936 Volume Removed : 6 Bore Depth (start) : 7.945

Time Stopped : 12:00 SWL (end) : 2.815 Discharge Rate : 1L/5m. Bore Depth (end) : 7.945

Comments : NAPL Present : Y / (N)

(If yes, thickness) :

Sampling

Date : 25·8·20 Performed By : KM Well Diameter : 50

Sampling Method : Peristaltic

Time Started : 12:00 Sampling Depth : ~ 7.5m

Time Stopped : 12:07 SWL (start) : 2.815.

Tubing Type : LDPE + Silicon SWL (end) : 2.792

Comments :

Duplicate Sample Collected? Y / (N) Duplicate Sample ID : —

Field Analyses

Time	Volume Removed (L)	EC (uS/cm)	pH	Temp (C)	Redox (mV)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	SWL (m)	Comments (colour, turbidity, odours, sheen etc)
11:34	1	40355	7.01	17.8	84.4	2.79	35.3	2.905	Cloudy ; L-brown , N.O
11:40	2	40421	6.98	17.9	86.4	3.03	38.4	2.878	Sl. Cloudy , N.O
11:45	3	40366	6.97	17.9	86.0	3.20	46.6	2.862	" "
11:50	4	40243	6.95	17.7	86.9	3.37	42.8	2.837	" "
11:55	5	40157	6.96	17.6	82.9	3.50	44.1	2.824	Sl. Cloudy - Clear , N.O
12:00	6	40122	6.97	17.6	82.4	3.53	44.6	2.815	Clear , N.O
Stabilisation Criteria		+/- 3%	+/- 0.05		+/- 10mV	+/- 10%			

Well Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor	0.98	1.96	7.85	31.4	49.1	70.7	125.7	196.3

TOTAL WELL DEPTH (-) WATER LEVEL (=) *WATER COLUMN*

7.945 m (-) 2.967 (=) 4.978

WATER COLUMN (X) CONVERSION FACTOR (=) LITRES PER WELL VOLUME

4.978 (X) 1.96 (=) 9.76. L

WELL DEVELOPMENT, GAUGING AND SAMPLING DATA SHEET

WELL No : MW07

Jacobs

Project No : 15335800 **Project Name :** Rhodes Planned Precinct.

Gauging

Date : 25.8.20 Performed By : KM

Gauging Method : Geotech IM Well Diameter : 50

Time : 12:35 Bore Depth : 6.627 LNAPL Present : Y / (N)

SWL : 1.255. Depth to LNAPL : — (If yes, thickness) :

Comments : DNAPL Present : Y / (N)

(If yes, thickness) :

Maintainance required : Visual confirmation with bailer : Y / (N)

Photo Number :

Purging / Development

Date : 25.8.20 Performed By : KM Well Diameter : 50

Purge Method : Solinst

Time Started : 12:44 SWL (start) : 1.510 Volume Removed : 5 Bore Depth (start) : 6.627

Time Stopped : 13:12 SWL (end) : 1.480 Discharge Rate : 1L/5m Bore Depth (end) : 6.627

Comments : NAPL Present : Y / (N)

(If yes, thickness) : —

Sampling

Date : 25.8.20 Performed By : KM Well Diameter : 50

Sampling Method : Solinst

Time Started : 13:12 Sampling Depth : ~ 6.1m.

Time Stopped : 13:20 SWL (start) : 1.480

Tubing Type : LDPE + Silicon SWL (end) : 1.472.

Comments :

Duplicate Sample Collected? Y / (N) Duplicate Sample ID : —

Field Analyses

Time	Volume Removed (L)	EC (uS/cm)	pH	Temp (C)	Redox (mV)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	SWL (m)	Comments (colour, turbidity, odours, sheen etc)
12:52	1	39317	6.94	18.2	98.0	4.33	54.8	1.505.	Clear, No
12:57	2	39183	6.90	18.1	98.0	4.47	55.4	1.495.	" "
13:02	3	39197	6.88	18.0	97.6	4.70	58.8	1.485	" "
13:07	4	39133	6.87	17.9	97.3	4.73	59.4	1.480	" "
13:12	5	39173	6.88	18.0	97.3	4.75	59.7	1.480	" "
Stabilisation Criteria		+/- 3%	+/- 0.05		+/- 10mV	+/- 10%			

Well Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor	0.98	1.96	7.85	31.4	49.1	70.7	125.7	196.3

TOTAL WELL DEPTH (-) WATER LEVEL (=) *WATER COLUMN*

6.627 m (-) 1.255 (=) 5.372

WATER COLUMN (X) CONVERSION FACTOR (=) LITRES PER WELL VOLUME

5.372 (X) 1.96 (=) 10.21 L

WELL DEVELOPMENT, GAUGING AND SAMPLING DATA SHEET

WELL No : MW09

Jacobs

Project No : IS335800 **Project Name :** Rhodes Planned Precinct

Gauging

Date : 25-8-20 Performed By : KM
Gauging Method : Geotech IP Well Diameter : 50
Time : 9:35. Bore Depth : 7.967 LNAPL Present : Y / (N)
SWL : 3.255. Depth to LNAPL : — (If yes, thickness) :
Comments : DNAPL Present : Y / (N)
(If yes, thickness) :
Maintainance required : Visual confirmation with bailer : Y / (N)
Photo Number :

Purging / Development

Date : 25-8-20 Performed By : KM Well Diameter : 50
Purge Method : Peristaltic
Time Started : 9:47 SWL (start) : 2.258 Volume Removed : 6 Bore Depth (start) : 7.967
Time Stopped : 10:32 SWL (end) : 2.205 Discharge Rate : 1L/6m Bore Depth (end) : 7.967
Comments : NAPL Present : Y / (N)
(If yes, thickness) :

Sampling

Date : 25-8-20 Performed By : KM Well Diameter : 50
Sampling Method : Peristaltic
Time Started : 10:31 Sampling Depth : ~ 7.5m.
Time Stopped : 11:01 SWL (start) : 3.205.
Tubing Type : LDPE + Silicon SWL (end) : 3.035.
Comments : Possibly under pressure during sampling.

Duplicate Sample Collected? (Y) N Duplicate Sample ID : QC101 & QC201 - 200825.

Field Analyses

Time	Volume Removed (L)	EC (uS/cm)	pH	Temp (C)	Redox (mV)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	SWL (m)	Comments (colour, turbidity, odours, sheen etc)
9:58	1	40973	6.64	18.2	79.4	0.18	2.3	3.268	Very Cloudy N.O, L-brown
10:03	2	40985	6.59	18.2	75.6	0.18	2.3	3.267	Sl. Cloudy N.O
10:09	3	41009	6.56	18.0	71.6	0.18	2.3	3.267	Sl. Cloudy - ~~Clear~~, N.O
10:16	4	41145	6.52	18.2	66.5	0.19	2.4	3.265	" "
10:25	5	41251	6.52	18.3	66.9	0.23	3.0	3.240	Cloudy, N.O
10:31	6	41142	6.52	18.2	69.7	0.24	3.1	3.205	" "
Stabilisation Criteria		+/- 3%	+/- 0.05		+/- 10mV	+/- 10%			

Well Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor	0.98	1.96	7.85	31.4	49.1	70.7	125.7	196.3

TOTAL WELL DEPTH (-) WATER LEVEL (=) *WATER COLUMN*
7.967 m (-) 3.255 (=) 4.712

WATER COLUMN (X) CONVERSION FACTOR (=) LITRES PER WELL VOLUME
4.712 (X) 1.96 (=) 9.236 L

WELL DEVELOPMENT, GAUGING AND SAMPLING DATA SHEET

WELL No : MW14

JACOBS

Project No : IS335800 **Project Name :** Rhodes

Gauging

Date : 21/5/21 Performed By : QR

Gauging Method : Well Diameter : 50

Time : 9:50 Bore Depth : 3.20 LNAPL Present : Y / (N)

SWL : 2.55 Depth to LNAPL : (If yes, thickness) :

Comments : fully recovered overnight after purging sampled straight away DNAPL Present : Y / (N)

(If yes, thickness) :

Maintainance required : Visual confirmation with bailer : Y / N

Photo Number :

Purging / Development

Date : Performed By : Well Diameter :

Purge Method :

Time Started : SWL (start) : Volume Removed : Bore Depth (start) :

Time Stopped : SWL (end) : Discharge Rate : Bore Depth (end) :

Comments : NAPL Present : Y / N

(If yes, thickness) :

Sampling

Date : 21/5/21 Performed By : Well Diameter :

Sampling Method :

Time Started : 10.00 Sampling Depth :

Time Stopped : SWL (start) :

Tubing Type : HDPE SWL (end) :

Comments :

Duplicate Sample Collected? Y (N) Duplicate Sample ID :

Field Analyses

Time	Volume Removed (L)	EC (uS/cm)	pH	Temp (C)	Redox (mV)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	SWL (m)	Comments (colour, turbidity, odours, sheen etc)
10.0	0	1.03	7.66	20.6	40.3	5.42	60.8	2.91	slightly turbid
Stabilisation Criteria		+/- 3%	+/- 0.05		+/- 10mV	+/- 10%			

Well Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor	0.98	1.96	7.85	31.4	49.1	70.7	125.7	196.3

TOTAL WELL DEPTH (-) WATER LEVEL (=) *WATER COLUMN*

_____ m (-) _____ (=) _____

WATER COLUMN (X) CONVERSION FACTOR (=) LITRES PER WELL VOLUME

_____ (X) _____ (=) _____ L

GROUNDWATER SAMPLING RECORD FORM

LOW FLOW PURGING and SAMPLING (incl. low yielding wells)

PROJECT INFORMATION			
WELL ID: MW14	Project Number: 13335800	Date: 20/5	
	Client:	Sampled By:	
	Site Location:	Time: 12:45	

Weather Conditions (Temperature, Precipitation, Wind): Sunny

Well Maintenance Required? YES / NO Detail: Peri pump

WELL INFORMATION	
Diameter of standpipe (mm)	50
Standpipe stick up (m)	-0.12
Surveyed reference point	
Depth to top of filter pack (from log)	
Depth to bottom of filter pack (from log)	
Depth of well (from log)	

mbRP - metres below top of reference point
Hose volume - 0.12 L/m of 1/2 inch diameter hose
Hose volume - 0.07 L/m of 3/8 inch diameter hose
Hose volume - 0.03 L/m of 1/4 inch diameter hose

GAUGING INFORMATION			
Pre-Sampling Information		*Purging and Sampling Information*	
Interface probe used?	YES / NO	Depth of pump intake (mbRP)	
Initial depth to water (mbRP)	2.54	Length of hose (m)	
Depth to product (mbRP)		Volume in hose (L)	
Thickness of product (m)		Depth to water after placement of pump (mbRP)	
Bailed product thickness (m)		Depth to water at end of purging (mbRP)	
Total depth of well (mbRP)	3.20	Depth to water after collection of samples (mbRP)	
Thickness of sediment on base of well (m)		Purging and Sampling Method	

Controller settings	
CPM	
Refill	
Discharge	
Throttle	

WQM Model

WQM Calibration Certificate

GROUNDWATER MONITORING WELL PURGING RECORD

Time	Cumulative Volume Purged (L)	Flow Rate (L/min)	Depth to Water (mbRP)	±0.1 pH	±5% Conductivity (µS/cm)	±10 Redox (mV)	±10% Dissolved Oxygen (ppm)	±0.5°C Temperature (°C)	Field Spectrophotometry Fe2+ (mg/L)	Fe Total (mg/L)	Mn (mg/L)	Al3+ (mg/L)	Appearance (Colour, Turbidity, Odour, etc)
13:53	0		2.70	7.09	0.92	62.1	4.23	20.1					lgnt brown, turbid
13:58	0.5		2.82	6.15	0.326	95.8	3.93	20.7					" "
2:04	1.3	pumped dry - sample tomorrow											

SAMPLING RECORD

Time Sampled:

Colour:

Odour:

Turbidity: Low Medium High

Hydrocarbon Sheen ? Yes No

DI Water Lab Certificate No.

Sample IDs

Primary Duplicate:	
Secondary Duplicate:	
Trip Blank:	
Rinsate:	
Field Blank:	

Sample Containers/Preservation (F=Filtered; UF=Unfiltered; P=Preserved; UP=Unpreserved)

Vials (P/UP)	Metals (F/UF;P/UP)
1L Amber	Cyanide
1L Plastic	Sulphide
Phenols/COD/NH3 (F/UF; P/UP)	Other
Ferrous/Ferric Iron (F/UF; P/UP)	Other

Sample Filtration Method:

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☐ Y ☐ N

Decon Required? ☐ Y ☐ N

Type of Decontamination Fluid(s):

Washes/Rinses:

GROUNDWATER SAMPLING RECORD FORM

LOW FLOW PURGING and SAMPLING (incl. low yielding wells)

PROJECT INFORMATION			
WELL ID:	MW03	**Project Number:** 15335800	**Date:** 21/5/21
		Client:	**Sampled By:**
		Site Location: Rhodes	**Time:** 8.45

Weather Conditions (Temperature, Precipitation, Wind): Sunny

Well Maintenance Required? YES / NO Detail: low tide 10am

peri pump

WELL INFORMATION	
Diameter of standpipe (mm)	50
Standpipe stick up (m)	-0.13
Surveyed reference point	
Depth to top of filter pack (from log)	
Depth to bottom of filter pack (from log)	
Depth of well (from log)	

mbRP - metres below top of reference point
Hose volume - 0.12 L/m of 1/2 inch diameter hose
Hose volume - 0.07 L/m of 3/8 inch diameter hose
Hose volume - 0.03 L/m of 1/4 inch diameter hose

GAUGING INFORMATION			
Pre-Sampling Information		*Purging and Sampling Information*	
Interface probe used?	YES / NO	Depth of pump intake (mbRP)	
Initial depth to water (mbRP)	2.04	Length of hose (m)	
Depth to product (mbRP)		Volume in hose (L)	
Thickness of product (m)		Depth to water after placement of pump (mbRP)	
Bailed product thickness (m)		Depth to water at end of purging (mbRP)	
Total depth of well (mbRP)	6.10	Depth to water after collection of samples (mbRP)	
Thickness of sediment on base of well (m)		Purging and Sampling Method	

Controller settings	
CPM	
Refill	
Discharge	
Throttle	

WQM Model

WQM Calibration Certificate

GROUNDWATER MONITORING WELL PURGING RECORD

Time	Cumulative Volume Purged (L)	Flow Rate (L/min)	Depth to Water (mbRP)	±0.1 pH	±5% Conductivity mS/cm	±10 Redox (mV)	±10% Dissolved Oxygen (ppm)	±0.5°C Temperature (°C)	Field Spectrophotometry Fe2+ (mg/L)	Fe Total (mg/L)	Mn (mg/L)	Al3+ (mg/L)	Appearance (Colour, Turbidity, Odour, etc)
8:52	0		2.06	7.08	47.07	-25.3	0.40	19.6					brown, turbid, no odour
8:56	1		2.07	6.98	48.00	-43.8	0.20	19.4					" "
9:01	2		2.08	6.98	47.98	-47.9	0.35	19.3					" "
9:06	3		2.08	7.04	47.63	-31.2	2.62	19.3					" "
9:12	4		2.09	7.24	47.43	-2.1	3.45	19.3					" "
9:17	5		2.10	7.30	47.39	11.7	3.68	19.2					" "
9:22	6		2.11	7.22	47.54	-17.7	3.38	19.3					slightly turbid
9:28	7		2.12	7.29	47.42	4.5	3.63	19.3					slightly turbid
9:34	8		2.12	7.28	47.39	0.3	3.53	19.3					" "

SAMPLING RECORD

Time Sampled: 9:40

Colour: light brown

Odour: no

Turbidity: Low (Medium) High

Hydrocarbon Sheen ? Yes (No)

DI Water Lab Certificate No.

Sample IDs

Primary Duplicate:	
Secondary Duplicate:	
Trip Blank:	
Rinsate:	
Field Blank:	

Sample Containers/Preservation (F=Filtered; UF=Unfiltered; P=Preserved; UP=Unpreserved)

____	Vials (P/UP)	____	Metals (F/UF;P/UP)
____	1L Amber	____	Cyanide
____	1L Plastic	____	Sulphide
____	Phenols/COD/NH3 (F/UF; P/UP)	____	Other
____	Ferrous/Ferric Iron (F/UF; P/UP)	____	Other

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☑ Y ☐ N

Decon Required? ☐ Y ☐ N

Type of Decontamination Fluid(s):

Washes/Rinses:

Sample Filtration Method:

WELL DEVELOPMENT, GAUGING AND SAMPLING DATA SHEET

WELL No : MW04

JACOBS

Project No : 15335800 **Project Name :** Rhodes

Gauging

Date : 21/5/21 Performed By : QB

Gauging Method : Well Diameter :

Time : 7:45 Bore Depth : 7.95 LNAPL Present : Y / N

SWL : 3.33 Depth to LNAPL : (If yes, thickness) :

Comments : Peri pump DNAPL Present : Y / N

Low tide 10am (If yes, thickness) :

Maintainance required : Visual confirmation with bailer : Y / N

Photo Number :

Purging / Development

Date : Performed By : Well Diameter :

Purge Method :

Time Started : SWL (start) : Volume Removed : Bore Depth (start) :

Time Stopped : SWL (end) : Discharge Rate : Bore Depth (end) :

Comments : NAPL Present : Y / N

(If yes, thickness) :

Sampling

Date : Performed By : Well Diameter :

Sampling Method :

Time Started : 8:15 Sampling Depth :

Time Stopped : 8:20 SWL (start) : 3.39

Tubing Type : HDPE SWL (end) :

Comments :

Duplicate Sample Collected? Y / (N) Duplicate Sample ID :

Field Analyses

Time	Volume Removed (L)	EC (uS/cm)	pH	Temp (C)	Redox (mV)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	SWL (m)	Comments (colour, turbidity, odours, sheen etc)
7:54	0	45.71	6.67	18.7	175.0	4.32	54.3	3.34	clear, no odour
7:59	1	46.77	7.23	19.1	147.8	4.13	53.4	3.36	" "
8:04	2	46.83	7.28	19.3	141.9	4.03	53.8	3.37	" "
8:09	3	46.83	7.29	19.3	136.8	3.62	46.5	3.38	" "
8:13	4	46.74	7.29	19.2	134.7	3.67	47.1	3.39	" "
Stabilisation Criteria		+/- 3%	+/- 0.05		+/- 10mV	+/- 10%			

Well Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor	0.98	1.96	7.85	31.4	49.1	70.7	125.7	196.3

TOTAL WELL DEPTH (-) WATER LEVEL (=) *WATER COLUMN*

_____ m (-) _____ (=) _____

WATER COLUMN (X) CONVERSION FACTOR (=) LITRES PER WELL VOLUME

_____ (X) _____ (=) _____ L

GROUNDWATER SAMPLING RECORD FORM

LOW FLOW PURGING and SAMPLING (incl. low yielding wells)

PROJECT INFORMATION			
WELL ID: MW04	Project Number: 1332530	Date: 17/5/21	
	Client:	Sampled By:	
	Site Location: Chata	Time: 15:30	

Weather Conditions (Temperature, Precipitation, Wind): Sunny

Well Maintenance Required? YES / NO Detail: not purged, sampled on falling tide

peri pump

WELL INFORMATION	
Diameter of standpipe (mm)	50
Standpipe stick up (m)	-0.14
Surveyed reference point	
Depth to top of filter pack (from log)	
Depth to bottom of filter pack (from log)	
Depth of well (from log)	7.95

mbRP - metres below top of reference point
Hose volume - 0.12 L/m of 1/2 inch diameter hose
Hose volume - 0.07 L/m of 3/8 inch diameter hose
Hose volume - 0.03 L/m of 1/4 inch diameter hose

GAUGING INFORMATION			
Pre-Sampling Information		*Purging and Sampling Information*	
Interface probe used?	(YES) / NO	Depth of pump intake (mbRP)	
Initial depth to water (mbRP)	3.27	Length of hose (m)	
Depth to product (mbRP)		Volume in hose (L)	
Thickness of product (m)		Depth to water after placement of pump (mbRP)	
Bailed product thickness (m)		Depth to water at end of purging (mbRP)	
Total depth of well (mbRP)		Depth to water after collection of samples (mbRP)	
Thickness of sediment on base of well (m)		Purging and Sampling Method	

Controller settings	
CPM	
Refill	
Discharge	
Throttle	

WQM Model: YSI

WQM Calibration Certificate:

GROUNDWATER MONITORING WELL PURGING RECORD

Time	Cumulative Volume Purged (L)	Flow Rate (L/min)	Depth to Water (mbRP)	±0.1 pH	±5% Conductivity (mS/cm)	±10 Redox (mV)	±10% Dissolved Oxygen (ppm)	±0.5°C Temperature (°C)	Field Spectrophotometry Fe2+ (mg/L)	Fe Total (mg/L)	Mn (mg/L)	Al3+ (mg/L)	Appearance (Colour, Turbidity, Odour, etc)
15:28	0	3	3.28	6.42	49.93	-50.3	0.22	20.5					Grey turbid no odour
15:34	1		3.30	6.36	50.12	-52.4	0.17	20.6					
15:39	2		3.32	6.37	50.03	-32.7	0.11	20.6					light brown turbid
15:44	3		3.33	6.37	49.61	-26.5	0.24	20.7					light brown slightly turbid
15:50	4		3.34	6.66	48.08	-33.1	0.26	20.6					slig light brown clear
15:55	5		3.34	6.84	48.44	-41.1	0.32	20.7					clear
16:00	6		3.36	6.98	47.56	-48.7	0.37	20.9					clear
16:05	7		3.37	7.04	47.54	-46.3	0.04	20.9					clear
16:11	8		3.38	7.04	46.94	-37.9	1.58	20.7					clear

SAMPLING RECORD

Time Sampled: 16:16

Colour: clear

Odour: none

Turbidity: (Low) Medium High

Hydrocarbon Sheen ? Yes (No)

DI Water Lab Certificate No.:

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☑ Y ☐ N

Decon Required? ☑ Y ☐ N

Sample IDs

Primary Duplicate:

Secondary Duplicate:

Trip Blank:

Rinsate: QC301-210517 taken off dipper

Field Blank:

Type of Decontamination Fluid(s):

Washes/Rinses:

Sample Containers/Preservation (F=Filtered; UF=Unfiltered; P=Preserved; UP=Unpreserved)

Vials (P/UP)	Metals (F/UF;P/UP)
1L Amber	Cyanide
1L Plastic	Sulphide
Phenols/COD/NH3 (F/UF; P/UP)	Other
Ferrous/Ferric Iron (F/UF; P/UP)	Other

Sample Filtration Method:

FEBRUARY 2018
Source: Golder, 2018

GROUNDWATER SAMPLING RECORD FORM

LOW FLOW PURGING and SAMPLING (incl. low yielding wells)

PROJECT INFORMATION			
WELL ID: MW12	Project Number: 1533-800	Date: 2015	
	Client:	Sampled By:	
	Site Location:	Time: 10:00	

Weather Conditions (Temperature, Precipitation, Wind): Sunny

Well Maintenance Required? YES / NO Detail: very slow recharge

peri pump

WELL INFORMATION	
Diameter of standpipe (mm)	50
Standpipe stick up (m)	-0.12
Surveyed reference point	
Depth to top of filter pack (from log)	
Depth to bottom of filter pack (from log)	
Depth of well (from log)	7.15

mbRP - metres below top of reference point
Hose volume - 0.12 L/m of 1/2 inch diameter hose
Hose volume - 0.07 L/m of 3/8 inch diameter hose
Hose volume - 0.03 L/m of 1/4 inch diameter hose

GAUGING INFORMATION			
Pre-Sampling Information		*Purging and Sampling Information*	
Interface probe used?	YES / NO	Depth of pump intake (mbRP)	
Initial depth to water (mbRP)	3.26	Length of hose (m)	
Depth to product (mbRP)		Volume in hose (L)	
Thickness of product (m)		Depth to water after placement of pump (mbRP)	
Bailed product thickness (m)		Depth to water at end of purging (mbRP)	
Total depth of well (mbRP)		Depth to water after collection of samples (mbRP)	
Thickness of sediment on base of well (m)		Purging and Sampling Method	

Controller settings	
CPM	
Refill	
Discharge	
Throttle	

WQM Model: YSI 166 104247

WQM Calibration Certificate:

GROUNDWATER MONITORING WELL PURGING RECORD

Time	Cumulative Volume Purged (L)	Flow Rate (L/min)	Depth to Water (mbRP)	±0.1 pH	±5% Conductivity (µS/cm)	±10 Redox (mV)	±10% Dissolved Oxygen (ppm)	±0.5°C Temperature (°C)	Field Spectrophotometry Fe2+ (mg/L)	Fe Total (mg/L)	Mn (mg/L)	Al3+ (mg/L)	Appearance (Colour, Turbidity, Odour, etc)
10:12	0		3.36	6.52	49.94	20.7	0.98	19.9					slightly turbid
10:33	1		3.47	6.17	48.57	52.5	1.87	18.0					" "
10:55	2		3.62	6.17	47.50	60.6	1.82	18.4					" "
11:10	3		3.77	6.25	46.36	61.6	2.19	19.1					" "
11:24	4		3.93	6.29	45.09	61.5	2.23	19.4					" "
11:36	5		4.08	6.30	44.77	56.1	2.20	19.5					" "
11:49	6		4.23	6.31	44.27	49.3	2.97	19.7					" "
12:06	7		4.43	6.33	44.08	45.3	2.02	19.9					" "
			4.47										

SAMPLING RECORD

Time Sampled: 12:10

Colour: slight brown

Odour: none

Turbidity: (Low) Medium High

Hydrocarbon Sheen ? Yes (No)

DI Water Lab Certificate No.:

Sample IDs

Primary Duplicate:

Secondary Duplicate:

Trip Blank:

Rinsate:

Field Blank:

Sample Containers/Preservation (F=Filtered; UF=Unfiltered; P=Preserved; UP=Unpreserved)

_____ Vials (P/UP)
_____ 1L Amber
_____ 1L Plastic
_____ Phenols/COD/NH3 (F/UF; P/UP)
_____ Ferrous/Ferric Iron (F/UF; P/UP)
_____ Metals (F/UF;P/UP)
_____ Cyanide
_____ Sulphide
_____ Other
_____ Other

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☐ Y ☐ N

Decon Required? ☐ Y ☐ N

Type of Decontamination Fluid(s):

Washes/Rinses:

Sample Filtration Method:

GROUNDWATER SAMPLING RECORD FORM

LOW FLOW PURGING and SAMPLING (incl. low yielding wells)

PROJECT INFORMATION			
WELL ID:	MW3	Project Number: 1533500	Date: 20/5/21
		Client:	Sampled By:
		Site Location: Mundijong	Time: 14:30

Weather Conditions (Temperature, Precipitation, Wind)

Well Maintenance Required? YES / NO Detail Sunny peripump

WELL INFORMATION	
Diameter of standpipe (mm)	50
Standpipe stick up (m)	-0.10
Surveyed reference point	
Depth to top of filter pack (from log)	
Depth to bottom of filter pack (from log)	
Depth of well (from log)	

mbRP - metres below top of reference point
Hose volume - 0.12 L/m of 1/2 inch diameter hose
Hose volume - 0.07 L/m of 3/8 inch diameter hose
Hose volume - 0.03 L/m of 1/4 inch diameter hose

GAUGING INFORMATION			
Pre-Sampling Information		*Purging and Sampling Information*	
Interface probe used?	YES / NO	Depth of pump intake (mbRP)	
Initial depth to water (mbRP)	2.02	Length of hose (m)	
Depth to product (mbRP)	?	Volume in hose (L)	
Thickness of product (m)		Depth to water after placement of pump (mbRP)	
Bailed product thickness (m)		Depth to water at end of purging (mbRP)	
Total depth of well (mbRP)	5.42	Depth to water after collection of samples (mbRP)	
Thickness of sediment on base of well (m)		Purging and Sampling Method	

Controller settings	
CPM	
Refill	
Discharge	
Throttle	

WQM Model

WQM Calibration Certificate

GROUNDWATER MONITORING WELL PURGING RECORD

Time	Cumulative Volume Purged (L)	Flow Rate (L/min)	Depth to Water (mbRP)	±0.1 pH	±5% Conductivity (µS/cm)	±10 Redox (mV)	±10% Dissolved Oxygen (ppm)	±0.5°C Temperature (°C)	Field Spectrophotometry Fe2+ (mg/L)	Fe Total (mg/L)	Mn (mg/L)	Al3+ (mg/L)	Appearance (Colour, Turbidity, Odour, etc)
14:36	0		2.03	5.95	0.532	98.6	0.54	21.1					brown turbid
14:43	1		2.15	5.81	0.518	94.9	0.21	21.4					" "
14:51	2		2.24	5.79	0.520	69.7	0.16	21.4					" "
14:58	3		2.39	5.80	0.522	53.7	0.18	21.4					" "
15:05	4		2.47	5.82	0.506	60.0	0.27	21.4					" "
15:14	5		2.54	5.87	0.496	32.9	0.25	21.4					" "
15:22	6		2.60	5.92	0.476	26.1	0.27	21.5					" "
15:29	7		2.66	5.94	0.473	20.7	0.30	21.4					" "
			2.67										

SAMPLING RECORD

Time Sampled: 15:45

Colour: brown

Odour: none

Turbidity: Low Medium (High)

Hydrocarbon Sheen ? Yes (No)

DI Water Lab Certificate No.

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☑ Y ☐ N

Decon Required? ☑ Y ☐ N

Sample IDs

Primary Duplicate:	QC101_210520
Secondary Duplicate:	QC202_210520
Trip Blank:	
Rinsate:	QC302_210520
Field Blank:	

Type of Decontamination Fluid(s):

Washes/Rinses:

Sample Containers/Preservation (F=Filtered; UF=Unfiltered; P=Preserved; UP=Unpreserved)

Vials (P/UP)	Metals (F/UF;P/UP)
1L Amber	Cyanide
1L Plastic	Sulphide
Phenols/COD/NH3 (F/UF; P/UP)	Other
Ferrous/Ferric Iron (F/UF; P/UP)	Other

Sample Filtration Method:

WELL DEVELOPMENT, GAUGING AND SAMPLING DATA SHEET

WELL No : MW07

JACOBS

Project No : 15335800 **Project Name :** Rhodes

Gauging

Date : 20/5/21 Performed By : QB

Gauging Method : Solinst Well Diameter : 50mm

Time : 8:20 Bore Depth : 6.63 LNAPL Present : Y / (N)

SWL : 2.38 Depth to LNAPL : (If yes, thickness) :

Comments : SU - 0.12mg/l DNAPL Present : Y / (N)

(If yes, thickness) :

Maintainance required : Visual confirmation with bailer : Y / N

Photo Number :

Purging / Development

Date : Performed By : Well Diameter :

Purge Method :

Time Started : SWL (start) : Volume Removed : Bore Depth (start) :

Time Stopped : SWL (end) : Discharge Rate : Bore Depth (end) :

Comments : NAPL Present : Y / N

(If yes, thickness) :

Sampling

Date : Performed By : Well Diameter :

Sampling Method : peri

Time Started : Sampling Depth : ~6m

Time Stopped : 9:03 SWL (start) :

Tubing Type : SWL (end) : 2.54

Comments :

Duplicate Sample Collected? Y / (N) Duplicate Sample ID :

Field Analyses

Time	Volume Removed (L)	EC (µS/cm)	pH	Temp (C)	Redox (mV)	Dissolved Oxygen (mg/L)	Dissolved Oxygen (% sat)	SWL (m)	Comments (colour, turbidity, odours, sheen etc)
8:25	0	41.33	6.71	19.7	57.3	0.37	4.4	2.44	turbid brown sediment / no odour
8:29	1	41.56	6.63	20.1	41.1	0.20	2.5	2.47	clear no odour
8:33	2	39.64	6.67	20.4	21.3	0.18	2.3	2.49	" "
8:38	3	39.27	6.68	20.5	15.3	0.12	1.5	2.50	" "
8:42	4	39.11	6.68	20.6	11.9	0.10	1.3	2.51	" "
8:47	5	38.97	6.68	20.6	9.0	0.11	1.4	2.52	" "
8:52	6	38.94	6.68	20.7	7.5	0.12	1.6	2.53	" "
8:57	7	38.93	6.67	20.7	6.4	0.14	1.9	2.54	" "
Stabilisation Criteria		+/- 3%	+/- 0.05		+/- 10mV	+/- 10%			

Well Volume Calculations

Casing Diameter	25mm	50mm	100mm	125mm	150mm	200mm	250mm	300mm
Conversion Factor	0.98	1.96	7.85	31.4	49.1	70.7	125.7	196.3

TOTAL WELL DEPTH (-) WATER LEVEL (=) *WATER COLUMN*

_____ m (-) _____ (=) _____

WATER COLUMN (X) CONVERSION FACTOR (=) LITRES PER WELL VOLUME

_____ (X) _____ (=) _____ L

GROUNDWATER SAMPLING RECORD FORM

LOW FLOW PURGING and SAMPLING (incl. low yielding wells)

PROJECT INFORMATION			
WELL ID: MW09	Project Number:	Date:	17/5/21
	Client:	Sampled By:	QS
	Site Location: Bradda	Time:	14:30

Weather Conditions (Temperature, Precipitation, Wind): Sunny

Well Maintenance Required? YES / NO Detail: Did not need to develop, sampled on falling hyd

Peristatic pump

WELL INFORMATION	
Diameter of standpipe (mm)	50
Standpipe stick up (m)	-0.13m
Surveyed reference point	
Depth to top of filter pack (from log)	
Depth to bottom of filter pack (from log)	
Depth of well (from log)	7.95

mbRP - metres below top of reference point
Hose volume - 0.12 L/m of 1/2 inch diameter hose
Hose volume - 0.07 L/m of 3/8 inch diameter hose
Hose volume - 0.03 L/m of 1/4 inch diameter hose

GAUGING INFORMATION			
Pre-Sampling Information		*Purging and Sampling Information*	
Interface probe used?	(YES) / NO	Depth of pump intake (mbRP)	
Initial depth to water (mbRP)	3.02	Length of hose (m)	
Depth to product (mbRP)		Volume in hose (L)	
Thickness of product (m)		Depth to water after placement of pump (mbRP)	
Bailed product thickness (m)		Depth to water at end of purging (mbRP)	
Total depth of well (mbRP)		Depth to water after collection of samples (mbRP)	
Thickness of sediment on base of well (m)		Purging and Sampling Method	

Controller settings	
CPM	
Refill	
Discharge	
Throttle	

WQM Model: YSI

WQM Calibration Certificate:

GROUNDWATER MONITORING WELL PURGING RECORD

Time	Cumulative Volume Purged (L)	Flow Rate (L/min)	Depth to Water (mbRP)	±0.1 pH	±5% Conductivity (mS/cm)	±10 Redox (mV)	±10% Dissolved Oxygen (ppm)	±0.5°C Temperature (°C)	Field Spectrophotometry Fe2+ (mg/L)	Fe Total (mg/L)	Mn (mg/L)	Al3+ (mg/L)	Appearance (Colour, Turbidity, Odour, etc)
14:44	0	~~3.03~~	3.03	6.77	50.71	-70.8	0.54	20.5					turbid brown no odour
14:50	1		3.04	6.52	51.18	-64.6	0.17	20.6					slightly turbid no odour
14:56	2		3.05	6.49	51.27	-64.9	0.14	20.5					" "
15:02	3		3.06	6.49	51.30	-66.4	0.13	20.6					" "

SAMPLING RECORD

Time Sampled: 15:07

Colour: brown

Odour: no

Turbidity: Low (Medium) High

Hydrocarbon Sheen ? Yes (No)

DI Water Lab Certificate No.:

Sample IDs

Primary Duplicate:	
Secondary Duplicate:	
Trip Blank:	
Rinsate:	
Field Blank:	

Sample Containers/Preservation (F=Filtered; UF=Unfiltered; P=Preserved; UP=Unpreserved)

	Vials (P/UP)		Metals (F/UF;P/UP)
	1L Amber		Cyanide
	1L Plastic		Sulphide
	Phenols/COD/NH3 (F/UF; P/UP)		Other
	Ferrous/Ferric Iron (F/UF; P/UP)		Other

Decontamination of Sampling Equipment

All Equipment Dedicated/Single Use? ☑ Y ☐ N

Decon Required? ☑ Y ☐ N

Type of Decontamination Fluid(s):

Washes/Rinses:

Sample Filtration Method:

FEBRUARY 2018
Source Golder, 2018

Appendix J. Lotsearch report

LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 07 Sep 2020 10:16:26

Reference: LS014470 EP

Address: Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

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

Dataset Listing

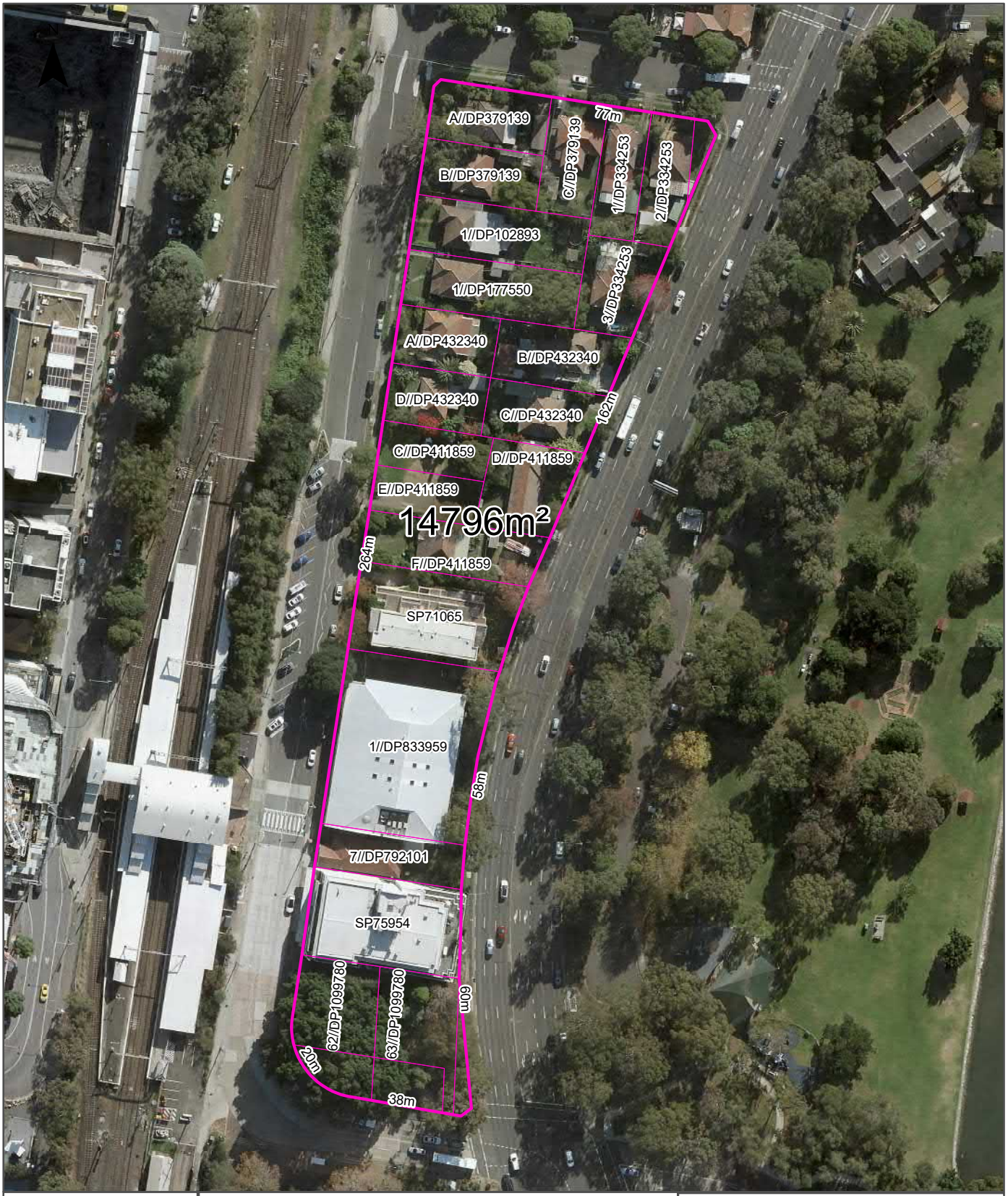
Datasets contained within this report, detailing their source and data currency:

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	NSW Department of Finance, Services & Innovation	31/03/2020	31/03/2020	Quarterly	-	-	-	-
Topographic Data	NSW Department of Finance, Services & Innovation	25/06/2019	25/06/2019	As required	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	14/08/2020	14/08/2020	Monthly	1000	0	1	7
Contaminated Land Records of Notice	Environment Protection Authority	28/08/2020	28/08/2020	Monthly	1000	0	1	6
Former Gasworks	Environment Protection Authority	28/08/2020	11/10/2017	Monthly	1000	0	0	0
National Waste Management Facilities Database	Geoscience Australia	15/05/2020	07/03/2017	Quarterly	1000	0	0	1
National Liquid Fuel Facilities	Geoscience Australia	12/08/2020	13/07/2012	Quarterly	1000	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	03/08/2020	07/05/2020	Monthly	2000	0	0	0
Defence PFAS Investigation & Management Program - Investigation Sites	Department of Defence	11/08/2020	11/08/2020	Monthly	2000	0	0	0
Defence PFAS Investigation & Management Program - Management Sites	Department of Defence	11/08/2020	11/08/2020	Monthly	2000	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	28/08/2020	28/08/2020	Monthly	2000	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Department of Defence	17/08/2020	17/08/2020	Monthly	2000	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	04/02/2020	13/12/2018	Annually	1000	0	0	1
Licensed Activities under the POEO Act 1997	Environment Protection Authority	17/08/2020	17/08/2020	Monthly	1000	0	1	1
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority	17/08/2020	17/08/2020	Monthly	1000	0	0	2
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	17/08/2020	17/08/2020	Monthly	1000	0	2	14
UBD Business Directories (Premise & Intersection Matches)	Hardie Grant			Not required	150	52	179	223
UBD Business Directories (Road & Area Matches)	Hardie Grant			Not required	150	-	77	77
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500	0	3	3
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500	-	0	0
Points of Interest	NSW Department of Finance, Services & Innovation	30/03/2020	30/03/2020	Quarterly	1000	2	5	46
Tanks (Areas)	NSW Department of Customer Service - Spatial Services	30/03/2020	30/03/2020	Quarterly	1000	0	0	0
Tanks (Points)	NSW Department of Customer Service - Spatial Services	30/03/2020	30/03/2020	Quarterly	1000	0	0	0
Major Easements	NSW Department of Finance, Services & Innovation	30/03/2020	30/03/2020	Quarterly	1000	0	0	5
State Forest	Forestry Corporation of NSW	18/01/2018	18/01/2018	As required	1000	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	21/01/2020	30/09/2019	Annually	1000	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000	1	1	1
Botany Groundwater Management Zones	NSW Department of Planning, Industry and Environment	15/03/2018	01/10/2005	As required	1000	0	0	0

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Groundwater Boreholes	NSW Dept. of Primary Industries - Water NSW; Commonwealth of Australia (Bureau of Meteorology)	24/07/2018	23/07/2018	Annually	2000	0	0	25
Geological Units 1:100,000	NSW Department of Planning, Industry and Environment	20/08/2014		None planned	1000	1	-	6
Geological Structures 1:100,000	NSW Department of Planning, Industry and Environment	20/08/2014		None planned	1000	0	-	0
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000	0	0	0
Atlas of Australian Soils	Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES)	19/05/2017	17/02/2011	As required	1000	1	1	2
Soil Landscapes	NSW Department of Planning, Industry and Environment	12/08/2014		None planned	1000	2	-	6
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning, Industry and Environment	13/08/2020	01/05/2020	Monthly	500	1	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000	1	2	3
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1000	0	0	0
Dryland Salinity Potential of Western Sydney	NSW Department of Planning, Industry and Environment	12/05/2017	01/01/2002	None planned	1000	0	0	1
Mining Subsidence Districts	NSW Department of Customer Service - Subsidence Advisory NSW	30/03/2020	30/03/2020	Quarterly	1000	0	0	0
Current Mining Titles	NSW Department of Industry	29/07/2020	29/07/2020	Monthly	1000	0	0	0
Mining Title Applications	NSW Department of Industry	29/07/2020	29/07/2020	Monthly	1000	0	0	0
Historic Mining Titles	NSW Department of Industry	29/07/2020	29/07/2020	Monthly	1000	12	12	13
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning, Industry and Environment	13/08/2020	07/12/2018	Monthly	1000	0	0	2
Environmental Planning Instrument Land Zoning	NSW Department of Planning, Industry and Environment	13/08/2020	07/08/2020	Monthly	1000	3	10	48
Commonwealth Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/08/2020	20/11/2019	Quarterly	1000	0	0	0
National Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/08/2020	20/11/2019	Quarterly	1000	0	0	0
State Heritage Register - Curtilages	NSW Department of Planning, Industry and Environment	24/07/2020	02/07/2020	Quarterly	1000	0	1	3
Environmental Planning Instrument Heritage	NSW Department of Planning, Industry and Environment	13/08/2020	07/08/2020	Monthly	1000	0	5	39
Bush Fire Prone Land	NSW Rural Fire Service	14/08/2020	14/12/2019	Quarterly	1000	0	0	0
Native Vegetation of the Sydney Metropolitan Area	NSW Office of Environment & Heritage	01/03/2017	16/12/2016	As required	1000	1	1	11
Ramsar Wetlands of Australia	Department of the Agriculture, Water and the Environment	08/10/2014	24/06/2011	As required	1000	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	2
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	4
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	31/08/2020	31/08/2020	Weekly	10000	-	-	-

Site Diagram

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Legend

- Site Boundary
- Internal Parcel Boundaries

Total Area: 14796m^2

Total Perimeter: 687m

Scale: 0 25 50 Meters

Data Sources: Aerial Imagery © Aerometrex Pty Ltd

Disclaimers:

Measurements are approximate only and may have been simplified or smaller lengths removed for readability.

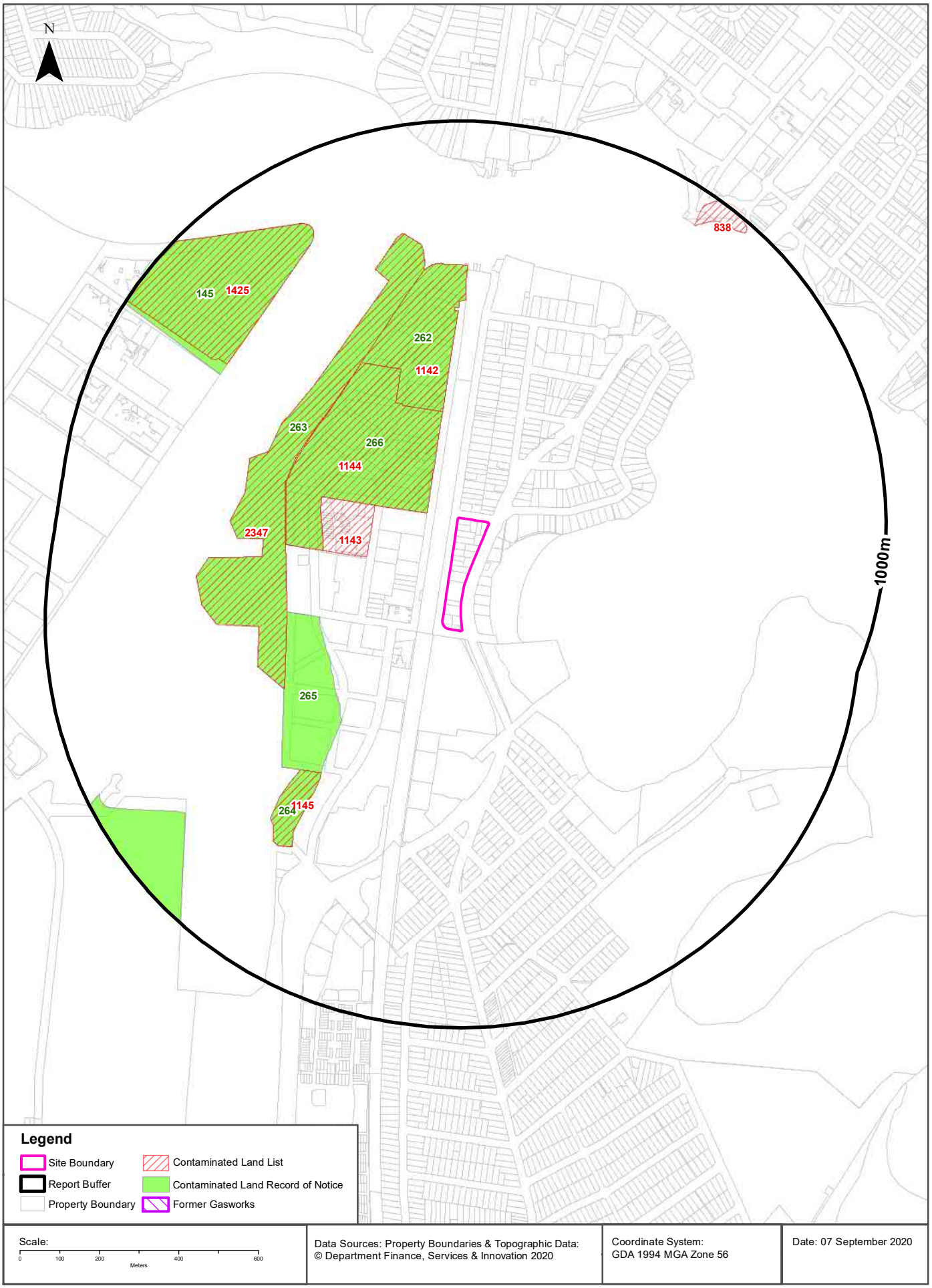
Parcels that make up a small percentage of the total site area have not been labelled for increased legibility.

Coordinate System: GDA 1994 MGA Zone 56

Date: 07 September 2020

Contaminated Land

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Contaminated Land

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

List of NSW contaminated sites notified to EPA

Records from the NSW EPA Contaminated Land list within the dataset buffer:

Map Id	Site	Address	Suburb	Activity	Management Class	Status	Location Confidence	Dist (m)	Direction
1144	Former UCAL site	Walker STREET	Rhodes	Chemical Industry	Ongoing maintenance required to manage residual contamination (CLM Act)	Current EPA List	Premise Match	80m	North West
1143	Former Glad factory site	10-16 Marquet Street	Rhodes	Chemical Industry	Regulation under CLM Act not required	Current EPA List	Premise Match	213m	West
1142	Former Allied Feeds site	Walker Street	Rhodes	Other Industry	Ongoing maintenance required to manage residual contamination (CLM Act)	Current EPA List	Premise Match	271m	North
2347	Homebush Bay Sediments adjoining the former UCAL and Allied Feeds sites	Homebush BAY	Rhodes	Chemical Industry	Ongoing maintenance required to manage residual contamination (CLM Act)	Current EPA List	Premise Match	393m	North West
1145	Homebush Bay sediments adjoining former Berger Paint factory	Oulton Avenue	Rhodes	Chemical Industry	Ongoing maintenance required to manage residual contamination (CLM Act)	Current EPA List	Premise Match	481m	South West
1425	RMS Eastern Precinct	3-7 Burroway Road	Wentworth Point	Other Petroleum	Regulation under CLM Act not required	Current EPA List	Premise Match	700m	North West
838	Former Council Works Depot	2 Parsonage Street	Meadowbank	Unclassified	Regulation under CLM Act not required	Current EPA List	Premise Match	911m	North East

The values within the EPA site management class in the table above, are given more detailed explanations in the table below:

EPA site management class	Explanation
Contamination being managed via the planning process (EP&A Act)	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. The contamination of this site is managed by the consent authority under the Environmental Planning and Assessment Act 1979 (EP&A Act) planning approval process, with EPA involvement as necessary to ensure significant contamination is adequately addressed. The consent authority is typically a local council or the Department of Planning and Environment.
Contamination currently regulated under CLM Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). Management of the contamination is regulated by the EPA under the CLM Act. Regulatory notices are available on the EPA's Contaminated Land Public Record of Notices.
Contamination currently regulated under POEO Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. Management of the contamination is regulated under the Protection of the Environment Operations Act 1997 (POEO Act). The EPA's regulatory actions under the POEO Act are available on the POEO public register.
Contamination formerly regulated under the CLM Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). The contamination was addressed under the CLM Act.

EPA site management class	Explanation
Contamination formerly regulated under the POEO Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed under the Protection of the Environment Operations Act 1997 (POEO Act).
Contamination was addressed via the planning process (EP&A Act)	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed by the appropriate consent authority via the planning process under the Environmental Planning and Assessment Act 1979 (EP&A Act).
Ongoing maintenance required to manage residual contamination (CLM Act)	The EPA has determined that ongoing maintenance, under the Contaminated Land Management Act 1997 (CLM Act), is required to manage the residual contamination. Regulatory notices under the CLM Act are available on the EPA's Contaminated Land Public Record of Notices.
Regulation being finalised	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997. A regulatory approach is being finalised.
Regulation under the CLM Act not required	The EPA has completed an assessment of the contamination and decided that regulation under the Contaminated Land Management Act 1997 is not required.
Under assessment	The contamination is being assessed by the EPA to determine whether regulation is required. The EPA may require further information to complete the assessment. For example, the completion of management actions regulated under the planning process or Protection of the Environment Operations Act 1997. Alternatively, the EPA may require information via a notice issued under s77 of the Contaminated Land Management Act 1997 or issue a Preliminary Investigation Order.

NSW EPA Contaminated Land List Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Contaminated Land

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Contaminated Land: Records of Notice

Record of Notices within the dataset buffer:

Map Id	Name	Address	Suburb	Notices	Area No	Location Confidence	Distance	Direction
266	Former UCAL site	Walker Street	Rhodes	1 current and 54 former	3064	Premise Match	80m	North West
262	Former Allied Feeds site	Walker Street	Rhodes	7 former	3066	Premise Match	271m	North
265	Rhodes Waterside	Mary Street	Rhodes	2 former	3065	Premise Match	297m	South West
263	Homebush Bay Sediments adjoining the former UCAL and Allied Feeds sites	Homebush BAY	Rhodes	1 current and 4 former	3333	Premise Match	393m	North West
264	Homebush Bay sediments adjoining former Berger Paint factory	Oulton Avenue	Rhodes	1 current and 11 former	3364	Premise Match	481m	South West
145	Homebush Bay General Area	No specific Street OTHER	Homebush Bay	2 former	3033	Premise Match	700m	South West

Contaminated Land Records of Notice Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority
Terms of use and disclaimer for Contaminated Land: Record of Notices, please visit http://www.epa.nsw.gov.au/clm/clmdisclaimer.htm

Former Gasworks

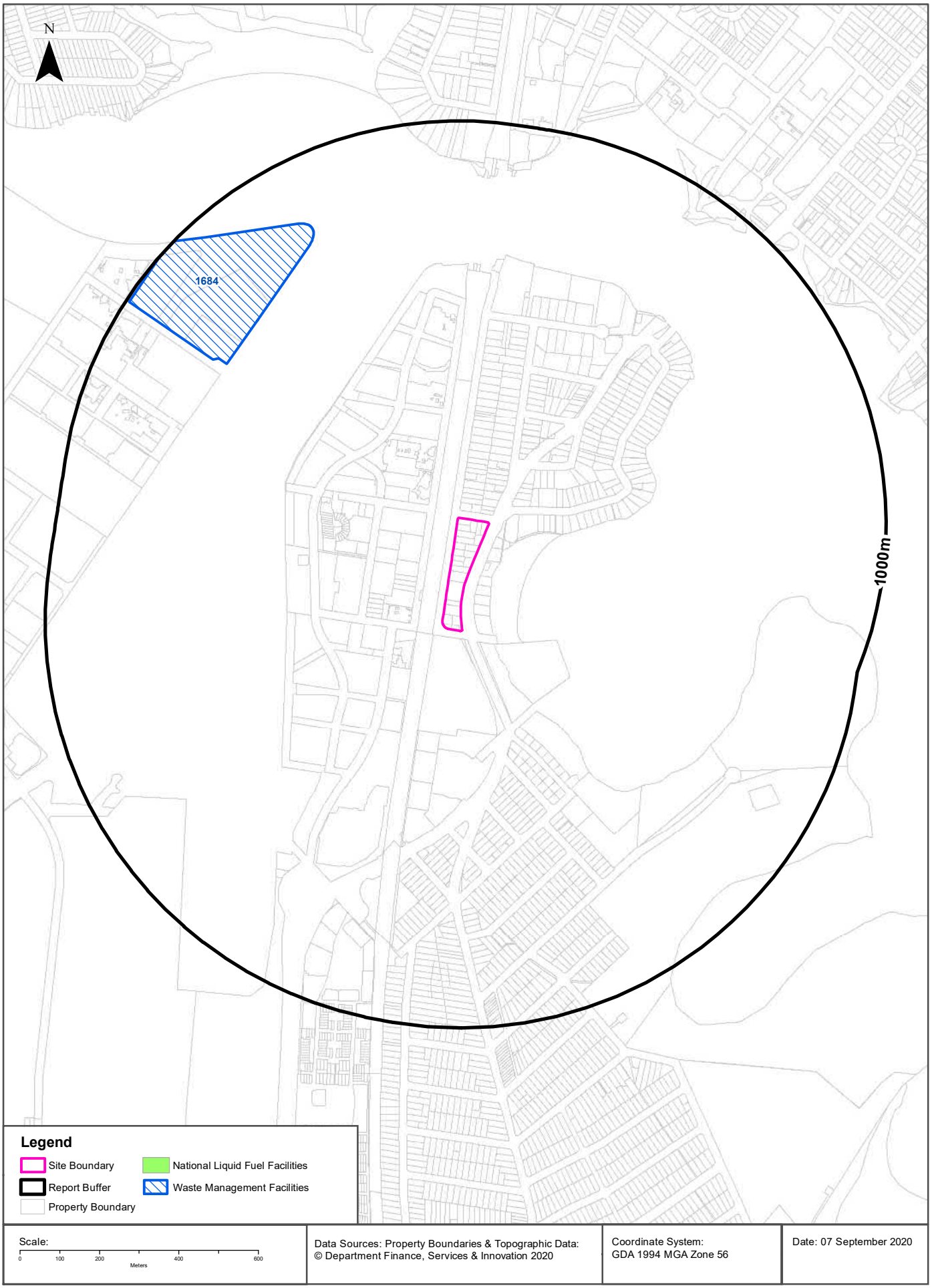
Former Gasworks within the dataset buffer:

Map Id	Location	Council	Further Info	Location Confidence	Distance	Direction
N/A	No records in buffer					

Former Gasworks Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Waste Management & Liquid Fuel Facilities

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Waste Management & Liquid Fuel Facilities

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

National Waste Management Site Database

Sites on the National Waste Management Site Database within the dataset buffer:

Site Id	Owner	Name	Address	Suburb	Class	Landfill	Reprocess	Transfer	Comments	Loc Conf	Dist (m)	Direction
1684		Unknown Facility	3 Burroway Road	Homebush Bay	Reprocessing		Operational			Premise Match	700 m	North West

Waste Management Facilities Data Source: Geoscience Australia
Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

National Liquid Fuel Facilities

National Liquid Fuel Facilties within the dataset buffer:

Map Id	Owner	Name	Address	Suburb	Class	Operational Status	Operator	Revision Date	Loc Conf	Dist (m)	Direction
N/A	No records in buffer										

National Liquid Fuel Facilities Data Source: Geoscience Australia
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PFAS Investigation & Management Programs

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

EPA PFAS Investigation Program

Sites that are part of the EPA PFAS investigation program, within the dataset buffer:

Id	Site	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

EPA PFAS Investigation Program: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Defence PFAS Investigation Program

Sites being investigated by the Department of Defence for PFAS contamination within the dataset buffer:

Map ID	Base Name	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

Defence PFAS Investigation Program Data Custodian: Department of Defence, Australian Government

Defence PFAS Management Program

Sites being managed by the Department of Defence for PFAS contamination within the dataset buffer:

Map ID	Base Name	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

Defence PFAS Management Program Data Custodian: Department of Defence, Australian Government

Airservices Australia National PFAS Management Program

Sites being investigated or managed by Airservices Australia for PFAS contamination within the dataset buffer:

Map ID	Site Name	Impacts	Loc Conf	Dist	Dir
N/A	No records in buffer				

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

Defence Sites

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Defence 3 Year Regional Contamination Investigation Program

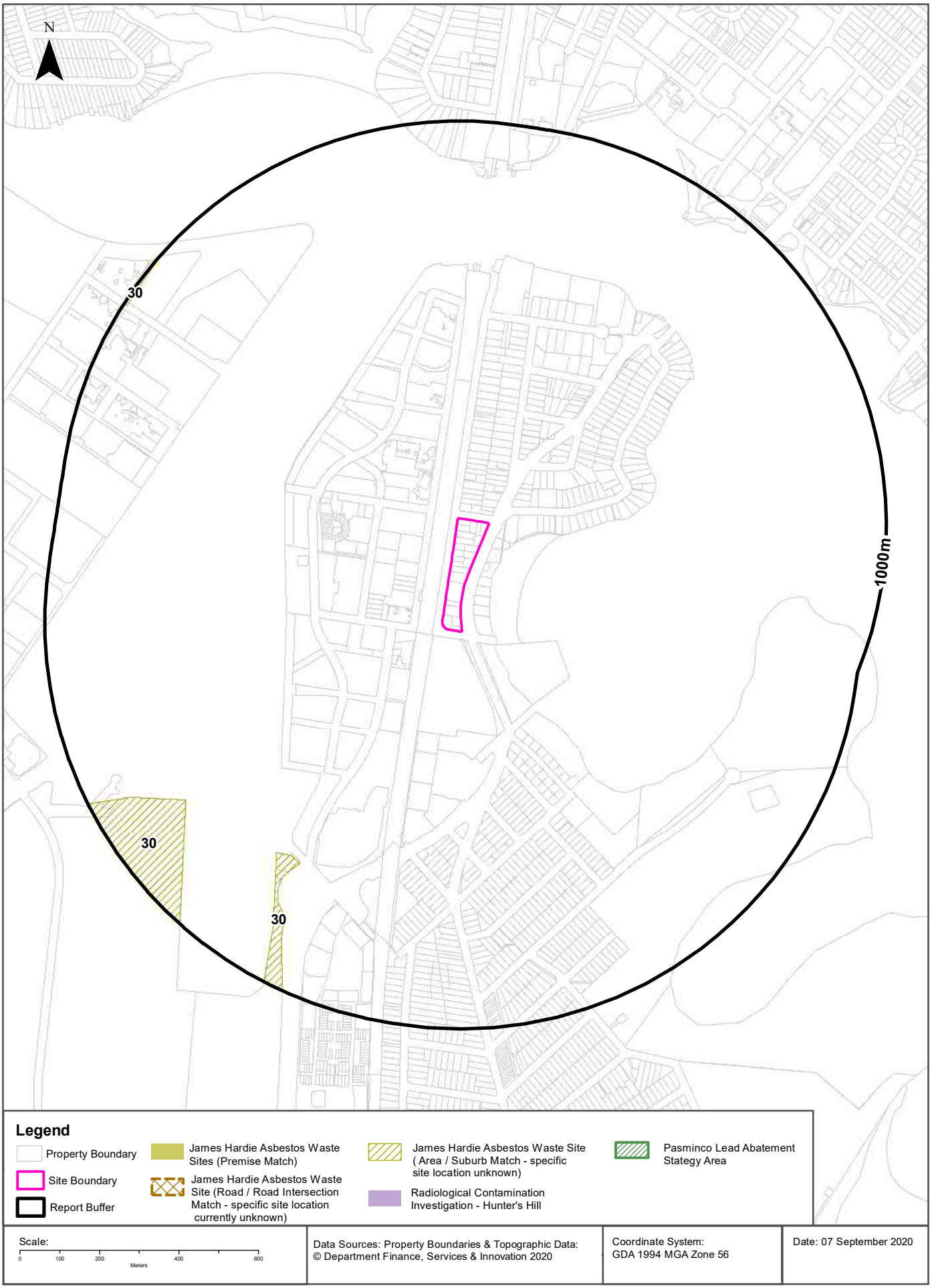
Sites which have been assessed as part of the Defence 3 Year Regional Contamination Investigation Program within the dataset buffer:

Property ID	Base Name	Address	Known Contamination	Loc Conf	Dist	Dir
N/A	No records in buffer					

Defence 3 Year Regional Contamination Investigation Program, Data Custodian: Department of Defence, Australian Government

EPA Other Sites with Contamination Issues

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



EPA Other Sites with Contamination Issues

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

EPA Other Sites with Contamination Issues

This dataset contains other sites identified on the EPA website as having contamination issues. This dataset currently includes:

- James Hardie asbestos manufacturing and waste disposal sites
- Radiological investigation sites in Hunter's Hill
- Pasminco Lead Abatement Strategy Area

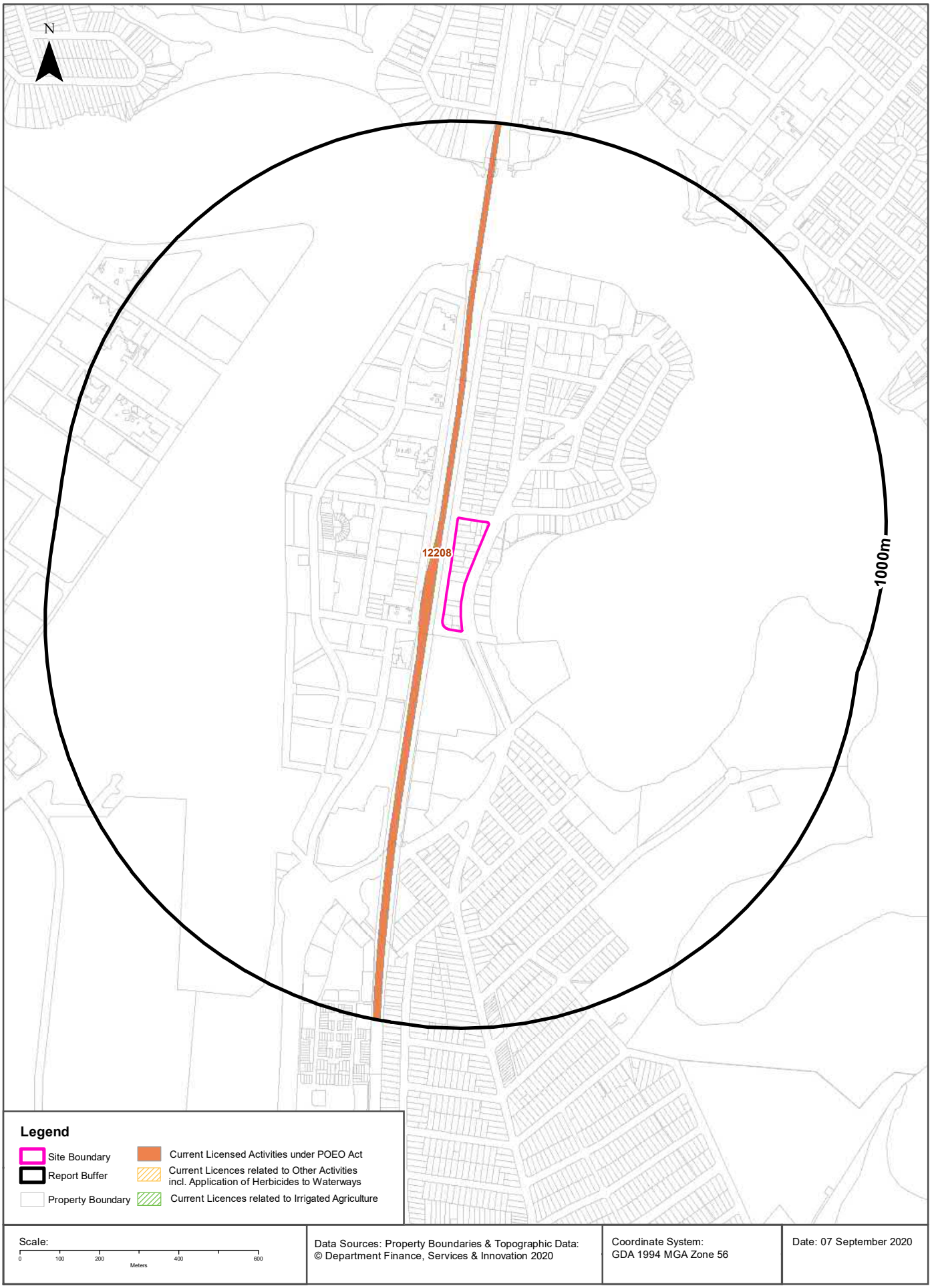
Sites within the dataset buffer:

Site Id	Site Name	Site Address	Dataset	Comments	Location Confidence	Distance	Direction
30	Homebush Tip	Unknown	James Hardie Asbestos Waste Sites		General Area/ Suburb Match	691m	South West

EPA Other Sites with Contamination Issues: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Current EPA Licensed Activities

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



EPA Activities

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Licensed Activities under the POEO Act 1997

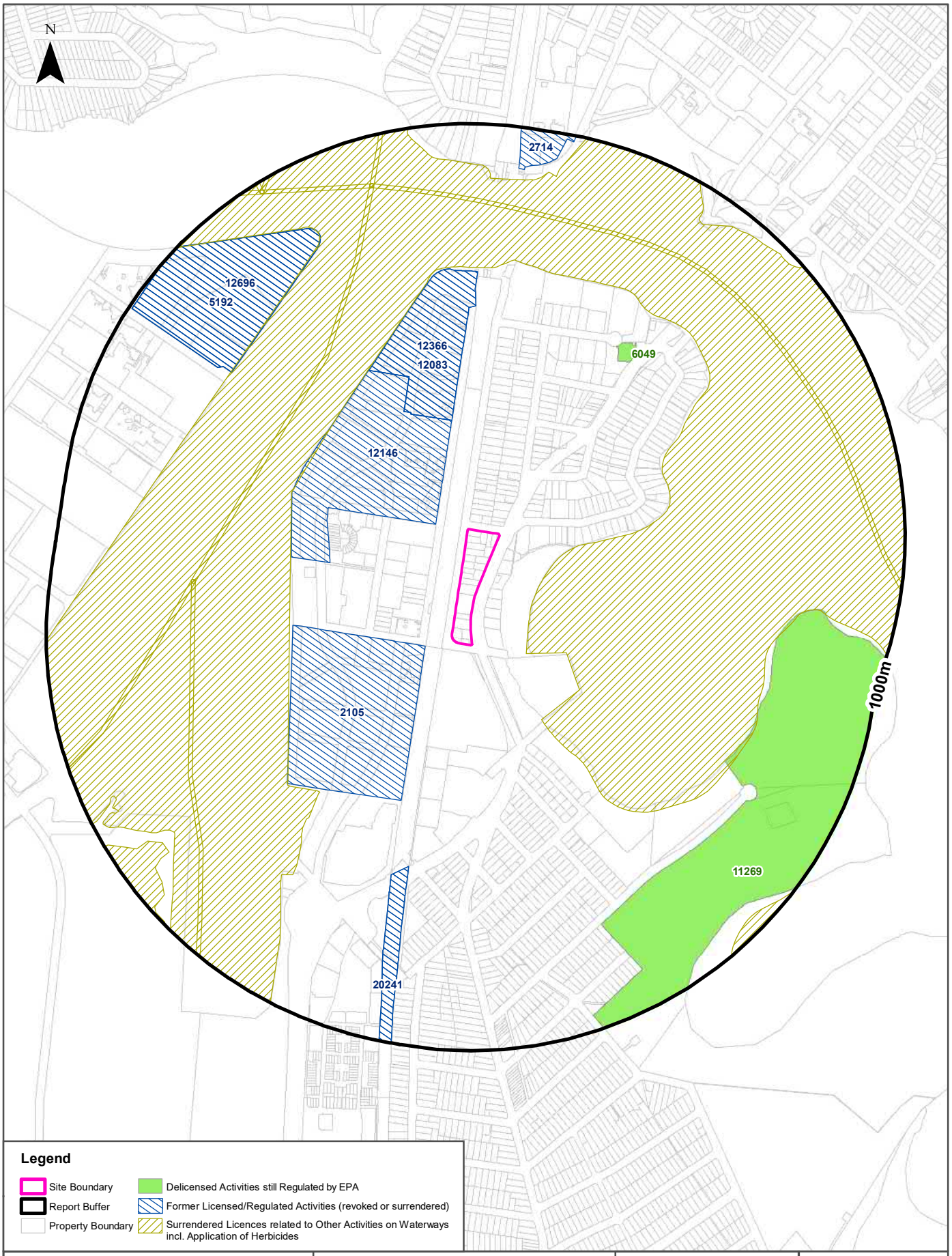
Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
12208	SYDNEY TRAINS		SYDNEY TRAINS, HAYMARKET, NSW 1238		Railway systems activities	Network of Features	33m	South West

POEO Licence Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Delicensed & Former Licensed EPA Activities

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



EPA Activities

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Delicensed Activities still regulated by the EPA

Delicensed activities still regulated by the EPA, within the dataset buffer:

Licence No	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
6049	DAVIES, CAMPBELL & DE LAMBERT PTY. LIMITED	DAVIES CAMPBELL DE LAMBERT PATHOLOGY	2 LEEDS STREET	RHODES	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	518m	North East
11269	SYDNEY SOUTH WEST AREA HEALTH SERVICE	CONCORD REPATRIATION GENERAL HOSPITAL	HOSPITAL ROAD	CONCORD WEST	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	686m	South East

Delicensed Activities Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Former Licensed Activities under the POEO Act 1997, now revoked or surrendered

Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the dataset buffer:

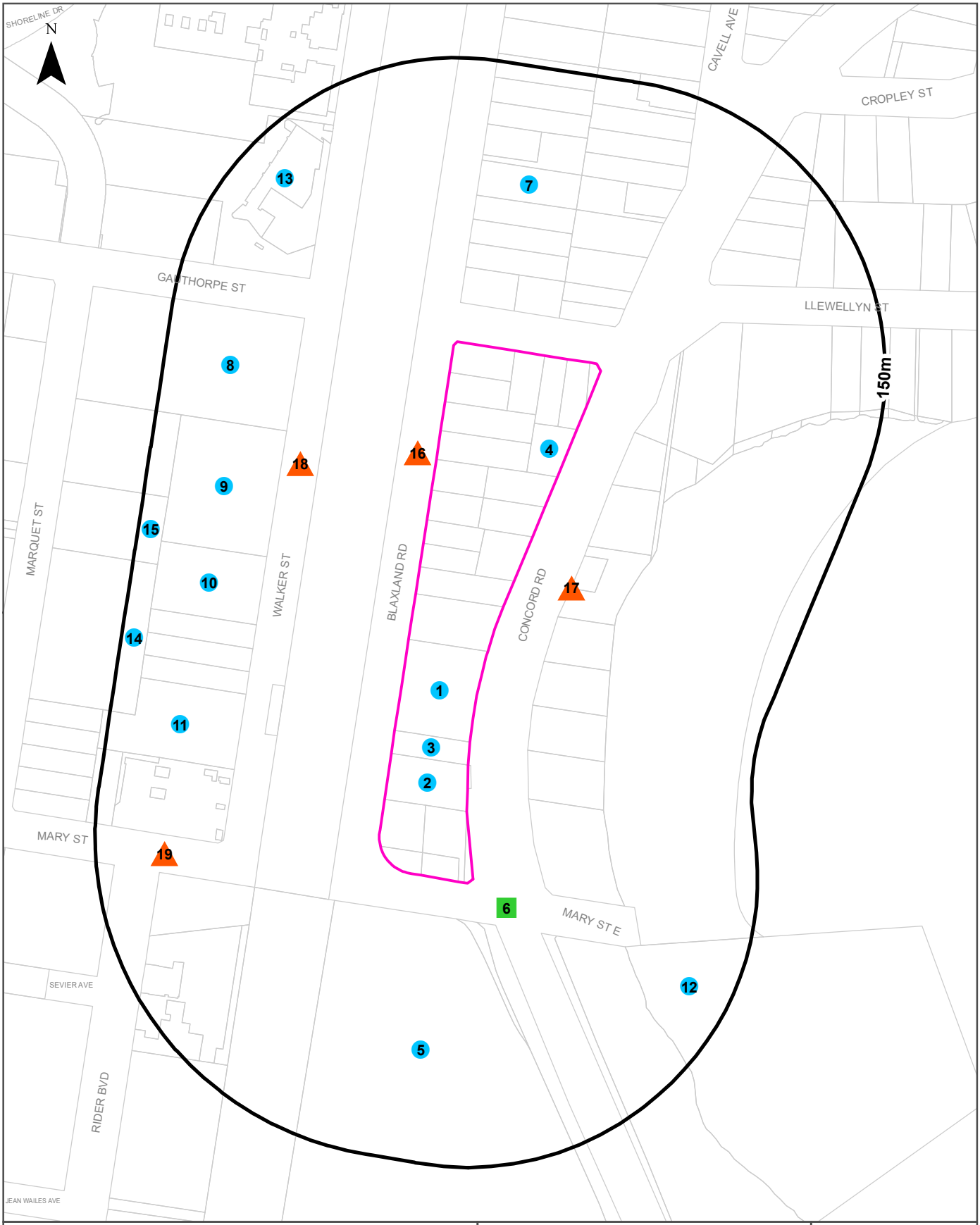
Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
2105	ORICA AUSTRALIA PTY LTD	1 MARY ST, RHODES, NSW 2138	Surrendered	07/06/2000	Contaminated soil treatment	Premise Match	70m	South West
12146	VENTIA UTILITY SERVICES PTY LIMITED	40 Walker Street, RHODES, NSW 2138	Surrendered	22/12/2004	Waste storage - hazardous, restricted solid, liquid, clinical and related waste and asbestos waste; Contaminated soil treatment; Non-thermal treatment of hazardous and other waste	Premise Match	80m	North West
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered	09/11/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	134m	-
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered	06/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	134m	-
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered	07/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	134m	-
5030	CITY OF RYDE	AREAS REQUIRING MOSQUITO TREATMENT WITHIN THE LGA OF RYDE CITY COUNCIL - RYDE NSW 2112	Surrendered	11/08/2000	Miscellaneous licensed discharge to waters (at any time) - Pesticide application in areas requiring mosquito treatment	Network of Features	134m	-
12083	PENTAIR WATER OPERATIONS AUSTRALIA PTY LTD	42 Walker Street, RHODES, NSW 2138	Surrendered	17/08/2004	Waste Storage, Transfer, Separating or Processing; Contaminated soil treatment; Crushing, grinding or separating	Premise Match	272m	North

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
12366	VENTIA UTILITY SERVICES PTY LIMITED	42 Walker Street , RHODES, NSW 2138	Surrendered	09/11/2005	Crushing, grinding or separating, Hazardous, Industrial or Group A Waste Generation or Storage, Non-thermal treatment of hazardous and other waste, Contaminated soil treatment	Premise Match	272m	North
20241	JOHN HOLLAND PTY LTD	North Strathfield Rail Underpass, Main North Line Corridor - 11km section located between Parramatta Road and Homebush Bay Drive, NORTH STRATHFIELD	Surrendered	16/04/2013	Railway systems activities	Network of Features	564m	South
20241	JOHN HOLLAND PTY LTD	North Strathfield Rail Underpass, Main North Line Corridor between Parramatta Road and Homebush Bay Drive, NORTH STRATHFIELD	Surrendered	16/04/2013	Land-based extractive activity	Network of Features	564m	South
12696	HOMEBUSH BAY RECYCLING CENTRE PTY LTD	Homebush Bay Recycling Centre Pty Ltd, 3 Burroway Road, HOMEBUSH BAY	Surrendered	27/08/2007	Recovery of general waste	Premise Match	700m	North West
12696	HOMEBUSH BAY RECYCLING CENTRE PTY LTD	Homebush Bay Recycling Centre Pty Ltd, 3 Burroway Road, HOMEBUSH BAY	Surrendered	27/08/2007	Waste storage - other types of waste	Premise Match	700m	North West
5192	SUEZ RECYCLING & RECOVERY PTY LTD	3 BURROWAY ROAD, HOMEBUSH BAY, NSW 2127	Surrendered	15/06/2000	Waste Storage, Transfer, Separating or Processing	Premise Match	700m	North West
2714	BRITISH AEROSPACE AUSTRALIA PROPERTIES PTY LIMITED	RAILWAY ROAD, MEADOWBANK, NSW 2114	Surrendered	17/01/2000	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	898m	North

Former Licensed Activities Data Source: Environment Protection Authority
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Historical Business Directories

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Legend

- Site Boundary
- Buffer 150m
- Property Boundary
- Business directory records mapped to a specific premise
- Business directory records mapped to a road intersection
- Business directory records mapped to a road corridor
- Business directory records mapped to a general area

Scale: 0 30 60 90 120 Meters

Coordinate System: GDA 1994 MGA Zone 56

Date: 07 September 2020

Data Sources: Reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018
Property Boundaries © NSW Department Finance, Services & Innovation 2020

Historical Business Directories

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Business Directory Records 1950-1991
Premise or Road Intersection Matches

Universal Business Directory records from years 1991, 1986, 1982, 1978, 1975, 1970, 1965, 1961 & 1950, mapped to a premise or road intersection within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	OFFICE SUPPLIES &/OR EQUIPMENT - RETAIL.	Alive Stationary Supplies, 17 Blaxland Rd., Rhodes. 2138	70410	1986	Premise Match	0m	On-site
	RUBBER STAMP MFRS. &/OR DISTS.	Alive Stationary Supplies, 17 Blaxland Rd., Rhodes. 2138	83969	1986	Premise Match	0m	On-site
	STATIONERS - RETAIL.	Alive Stationary Supplies, 17 Blaxland Rd., Rhodes. 2138	88315	1986	Premise Match	0m	On-site
	OFFICE SUPPLIES &/OR EQUIPMENT - RETAIL.	Alive Stationery Supplies 17 Blaxland Road, Rhodes. 2138	70404	1986	Premise Match	0m	On-site
	STATIONERS - RETAIL.	Alive Stationery Supplies, 17 Blaxland Road, Rhodes. 2138	88308	1986	Premise Match	0m	On-site
	GROCERS-RETAIL.	Boon, G. M 15A Blaxland Rd., Rhodes. 2138	40483	1986	Premise Match	0m	On-site
	BUTCHERS-RETAIL.	Rhodes Butchery, 15 Blaxland Rd., Rhodes. 2138	10528	1986	Premise Match	0m	On-site
	RUBBER STAMP MFRS. &/OR DISTS.	Stead's Rubber Stamp Service 17 Blaxland Road, Rhodes. 2138	83967	1986	Premise Match	0m	On-site
	OFFICE SUPPLIES &/OR EQUIPMENT - RETAIL.	Stead's Rubber Stamp Service, 17 Blaxland Rd., Rhodes. 2138	70476	1986	Premise Match	0m	On-site
	RUBBER STAMP MFRS. &/OR DISTS.	Stead's Rubber Stamp Service, 17 Blaxland Rd., Rhodes. 2138	84005	1986	Premise Match	0m	On-site
	GROCERS - RETAIL. (G7850)	Boon, G.M., 15a Blaxland Rd, Rhodes. 2138.	37420	1982	Premise Match	0m	On-site
	BUTCHERS - RETAIL. (B8040)	Rhodes Butchery, 15 Blaxland Rd., Rhodes. 2138.	11494	1982	Premise Match	0m	On-site
	RUBBER STAMP MFRS. &/OR DISTS. (R8120)	Stead's Rubber Stamp Service, 17B Blaxland Rd., Rhodes. 2138.	72682	1982	Premise Match	0m	On-site
	GROCERS-RETAIL	Boon. G.M., 15a Blaxland Rd., Rhodes. 2138	33697	1978	Premise Match	0m	On-site
	HAIRDRESSERS-GENTS.	Rhodes Gents Hairdresser, 17 Blaxland Rd., Rhodes. 2138	34679	1978	Premise Match	0m	On-site
	BUTCHERS-RETAIL.	Ryan. K.F., 15 Blaxland Rd., Rhodes. 2138	9841	1978	Premise Match	0m	On-site
	RUBBER STAMP MFRS. &/OR DISTS	Stampezy Manufacturing Co., 17b Blaxland Rd., Rhodes. 2138	64237	1978	Premise Match	0m	On-site
	BEAUTY SALONS &/OR LADIES HAIRDRESSERS.	Vilmas Beauty Salon, 17A Blaxland Rd., Rhodes. 2138	5727	1978	Premise Match	0m	On-site
	BEAUTY SALONS &/OR LADIES HAIRDRESSERS.	Priscellers Beauty Salon, 17A Blaxland Rd., Rhodes. 2138	5808	1975	Premise Match	0m	On-site
	BUTCHERS-RETAIL	Rhodes Butchery, 15 Blaxland Rd., Rhodes. 2138	11062	1975	Premise Match	0m	On-site
	FRUITERERS &/OR GREENGROCERS.	Rhodes Fruit & Milk Bar., 15 Blaxland Rd., Rhodes. 2138.	35748	1975	Premise Match	0m	On-site
	HAIRDRESSERS-GENTS.	Rhodes Gents Hairdresser, 17 Blaxland Rd., Rhodes. 2138	40844	1975	Premise Match	0m	On-site
	BUTCHERS-RETAIL (B860)	Rhodes Butchery (Ryan)., 15 Blaxland Rd., Rhodes	274418	1970	Premise Match	0m	On-site
	FRUITERERS/GREENGROCERS (F640)	Rhodes Fruit & Milk Bar., 15 Blaxland Rd., Rhodes	307824	1970	Premise Match	0m	On-site
	HAIRDRESSERS (GENT.'S) (H070)	Rhodes Gent.'s Hairdresser., 17 Blaxland Rd., Rhodes	314358	1970	Premise Match	0m	On-site

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	BEAUTY SALONS &/OR LADIES' HAIRDRESSERS (B260)	Ruby's Beauty Salon., 17a Blaxland Rd., Rhodes	266582	1970	Premise Match	0m	On-site
	Butchers - Retail	Rhodes Butchery (Ryan)., 15 Blaxland Rd., Rhodes	59178	1965	Premise Match	0m	On-site
	Fruiterers & Greengrocers	Rhodes Fruit & Milk Bar, 17 Blaxland Rd., Rhodes	92011	1965	Premise Match	0m	On-site
	Beauty Salons &/or Ladies Hairdressers	Ruby's Beauty Salon., 21 Blaxland Rd., Rhodes	51173	1965	Premise Match	0m	On-site
2	NEWSAGENTS.	Stark's, 9 Blaxland Rd., Rhodes. 2138	69703	1986	Premise Match	0m	On-site
	NEWSAGENTS. (N0800)	Stark's, 9 Blaxland Rd., Rhodes. 2138.	60838	1982	Premise Match	0m	On-site
	NEWSAGENTS-GENERAL.	Stark's, 9 Blaxland Rd, Rhodes 2138	54130	1978	Premise Match	0m	On-site
	NEWSAGENTS-GENERAL	Stark's, 9 Blaxland Rd., Rhodes. 2138	63862	1975	Premise Match	0m	On-site
	NEWSAGENTS (N100)	Roberts., 9 Blaxland Rd., Rhodes	343804	1970	Premise Match	0m	On-site
	BOOKSELLERS-RETAIL	Robert's., 9 Blaxland Rd., Rhodes	268500	1970	Premise Match	0m	On-site
	Newsagents	Lamont's, 9 Blaxland Rd., Rhodes	128257	1965	Premise Match	0m	On-site
	Boats, Launches & Yachts - For Hire	Lamont's., 9 Blaxland Rd., Rhodes	52205	1965	Premise Match	0m	On-site
	NEWSAGENTS	Ogg, D., 9 Blaxland Rd., Rhodes	353356	1961	Premise Match	0m	On-site
	GROCERS-RETAIL	Bax, H., 9 Blaxland Rd., Rhodes	56401	1950	Premise Match	0m	On-site
	NEWSAGENTS	Bax, H., 9 Blaxland Rd., Rhodes	87819	1950	Premise Match	0m	On-site
	BOOKSELLERS &/OR STATIONERS	Bay, H., 9 Blaxland Rd., Rhodes	9354	1950	Premise Match	0m	On-site
	NEWSAGENTS	Williams, R., 9 Blaxland Rd., Rhodes	88443	1950	Premise Match	0m	On-site
3	SANDWICH &/OR LUNCHEON SHOPS.	Railway Mixed., 11 Blaxland Rd., Rhodes. 2138	75443	1975	Premise Match	0m	On-site
	MILK, FRUIT JUICE BARS/CONFECTIONERS	McIlwaine, C. L., 11 Blaxland Rd., Rhodes	330883	1970	Premise Match	0m	On-site
	DELICATESSENS (D080)	Munro, G. R. & N. M., 11 Blaxland Rd., Rhodes	287731	1970	Premise Match	0m	On-site
	DELICATESSENS (D080)	Rhodes Delicatessen., 11 Blaxland Rd., Rhodes	287877	1970	Premise Match	0m	On-site
	Milk, Fruit Juice Bars/Confectioners	McIlwaine, C. L., 11 Blaxland Rd., Rhodes	115250	1965	Premise Match	0m	On-site
	DELICATESSENS	Rhodes Delicatessen, 11 Blaxland Rd., Rhodes	72647	1965	Premise Match	0m	On-site
	MIXED BUSINESS	McIlwaine, C. & L., 11 Blaxland Rd., Rhodes	341749	1961	Premise Match	0m	On-site
	MILK, FRUIT JUICE BARS/CONFECTIONERS	McIlwaine, C. L., 11 Blaxland Rd., Rhodes	339325	1961	Premise Match	0m	On-site
	MILK VENDORS	McIlwaine, C L., 11 Blaxland Rd., Rhodes	77848	1950	Premise Match	0m	On-site
4	SIGNWRITERS	Watson, G. F., 446 Concord Rd., Rhodes	250421	1961	Premise Match	0m	On-site
5	Computer Hardware Mfrs &/or Imps &/or Dists	Digital Equipment Corporation (Australia) Pty. Limited, 410 Concord Rd., Rhodes 2138	40050	1991	Premise Match	20m	South
	Computer Software	Digital Equipment Corporation (Australia) Pty. Limited., 410 Concord Rd., Rhodes 2138	40302	1991	Premise Match	20m	South
	VETERINARY HOSPITALS.	Concord Animal Hospital, 410 Concord Rd. Concord West. 2138	97171	1986	Premise Match	20m	South
	Chemical Manufacturers &/or Distributors	C.S.R. Chemicals Pty. Ltd., 1 Mary St., Rhodes	64109	1965	Premise Match	20m	South
	Chemical Manufacturers &/or Distributors	Colonial Sugar Refining Co. (Fine), Mary St. West, Rhodes	64121	1965	Premise Match	20m	South
	CHEMICAL MANUFACTURERS &/OR DISTRIBUTORS	Colonial Sugar Refining Co. (Fine)., Mary St. West, Rhodes	286575	1961	Premise Match	20m	South

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
5	CHEMICAL MANUFACTURERS	Colonial Sugar Refining Co. (Fine), Mary St. West, Rhodes	21015	1950	Premise Match	20m	South
6	BUILDERS' SUPPLIERS	Tulloch's Pty. Ltd., Concord Rd. and Mary St., Rhodes	11925	1950	Road Intersection	23m	South
7	ABRASIVE DISTRIBUTORS &/OR MERCHANTS	Mackellar, C. S., 49 Blaxland Rd., Rhodes	43293	1965	Premise Match	78m	North
	Engineers General &/or Mfrg. &/or Mechanical	MacKellar, S. A., 49 Blaxland Rd., Rhodes	82608	1965	Premise Match	78m	North
	ABRASIVE DISTRIBUTORS &/OR MERCHANTS	Mackellar, C. S., 49 Blaxland Rd., Rhodes	264496	1961	Premise Match	78m	North
	ENGINEERS-GENERAL/MFRG./ MECHANICAL	MacKellar, S. A., 49 Blaxland Rd., Rhodes	306708	1961	Premise Match	78m	North
	ABRASIVE DISTRIBUTORS & MERCHANTS	MacKellar, C. S., 49 Blaxland Rd., Rhodes	53	1950	Premise Match	78m	North
8	Labels Adhesive	Impresstik Pty. Ltd., 34 Walker St., Rhodes. 2138	50425	1991	Premise Match	80m	North West
9	CHEMISTS-INDUSTRIAL	Timbrol Company (Division of Union Carbide Aust. Limited), 32 Walker St., Rhodes.	286985	1961	Premise Match	80m	West
	CHEMISTS-MANUFACTURING &/OR WHOLE SALE	Timbrol Limited, 32 Walker St., Rhodes	287241	1961	Premise Match	80m	West
	AGRICULTURAL CHEMICALS-IMPS, &/OR DISTS.	Timbrol Ltd., 32 Walker St., Rhodes	266888	1961	Premise Match	80m	West
	ELECTRICAL CONTRACTORS-LICENSED	Timbrol Ltd., 32 Walker St., Rhodes	302632	1961	Premise Match	80m	West
	CHEMISTS-MANUFACTURING & WHOLESALE	Timbrol Limited, 32 Walker St., Rhodes	70638	1950	Premise Match	80m	West
10	Pen Fountain &/or Ballpoint &/or Mfrs &/or Imps Dists	BIC Australia Pty Ltd, 18 Walker St., Rhodes. 2138	56957	1991	Premise Match	81m	West
11	Printers Lithographic (Offset)	Progress Press, 6 Walker St. Rhodes. 2138	59296	1991	Premise Match	81m	South West
	Business & Commercial Mailing Service	Progress Press, 6 Walker St., Rhodes 2138	37688	1991	Premise Match	81m	South West
12	ELECTRIC GENERATING EQUIPMENT MFRS. &/OR IMPS. &/OR DISTS.	Dunlite, 443 Concord Rd., Rhodes. 2138	26289	1986	Premise Match	88m	South East
	RADIO &/OR TELEVISION SALES &/OR SERVICEMEN.	Philips Consumer Products, 443 Concord Rd, Rhodes. 2138	78790	1986	Premise Match	88m	South East
	ELECTRICAL APPLIANCES-REPAIRS &/OR SERVICE AGENTS.	Philips Consumer Products, 443 Concord Rd., Rhodes 2138	27009	1986	Premise Match	88m	South East
	ELECTRICAL SUPPLIES &/OR APPLIANCES-WHOLESALE.	Philips Consumer Products, 443 Concord Rd., Rhodes. 2138	27658	1986	Premise Match	88m	South East
	MOTOR CAR RADIO MFRS. &/OR IMPS. &/OR DISTS.	Philips Consumer Products, 443 Concord Rd., Rhodes. 2138	61848	1986	Premise Match	88m	South East
	REFRIGERATOR DEALERS &/OR SERVICEMEN.	Philips Consumer Products, 443 Concord Rd., Rhodes. 2138	80781	1986	Premise Match	88m	South East
	ELECTRIC GENERATING EQUIPMENT MFRS. &/OR IMPS.&/OR DISTS. (E1560)	Dunlite, 443 Concord Rd., Rhodes. 2138.	24731	1982	Premise Match	88m	South East
	CYCLE ACCESSORIES MFRS. &/OR W/SALERS. (C9285)	General Accessories, 443 Concord Rd., Concord West. 2138.	18793	1982	Premise Match	88m	South East
	CYCLE MFRS. (C9360)	General Accessories. 443 Concord Rd., Concord West. 2138.	18868	1982	Premise Match	88m	South East
	ELECTRICAL SUPPLIES &/OR APPLIANCES - WHOLESALE. (E3870)	Philips Service, 443 Concord Rd., Rhodes. 2138.	25943	1982	Premise Match	88m	South East
	MOTOR CAR RADIO MFRS. &/OR DISTS. (M5620)	Philips Service, 443 Concord Rd., Rhodes. 2138.	54592	1982	Premise Match	88m	South East
	RADIO &/OR TELEVISION SALES&/OR SERVICEMEN. (R1260)	Philips Service, 443 Concord Rd., Rhodes. 2138.	68330	1982	Premise Match	88m	South East
	REFRIGERATOR DEALERS &/OR SERVICEMEN. (R4130)	Philips Service, 443 Concord Rd., Rhodes. 2138.	70209	1982	Premise Match	88m	South East
	CYCLE ACCESSORIES MFRS. &/OR W/SALERS.	General Accessories, 443 Concord Rd., Concord West. 2138	17018	1978	Premise Match	88m	South East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
12	CYCLE MFRS.	General Accessories, 443 Concord Rd., Concord West. 2138	17077	1978	Premise Match	88m	South East
	REFRIGERATOR DEALERS &/OR SERVICEMEN.	United Electronic Servicing Pty. Ltd, 443 Concord Rd, Rhodes, 2138	62625	1978	Premise Match	88m	South East
	REFRIGERATOR DEALERS &/OR SERVICEMEN.	United Electronic Servicing Pty. Ltd, 443 Concord Rd, Rhodes. 2138	62626	1978	Premise Match	88m	South East
	RADIO &/OR TELEVISION SALES &/OR SERVICEMEN.	United Electronic Servicing Pty. Ltd., 443 Concord Rd., Rhodes. 2138	61161	1978	Premise Match	88m	South East
	RADIO &/OR TELEVISION SALES &/OR SERVICEMEN.	United Electronic Servicing Pty. Ltd., 443 Concord Rd., Rhodes. 2138	61162	1978	Premise Match	88m	South East
	ELECTRONIC EQUIPMENT MFRS. &/OR DISTS.	Anodeon Sales, 443 Concord Rd., Rhodes. 2138	26765	1975	Premise Match	88m	South East
	TELEVISION EQUIPMENT MFRS. &/OR IMPS. &/OR DISTS.	Anodeon Sales., 443 Concord Rd., Rhodes. 2138	82420	1975	Premise Match	88m	South East
	RADIO &/OR RADIOGRAM MFRS.	Astor Appliances., 443 Concord Rd., Rhodes. 2138	71407	1975	Premise Match	88m	South East
	RECORD MFRS. &/OR IMPS. &/OR DISTS.	Astor Appliances., 443 Concord Rd., Rhodes. 2138	73180	1975	Premise Match	88m	South East
	REFRIGERATOR-DOMESTIC-MFRS. &/OR DISTS.	Astor Appliances., 443 Concord Rd., Rhodes. 2138	73388	1975	Premise Match	88m	South East
	SEWING MACHINE DOMESTIC MFRS. &/OR DISTS.	Astor Appliances., 443 Concord Rd., Rhodes. 2138	76604	1975	Premise Match	88m	South East
	INSURANCE COMPANIES-GENERAL	E.I.L Service Pty. Ltd., 443 Concord Rd., Rhodes. 2138	45017	1975	Premise Match	88m	South East
	RADIO &/OR TELEVISION SALES &/OR SERVICEMEN.	E.I.L. Service Pty. Ltd., 443 Concord Rd., Rhodes. 2138	71605	1975	Premise Match	88m	South East
	REFRIGERATOR DEALERS &/OR SERVICEMEN.	E.I.L. Service Pty. Ltd., 443 Concord Rd., Rhodes. 2138	73334	1975	Premise Match	88m	South East
	SEWING MACHINE REPAIRERS.	E.I.L. Service Pty. Ltd., 443 Concord Rd., Rhodes. 2138	76672	1975	Premise Match	88m	South East
	TELEVISION ANTENNAE MFRS. &/OR INSTALLERS.	E.I.L. Service Pty. Ltd., 443 Concord Rd., Rhodes. 2138	82415	1975	Premise Match	88m	South East
	TELEVISION &/OR RADIO HIRERS.	Eclipse Radio Pty, Ltd., 443 Concord Rd., Rhodes. 2138	82474	1975	Premise Match	88m	South East
	PUBLIC ADDRESS SYSTEMS., HIRERS.	Eclipse Radio Pty. Ltd., 443 Concord Rd., Rhodes. 2138	70876	1975	Premise Match	88m	South East
	CYCLE ACCESSORIES MFRS.&/OR W/SALERS.	General Accessories, 443 Concord Rd., Concord West. 2138	19652	1975	Premise Match	88m	South East
	CYCLE MFRS.	General Accessories, 443 Concord Rd., Concord West. 2138	19704	1975	Premise Match	88m	South East
	ELECTRICAL SUPPLIES &/OR APPLIANCES-W/SALE	General Accessories, 443 Concord Rd., Concord West. 2138.	26583	1975	Premise Match	88m	South East
	AIR CONDITIONING UNIT &/OR MACHINERY MFRS.	Radio Corporation, 443 Concord Rd., Rhodes. 2138	1790	1975	Premise Match	88m	South East
	DRYING CABINET MFRS. &/OR DISTS.	Radio Corporation, 443 Concord Rd., Rhodes. 2138	24453	1975	Premise Match	88m	South East
	MOTOR CAR RADIO MFRS. &/OR DISTS.	Radio Corporation., 443 Concord Rd., Rhodes. 2138	56931	1975	Premise Match	88m	South East
	RADIO &/OR TELEVISION DISTS. W/SALE.	Radio Corporation., 443 Concord Rd., Rhodes. 2138	71529	1975	Premise Match	88m	South East
	RECORD MFRS. &/OR IMPS. &/OR DISTS.	Radio Corporation., 443 Concord Rd., Rhodes. 2138	73198	1975	Premise Match	88m	South East
	REFRIGERATOR-DOMESTIC-MFRS. &/OR DISTS.	Radio Corporation., 443 Concord Rd., Rhodes. 2138	73405	1975	Premise Match	88m	South East
	TELEVISION SET MFRS. &/OR DISTS.	Radio Corporation., 443 Concord Rd., Rhodes. 2138	82504	1975	Premise Match	88m	South East
	MARINE ENGINE IMPS. &/OR DISTS. &/OR MFRS.	Rotomotive industries (A/asia) Ltd., 443 Concord Rd., Rhodes.	49157	1975	Premise Match	88m	South East
	FISHING TACKLE MFRS. &/OR IMPS &/OR DISTS.	Simmons, M. (W'Sale) Pty. Ltd., 443 Concord Rd., Rhodes. 2138	32748	1975	Premise Match	88m	South East
	SPORTS GOODS W/SALERS.	Simmons, M. (W'Sale) Pty. Ltd., 443 Concord Rd., Rhodes. 2138	79184	1975	Premise Match	88m	South East
	TOY IMPS. &/ORW/SALERS.	Simmons, M. (W'Sale) Pty. Ltd., 443 Concord Rd., Rhodes. 2138	84508	1975	Premise Match	88m	South East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
12	GUNSMITHS SUPPLIES.	Simmons. M. (W., Sale) Pty. Ltd., 443 Concord Rd., Rhodes. 2138	40124	1975	Premise Match	88m	South East
	GUNSMITHS.	Simmons. M. (W'Sale) Pty. Ltd., 443 Concord Rd. Rhodes. 2138	40108	1975	Premise Match	88m	South East
	SPEARFISHING &/OR UNDERWATER EQUIPMENT.	Simmons. M. (W'Sale) Pty. Ltd., 443 Concord Rd., Rhodes. 2138	78891	1975	Premise Match	88m	South East
	GOLF CLUB MFRS.	Simmons. M. (W'Sale) Pty. Ltd., 443 Concord Rd., Rhodes. 2138.	38737	1975	Premise Match	88m	South East
	TELEVISION EQUIPMENT IMPORTS., MFRS. &/OR DISTS.	Anodeon, 443 Concord Rd., Rhodes	367638	1970	Premise Match	88m	South East
	ELECTRONIC EQUIPMENT MFRS.&/OR DISTRIBUTORS (E355)	Anodeon., 443 Concord Rd., Rhodes	296320	1970	Premise Match	88m	South East
	AIR CONDITIONING UNIT &/OR MACHINERY MFRS.	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	260787	1970	Premise Match	88m	South East
	DISH-WASHING MACHINE MANUFACTURERS (D330)	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	289652	1970	Premise Match	88m	South East
	DRYING CABINET MFRS. (D730)	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	292609	1970	Premise Match	88m	South East
	ELECTRICAL SUPPLIES/APPLIANCES RETAILERS	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	295525	1970	Premise Match	88m	South East
	MOTOR CAR RADIO MFRS./DISTS.	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	335674	1970	Premise Match	88m	South East
	RADIO &/OR RADIOGRAM MFRS.(R035)	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	353952	1970	Premise Match	88m	South East
	RADIO &/OR T.V. DISTRIBUTORS-WHOLESALE (R070)	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	354010	1970	Premise Match	88m	South East
	RECORD MANUFACTURERS &/OR IMPORTERS (R215)	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	356293	1970	Premise Match	88m	South East
	REFRIGERATOR DISTRIBUTORS-W'SALE-DOMESTIC (R255)	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	356612	1970	Premise Match	88m	South East
	REFRIGERATOR MFRS.-DOMESTIC-ELECTRIC (R273)	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	356711	1970	Premise Match	88m	South East
	ROOM HEATERS-ELECTRIC-MFRS. &/OR DISTS. (R420)	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	357902	1970	Premise Match	88m	South East
	TELEVISION SET MANUFACTURERS/DISTRIBUTORS (T155)	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	367701	1970	Premise Match	88m	South East
	WASHING MACHINE MFRS. (W060)	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	373052	1970	Premise Match	88m	South East
	WASHING MACHINE SALES/SERVICE(W065)	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	373074	1970	Premise Match	88m	South East
	SEWING MACHINES-DOMESTIC-MFRS./DISTRIBUTORS (S194)	Astor Electronics Pty., Ltd., 443 Concord Rd., Rhodes	360462	1970	Premise Match	88m	South East
	RADIO &/OR TELEVISION SALES & SERVICEMEN (R090)	E. I. L. Insurances (N.S.W.) Pty. Ltd., 443 Concord Rd., RHODES	354269	1970	Premise Match	88m	South East
	ELECTRICAL SUPPLIES/APPLIANCES RETAILERS	E. I. L. Service Pty. Ltd., 443 Concord Rd., Rhodes	295634	1970	Premise Match	88m	South East
	INSURANCE COMPANIES-GENERAL(I530)	E.I.L. Insurances (N.S.W.) Pty. Ltd., 443 Concord Rd., Rhodes	320210	1970	Premise Match	88m	South East
	REFRIGERATOR DEALERS &/OR SERVICEMEN (R247)	E.I.L. Insurances (N.S.W.) Pty. Ltd., 443 Concord Rd., Rhodes	356498	1970	Premise Match	88m	South East
	SEWING MACHINE REPAIRERS (S204)	E.I.L. Insurances (N.S.W.) Pty. Ltd., 443 Concord Rd., Rhodes	360442	1970	Premise Match	88m	South East
	SEWING MACHINE DEALERS (S191)	E.I.L. Service Pty. Ltd., 443 Concord Rd., Rhodes	360371	1970	Premise Match	88m	South East
	WASHING MACHINE SALES/SERVICE(W065)	E.I.L.insurances (N.S.W.) Pty. Ltd., 443 Concord Rd., Rhodes	373101	1970	Premise Match	88m	South East
	TELEVISION ANTENNAE MFRS./INSTALLERS (T151)	E.I.L.Service Pty. Ltd., 443 Concord Rd., Rhodes	367626	1970	Premise Match	88m	South East
	PUBLIC ADDRESS SYSTEM HIRERS(P876)	Eclipse Radio Pty. Ltd., 443 Concord Rd., Rhodes	353263	1970	Premise Match	88m	South East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
12	RADIO &/OR TELEVISION HIRERS(R080)	Eclipse Radio Pty. Ltd., 443 Concord Rd., Rhodes	354120	1970	Premise Match	88m	South East
	CYCLE ACCESSORIES-MFRS.&/OR WHOLESALERS (C795)	General Accessories., 443 Concord Rd., Concord West	286746	1970	Premise Match	88m	South East
	CYCLE MANUFACTURERS (C804)	General Accessories., 443 Concord Rd., Concord West	286863	1970	Premise Match	88m	South East
	ELECTRICAL SUPPLIES/APPLIANCES-WHOLESALE	General Accessories., 443 Concord Rd., Concord West	296012	1970	Premise Match	88m	South East
	SPEARFISHING & UNDERWATER EQUIPMENT (S422)	Mick Simmons (W'sale) Pty. Ltd., 443 COncord Rd., Rhodes	363241	1970	Premise Match	88m	South East
	SPORTS GOODS W'SALERS (S446)	Mick Simmons (W'sale) Pty. Ltd., 443 Concord Rd., Rhodes	363615	1970	Premise Match	88m	South East
	TOY IMPORTERS &/OR WHOLESALERS(T540)	Mick Simmons (W'sale) Pty. Ltd., 443 Concord Rd., Rhodes	370371	1970	Premise Match	88m	South East
	GOLF CLUB MANUFACTURERS (G460)	Simmons, M. (W/sale) Pty. Ltd., 443 Concord Rd., Rhodes	311528	1970	Premise Match	88m	South East
	GUNSMITHS (G710)	Simmons, M. (Whoelsale) Pty. Ltd., 443 Concord Rd., Rhodes	313313	1970	Premise Match	88m	South East
	FISHING TACKLE IMPORTERS &/OR DISTRIBUTORS (F270)	Simmons, M. (Wholesale) Pty. Ltd., 443 Concord Rd., Rhodes	303924	1970	Premise Match	88m	South East
	FISHING TACKLE MANUFACTURERS &/OR DEALERS (F275)	Simmons, M. (Wholesale) Pty. Ltd., 443 Concord Rd., Rhodes	303965	1970	Premise Match	88m	South East
	GUNSMITHS' SUPPLIES (G720)	Simmons, M. (Wholesale) Pty. Ltd., 443 Concord Rd., Rhodes	313332	1970	Premise Match	88m	South East
	Record Manufacturers &/or Importers	Astor Electronics Pty, Ltd., 443 Concord Rd., Rhodes	139796	1965	Premise Match	88m	South East
	TELEVISION SET MANUFACTURERS/DISTRIBUTORS	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	150544	1965	Premise Match	88m	South East
	Air Conditioning - Sales & Service	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	45668	1965	Premise Match	88m	South East
	Electrical Supplies/Appliances Retailers	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	79286	1965	Premise Match	88m	South East
	Radio &/or Radiogram Mfrs.	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	137908	1965	Premise Match	88m	South East
	Refrigerator Dealers &/or Servicemen	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	139959	1965	Premise Match	88m	South East
	Washing Machine Sales/Service	Astor Electronics Pty. Ltd., 443 Concord Rd., Rhodes	155862	1965	Premise Match	88m	South East
	Insurance Companies - General	E.I.L. (Insurances) Ltd., 443 Concord Rd., Rhodes	104857	1965	Premise Match	88m	South East
	Radio &/Or Television Sales & Servicemen	E.I.L. insurance (N.S.W.) Pty. Ltd., 443 Concord Rd. Rhodes	138382	1965	Premise Match	88m	South East
	Radio &/Or Television Sales & Servicemen	E.I.L. insurance (N.S.W.) Pty. Ltd., 443 Concord Rd., Rhodes	137983	1965	Premise Match	88m	South East
	Radio &/Or Television Sales & Servicemen	E.I.L. Service Pty. Ltd., 443 Concord Rd. Rhodes	138383	1965	Premise Match	88m	South East
	Sewing Machine Dealers	E.I.L. Service Pty. Ltd., 443 Concord Rd., Rhodes	143659	1965	Premise Match	88m	South East
	TELEVISION ANTENNAE MFRS./ INSTALLERS	E.I.L. Service Pty. Ltd., 443 Concord Rd., Rhodes	150475	1965	Premise Match	88m	South East
	Electrical Supplies/Appliances Retailers	E.I.L. Service Pty. Ltd.,. 443 Concord Rd., Rhodes	79396	1965	Premise Match	88m	South East
	Cycle Accessories - Mfrs. &/or Wholesalers	General Accessories Pty. Ltd., 443 Concord Rd., Concord West	71467	1965	Premise Match	88m	South East
	Cycle Manufacturers	General Accessories Pty. Ltd., 443 Concord Rd., Concord West	71591	1965	Premise Match	88m	South East
	Electrical Supplies/Appliances - Wholesale	General Accessories Pty. Ltd., 443 Concord Rd., Concord West	79783	1965	Premise Match	88m	South East
13	POULTRY FOOD MFRS. &/OR DISTS.	Allied Feeds, 42 Walker St., Rhodes. 2138	75688	1986	Premise Match	108m	North West
	STOCK FOODS MFRS. &/OR DIST.	Allied Feeds, 42 Walker St., Rhodes. 2138	89357	1986	Premise Match	108m	North West

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
13	VETERINARY SUPPLIES &/OR INSTRUMENTS - MFRS. &/OR IMPS. &/OR DISTS.	McCall Industries, 42 Walker St. Rhodes. 2138	97220	1986	Premise Match	108m	North West
	VETERINARY SUPPLIES &/OR INSTRUMENTS - MFRS. &/OR IMPS. &/OR DISTS.	McCall Industries, 42 Walker St. Rhodes. 2138	97242	1986	Premise Match	108m	North West
	AGRICULTURAL CHEMICALS MFRS, &/OR IMPS. &/OR DISTS.	McCall Industries, 42 Walker St., Rhodes. 2138	1718	1986	Premise Match	108m	North West
	STATION SE/OR FARM SUPPLIES	McCall Industries, 42 Walker St., Rhodes. 2138	88181	1986	Premise Match	108m	North West
	POULTRY FOOD MFRS. &/OR DISTS. (P7580)	Allied Feeds, 42 Walker St., Rhodes. 2138.	65731	1982	Premise Match	108m	North West
	STOCK FOODS MFRS. &/OR DISTS. (S7065)	Allied Feeds, 42 Walker St., Rhodes. 2138.	77293	1982	Premise Match	108m	North West
	AGRICULTURAL CHEMICALS MFRS. &/OR IMPS. &/OR DISTS.(A2430)	McCall Industries, 42 Walker St., Rhodes. 2138.	1592	1982	Premise Match	108m	North West
	VETERINARY SUPPLIES &/OR INSTRUMENTS - MFRS. &/OR DISTS. (V1900)	McCall Industries, 42 Walker St., Rhodes. 2138.	83388	1982	Premise Match	108m	North West
	STATION &/OR FARM SUPPLIES.(S5460)	McCall Industries. 42 Walker St., Rhodes. 2138.	76231	1982	Premise Match	108m	North West
	POULTRY FOOD MFRS.&/OR DISTS.	Allied Feeds, 42 Walker St., Rhodes. 2138	58650	1978	Premise Match	108m	North West
	STOCK FOODS MFRS. &/OR DISTS.	Allied Feeds, 42 Walker St., Rhodes. 2138	68505	1978	Premise Match	108m	North West
	VETERINARY SUPPLIES &/OR INSTRUMENTS-MFRS. &/OR DISTS.	McCall Industries, 42 Walker St., Rhodes.2138	73517	1978	Premise Match	108m	North West
	POULTRY FOOD MFRS. &/OR DISTS.	Allied Feeds., 42 Walker St., Rhodes. 2138	69014	1975	Premise Match	108m	North West
	STOCK FOODS MFRS. &/OR DISTS.	Allied Feeds., 42 Walker St., Rhodes. 2138	80971	1975	Premise Match	108m	North West
	VETERINARY SUPPLIES &/OR INSTRUMENTS., MFRS. &/OR DISTS.	McCall Industries Pty. Ltd, 42 Walker St., Rhodes. 2138	86214	1975	Premise Match	108m	North West
	POULTRY FARMERS SUPPLIERS.	McCall Industries Pty. Ltd., 42 Walker St., Rhodes. 2138	69007	1975	Premise Match	108m	North West
	VETERINARY SUPPLIES &/OR INSTRUMENTS.,RETAIL	McCall Industries Pty. Ltd., 42 Walker St., Rhodes. 2138	86242	1975	Premise Match	108m	North West
	POULTRY FOOD MFRS./DIST. (P708)	Allied Feed Mills Pty. Ltd., 42 Walker St., Rhodes	351371	1970	Premise Match	108m	North West
	STOCK FOODS MANUFACTURERS &/OR DISTRIBUTORS	Allied Feed Mills Pty. Ltd., 42 Walker St., Rhodes	365857	1970	Premise Match	108m	North West
	POULTRY FARMERS' SUPPLIERS (P704)	McCall Industries Pty. Ltd., 42 Walker St., Rhodes	351361	1970	Premise Match	108m	North West
	VETERINARY SUPPLIES & INSTRUMENTS-MFRS. &/OR DISTRIBUTORS	McCall Industries Pty. Ltd., 42 Walker St., Rhodes	372631	1970	Premise Match	108m	North West
	VETERINARY SUPPLIES/INSTRUMENTS-RETAIL	McCall Industries Pty. Ltd., 42 Walker St., Rhodes	372674	1970	Premise Match	108m	North West
	POULTRY FOOD MFRS./DIST.	Allied Feed Mills Pty. Ltd., 42 Walker St., Rhodes	135581	1965	Premise Match	108m	North West
	STOCK FOODS MANUFACTURERS &/OR DISTRIBUTORS	Allied Feed Mills Pty. Ltd., 42 Walker St., Rhodes	148963	1965	Premise Match	108m	North West
	Poultry Equipment Supplies	McCall Industries Pty. Ltd., 42 Walker St., Rhodes	135572	1965	Premise Match	108m	North West
	Veterinary Supplies & Instruments - Mfrs. &/or Distributors	McCall Industries Pty. Ltd., 42 Walker St., Rhodes	155431	1965	Premise Match	108m	North West
	Veterinary Supplies/Instruments - Retail	McCall Industries Pty. Ltd., 42 Walker St., Rhodes	155472	1965	Premise Match	108m	North West
14	Labelling Machines &/or Equipment Mfrs &/or Imps &/or Dists	Impresstik Machinery Pty, Ltd., B/21 Marquet St., Rhodes. 2138	50393	1991	Premise Match	137m	West

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
14	Business & Commercial Mailing Service	Reliable Mailing Services Pty. Ltd., 2/21 Marquet St., Rhodes 2138	37689	1991	Premise Match	137m	West
15	IMPORTERS.	Consolidated Merchandising Company Pty. Ltd., 23 Marquet St., Rhodes. 2138	47569	1986	Premise Match	137m	West
	MANUFACTURERS AGENTS.	Consolidated Merchandising Company Pty. Ltd., 23 Marquet St., Rhodes. 2138	52526	1986	Premise Match	137m	West
	NOVELTY GOODS MFRS. &/OR IMPS. &/OR W/SALERS.	Consolidated Merchandising Company Pty. Ltd., 23 Marquet St., Rhodes. 2138	69931	1986	Premise Match	137m	West
	TOY IMPS. &/OR W/SALERS.	Consolidated Merchandising Company Pty. Ltd., 23 Marquet St., Rhodes. 2138	94618	1986	Premise Match	137m	West
	MANUFACTURERS AGENTS, (M0800)	Consolidated Merchandising Company Pty. Ltd., 23 Marquet St., Rhodes. 2138.	46183	1982	Premise Match	137m	West
	NOVELTY GOODS MFRS. &/OR IMPS. &/OR W/SALERS. (N1310)	Consolidated Merchandising Company Pty. Ltd., 23 Marquet St., Rhodes. 2138.	61059	1982	Premise Match	137m	West
	TOY IMPS. &/OR W/SALERS. (T6225)	Consolidated Merchandising Company Pty. Ltd., 23 Marquet St., Rhodes. 2138.	81269	1982	Premise Match	137m	West
	NOVELTY GOODS MFRS.&/OR IMPS. &/OR W/SALERS.	Consolidated Merchandising Company Pty Ltd, 23 Marquet St, Rhodes 2138	54329	1978	Premise Match	137m	West
	TOY IMPS. &/OR W/SALERS.	Consolidated Merchandising Company Pty. Ltd, 23 Marquet St, Rhodes.2138	71773	1978	Premise Match	137m	West
	IMPORTERS.	Consolidated Merchandising Company Pty. Ltd., 23 Marquet St., Rhodes. 2138	36805	1978	Premise Match	137m	West
	MANUFACTURERS AGENTS.	Consolidated Merchandising Company Pty. Ltd., 23 Marquet St., Rhodes. 2138	41218	1978	Premise Match	137m	West
	IMPORTERS.	Consolidated Merchandising Company Pty. Ltd., 23 Marquet St., Rhodes. 2138	43585	1975	Premise Match	137m	West
	MANUFACTURERS AGENTS.	Consolidated Merchandising Company Pty. Ltd., 23 Marquet St., Rhodes. 2138.	48673	1975	Premise Match	137m	West

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Business Directory Records 1950-1991
Road or Area Matches

Universal Business Directory records from years 1991, 1986, 1982, 1978, 1975, 1970, 1965, 1961 & 1950, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
16	TIMBER MERCHANTS.	Ellis, A. & E. Pty. Ltd., Blaxland Rd., Rhodes. 2138	83434	1975	Road Match	0m
	SAWMILLERS.	Ellis. A. & E. Pty. Ltd., Blaxland Rd., Rhodes. 2138	75753	1975	Road Match	0m
	TIMBER MERCHANTS (T385)	A.& E. Ellis Pty. Ltd., Blaxland Rd., Rhodes	368883	1970	Road Match	0m
	SAWMILLERS (S110)	Ellis, A. & E. Pty. Ltd., Blaxland Rd., Rhodes	359314	1970	Road Match	0m
	TIMBER MERCHANTS (T385)	Ellis, A.& E.Pty. Ltd., Blaxland Rd., Rhodes	368954	1970	Road Match	0m
	TIMBER MERCHANTS	A. & E. Ellis Pty. Ltd., BlaxLand Rd., Rhodes	151722	1965	Road Match	0m
	TIMBER MERCHANTS	Ackworth & Whitehead, Blaxland Rd., Uhrs Point, Rhodes	151724	1965	Road Match	0m
	TIMBER Importers &/or Dists	Acworth & Whitehead Pty. Ltd., Blaxland Rd., Rhodes	151658	1965	Road Match	0m
	Sawmillers	Ellis, A. & E. Pty.Ltd., Blaxland Rd., Rhodes	142531	1965	Road Match	0m
	TIMBER MERCHANTS	Ellis, A. & E. Pty. Ltd., Blaxland Rd., Uhrs Pt., Rhodes	257342	1961	Road Match	0m
17	ROOFING-STEEL PURLIN MFRS.	TULLOCH LIMITED, BUILDING PRODUCTS DIVISION:CONCORD Rd., RHODES	357900	1970	Road Match	0m
	ALUMINIUM PRODUCTS MFRS. (A320)	Tulloch Ltd. (Building Products Division), Concord Rd., Rhodes	261272	1970	Road Match	0m
	ROOFING MATERIAL MFRS. &/OR DISTRIBUTORS (R415)	Tulloch Ltd. Building Products Division, Concord Rd., Rhodes	357894	1970	Road Match	0m
	BUILDINGS-PREFABRICATED-MFRS. &/OR DISTS.	Tulloch Ltd., Building Products Division, Concord Rd., Rhodes	272553	1970	Road Match	0m
	SHEET METAL WORKERS (S230)	Tulloch Ltd., Building Products Division, Concord Rd., Rhodes.	360772	1970	Road Match	0m
	ENGINEERS-GENERAL &/OR MFRG.&/OR MECHANICAL (E615)	Tulloch Ltd., Concord Rd., Rhodes	299709	1970	Road Match	0m
	ENGINEERS-HEAVY (E630)	Tulloch Ltd., Concord Rd., Rhodes	299834	1970	Road Match	0m
	ENGINEERS-RAILWAY ROLLING STOCK (E720)	Tulloch Ltd., Concord Rd., Rhodes	300597	1970	Road Match	0m
	FOUNDERS-FERROUS (F535)	Tulloch Ltd., Concord Rd., Rhodes	306055	1970	Road Match	0m
	PARTITIONS-OFFICE/FACTORY-MANUFACTURERS (P168)	Tulloch Ltd., Concord Rd., Rhodes	347313	1970	Road Match	0m
	STEEL FABRICATORS (S673)	Tulloch Ltd., Concord Rd., Rhodes.	365380	1970	Road Match	0m
	Window Frame Mfrs.	Econd Products Ltd.Co., Concord Rd., Rhodes	157184	1965	Road Match	0m
	Buildings Prefabricated - Mfrs. &/or Dists.	Econo Products Co., Concord Rd., Rhodes	57319	1965	Road Match	0m
	Roofing Material Mfrs. &/or Distributors	Econo Products Co., Concord Rd., Rhodes	141148	1965	Road Match	0m
	Sheet Metal Workers	Econo Products Co., Concord Rd., Rhodes	143914	1965	Road Match	0m
	STEEL FABRICATORS	Econo Products Co., Concord Rd., Rhodes	148127	1965	Road Match	0m
	Partitions - Office/Factory - Manufacturers	Econo Products Company, Concord Rd., Rhodes	131785	1965	Road Match	0m
	Buildings Prefabricated - Mfrs. &/or Dists.	Tulloch Ltd., Concord Rd., Rhodes	57337	1965	Road Match	0m

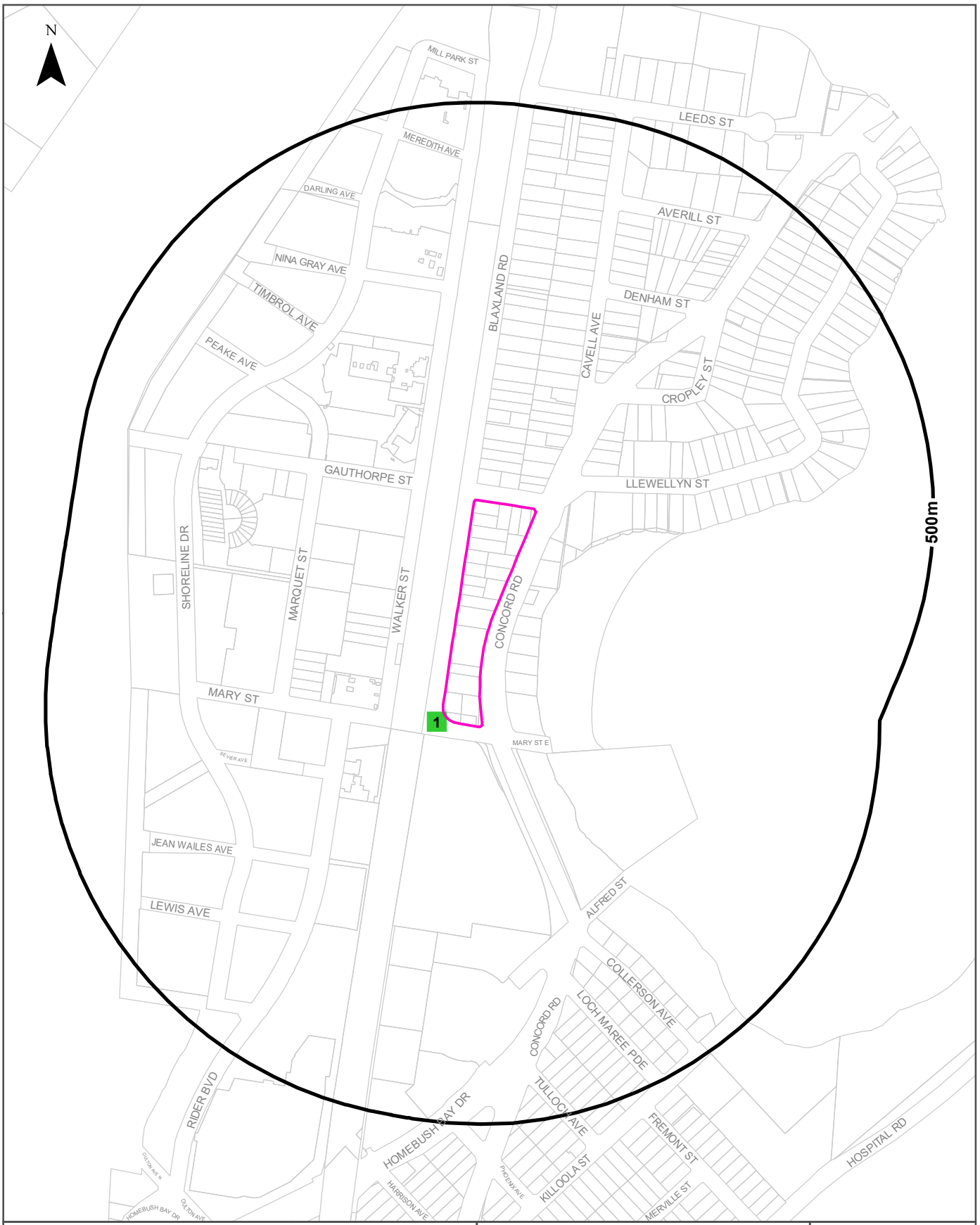
Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
17	Engineers - Heavy	Tulloch Ltd., Concord Rd., Rhodes	83083	1965	Road Match	0m
	Engineers - Railway Rolling	Tulloch Ltd., Concord Rd., Rhodes	83802	1965	Road Match	0m
	Engineers General &/or Mfrg. &/or Mechanical	Tulloch Ltd., Concord Rd., Rhodes	82961	1965	Road Match	0m
	Founders - Ferrous	Tulloch Ltd., Concord Rd., Rhodes	89418	1965	Road Match	0m
	STEEL FABRICATORS	Econo Products Co Concord Rd., Rhodes	253435	1961	Road Match	0m
	BUILDINGS-PREFABRICATED-MFRS. &/OR DISTS.	Econo Products Co., Concord Rd., Rhodes	279350	1961	Road Match	0m
	STEEL FABRICATORS	Econo Products Co., Concord Rd., Rhodes	253436	1961	Road Match	0m
	BOILERMAKERS	Tulloch (Tools) Ltd., Concord Rd., Rhodes	274024	1961	Road Match	0m
	BUILDERS' SUPPLIERS	Tulloch (Tools) Ltd., Concord Rd., Rhodes	278463	1961	Road Match	0m
	ENGINEERS-GENERAL/MFRG./ MECHANICAL	Tulloch (Tools) Ltd., Concord Rd., Rhodes	307142	1961	Road Match	0m
	ENGINEERS-RAILWAY ROLLING STOCK	Tulloch (Tools) Ltd., Concord Rd., Rhodes	308009	1961	Road Match	0m
	GARDEN TOOL MFRS., IMPORTERS &/OR DISTS.	Tulloch (Tools) Ltd., Concord Rd., Rhodes	318566	1961	Road Match	0m
	FOUNDERS-FERROUS	Tulloch Tools Ltd., Concord Rd., Rhodes	313586	1961	Road Match	0m
	TOOL MANUFACTURERS	Tultoch Ltd., Concord Rd., Rhodes	258329	1961	Road Match	0m
	SIGNWRITERS	Wilson, G. F., 36 Concord Rd., Rhodes	250429	1961	Road Match	0m
	ENGINEERS-GENERAL &/OR MANUFACTURING &/OR MECHANICAL	S.C. Engineering, Concord Rd, Rhodes	41221	1950	Road Match	0m
	PAINT, VARNISH & STAIN MANUFACTURERS	Sherwin Williams Ltd., Concord Rd., Rhodes	90664	1950	Road Match	0m
	ENGINEERS-GENERAL &/OR MANUFACTURING &/OR MECHANICAL	Tullochs Pty Ltd., Concord Rd., Rhodes	41356	1950	Road Match	0m
	BOILERMAKERS	Tullochs Pty. Ltd., Concord Rd., Rhodes	9135	1950	Road Match	0m
	RAILWAY ROLLING STOCK MANUFACTURERS	Tullochs Pty. Ltd., Concord Rd., Rhodes	97824	1950	Road Match	0m
	SIGNWRITERS	Wilson, G. F., 36 Concord Rd., Rhodes	102677	1950	Road Match	0m
18	PLASTIC MFRS. MATERIAL SUPPLIES.	Union Carbide (Aust.) Ltd. Walker St., Rhodes. 2138	68053	1975	Road Match	61m
	CHEMISTS-CONSULTING &/OR INDUSTRIAL RESEARCH.	Union Carbide (Aust.) Ltd., Walker St., Rhodes 2138	14728	1975	Road Match	61m
	CHEMICAL MFRS. &/OR DISTS. &/OR IMPS	Union Carbide (Aust.) Ltd., Walker St., Rhodes. 2138	14653	1975	Road Match	61m
	CHEMICAL MFRS. &/OR DISTS. &/OR IMPS	Union Carbide Australia Ltd. Works and Laboratories: Walker St., Rhodes. 2000	14413	1975	Road Match	61m
	CHEMICAL MANUFACTURERS &/OR DISTRIBUTORS	Clarke, King & Co. Pty. Ltd., Walker St., Rhodes	286573	1961	Road Match	61m
	CHEMISTS-ANALYTICAL	Timbrol Ltd., Walker St., Rhodes	286911	1961	Road Match	61m
	CHEMICAL MANUFACTURERS	Timbrol Ltd., Walker Rd., Rhodes	21127	1950	Road Match	61m
	NAPHTHALENE MANUFACTURERS	Timbrol Pty. Ltd., Walker St., Rhodes	87754	1950	Road Match	61m
19	CHEMISTS-CONSULTING. (C4035)	C. S.R. Chemicals Ltd., Mary St., Rhodes. 2138.	14558	1982	Road Match	85m
	CHEMICAL MFRS. &/OR IMPS.&/OR DISTS. (C3855)	C.S.R. Chemicals Ltd., Mary St., Rhodes. 2138.	14378	1982	Road Match	85m
	PLASTIC MFRS. MATERIAL SUPPLIES. (P6060)	C.S.R. Chemicals Ltd., Mary St., Rhodes. 2138.	64805	1982	Road Match	85m
	PLASTIC MFRS. MATERIAL SUPPLIES	C. S. R Chemicals Ltd., Mary St., Rhodes. 2138	57763	1978	Road Match	85m
	CHEMICAL MFRS. &/OR DISTS. &/OR IMPS.	C. S. R. Chemicals Ltd, Mary St, Rhodes. 2138	12514	1978	Road Match	85m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
19	CHEMISTS-CONSULTING &/OR INDUSTRIAL RESEARCH.	C. S. R. Chemicals Ltd, Mary St, Rhodes. 2138	12703	1978	Road Match	85m
	CHEMISTS MFRG. &/OR W/SALERS.	C. S. R. Chemicals Ltd., Mary St, Rhodes. 2138	12773	1978	Road Match	85m
	CHEMISTS-CONSULTING &/OR INDUSTRIAL RESEARCH.	C.S.R Chemicals Ltd., Mary St, Rhodes. 2138	14704	1975	Road Match	85m
	PLASTIC MFRS. MATERIAL SUPPLIES.	C.S.R- Chemicals Ltd., Mary St., Rhodes. 2138	68007	1975	Road Match	85m
	CHEMICAL MFRS. &/OR DISTS. &/OR IMPS	C.S.R. Chemicals Ltd., Mary St, Rhodes. 2138	14464	1975	Road Match	85m
	CHEMISTS MFRG. &/OR W/SALERS.	C.S.R. Chemicals Ltd., Mary St, Rhodes. 2138	14774	1975	Road Match	85m
	CHEMICAL MANUFACTURERS &/OR DISTRIBUTORS (C268)	C.S.R. Chemicals Pty. Ltd., Mary St., Rhodes, 2138	279331	1970	Road Match	85m
	PLASTIC MFRS.' MATERIALS SUPPLIERS(P588)	C.S.R. CHEMICALS PTY. LTD., MARY St., RHODES, 2138	349966	1970	Road Match	85m
	PLASTICISERS-MFRS./DISTS.	C.S.R. CHEMICALS PTY. LTD., MARY ST., RHODES, 2138	350163	1970	Road Match	85m
	Plastic Manufacturers Materials Suppliers	C.S.R. Chemicals Pty. Ltd., Mary St., Rhodes	134225	1965	Road Match	85m
	SHOVEL MFRS./DISTRIBUTORS	Tullochi Pty. Ltd., Mary St., Rhodes	250177	1961	Road Match	85m
	DROP FORGERS	Tulloch's Pty. Ltd., Mary St., Rhodes	35013	1950	Road Match	85m
	GARDEN TOOL MANUFACTURERS	Tullochs Phoenix Iron Works Pty. Ltd., Mary St., Rhodes	54039	1950	Road Match	85m
	FOUNDERS-FERROUS	Tullochs Pty. Ltd., Mary St., Rhodes	47765	1950	Road Match	85m
	SHOVEL MANUFACTURERS &/OR DISTRIBUTORS	Tullochs Pty. Ltd., Mary St., Rhodes	102389	1950	Road Match	85m

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Dry Cleaners, Motor Garages & Service Stations

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Legend

- Site Boundary
- Buffer 500m
- Property Boundary
- Business directory records mapped to a specific premise
- Business directory records mapped to a road intersection
- Business directory records mapped to a road corridor
- Business directory records mapped to a general area

Scale: 0 90 180 270 360 Meters

Coordinate System: GDA 1994 MGA Zone 56

Date: 07 September 2020

Data Sources: Reproduced with permission of UBD and Hardie Grant Media Pty Ltd DD 01/08/2018
Property Boundaries © NSW Department Finance, Services & Innovation 2020

Historical Business Directories

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Dry Cleaners, Motor Garages & Service Stations 1948-1993 Premise or Road Intersection Matches

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a premise or road intersection, within the dataset buffer.

Note: The Universal Business Directories were published between 1948 and 1993. Dry Cleaners, Motor Garages & Service Stations have been extracted from all of these directories except the following years 1951, 1955, 1957, 1960, 1963, 1973, 1974, 1977, 1987.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	DRY CLEANERS, PRESSERS &/OR DYERS.	Josephs Dry Cleaners., 5 Blaxland Rd., Rhodes 2138	23575	1976	Road Intersection	14m	South
	DRY CLEANERS, PRESSERS &/OR DYERS.	Josephs Dry Cleaners., 5 Blaxland Rd., Rhodes 2138	2964	1972	Road Intersection	14m	South
	DRY CLEANERS, PRESSERS &/OR DYERS	Josephs Dry Cleaners., 5 Blaxland Rd., Rhodes 2138	51113	1971	Road Intersection	14m	South

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Dry Cleaners, Motor Garages & Service Stations 1948-1993 Road or Area Matches

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published.

Note: The Universal Business Directories were published between 1948 and 1993. Dry Cleaners, Motor Garages & Service Stations have been extracted from all of these directories except the following years 1951, 1955, 1957, 1960, 1963, 1973, 1974, 1977, 1987.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
	No records in buffer					

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Aerial Imagery 2020

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Data Sources: Aerial Imagery © Aerometrex Pty Ltd

Coordinate System:
GDA 1994 MGA Zone 56

Date: 07 September 2020

Aerial Imagery 2015

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Aerial Imagery 2009

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Aerial Imagery 2000

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Aerial Imagery 1994

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Scale:	Data Source Aerial Imagery:	Coordinate System:	Date: 03 September 2020
0 30 60 90 120 Meters	© NSW Department of Customer Service	GDA 1994 MGA Zone 56	

Aerial Imagery 1991

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Data Source Aerial Imagery:
© NSW Department of Customer Service

Coordinate System:
GDA 1994 MGA Zone 56

Date: 07 September 2020

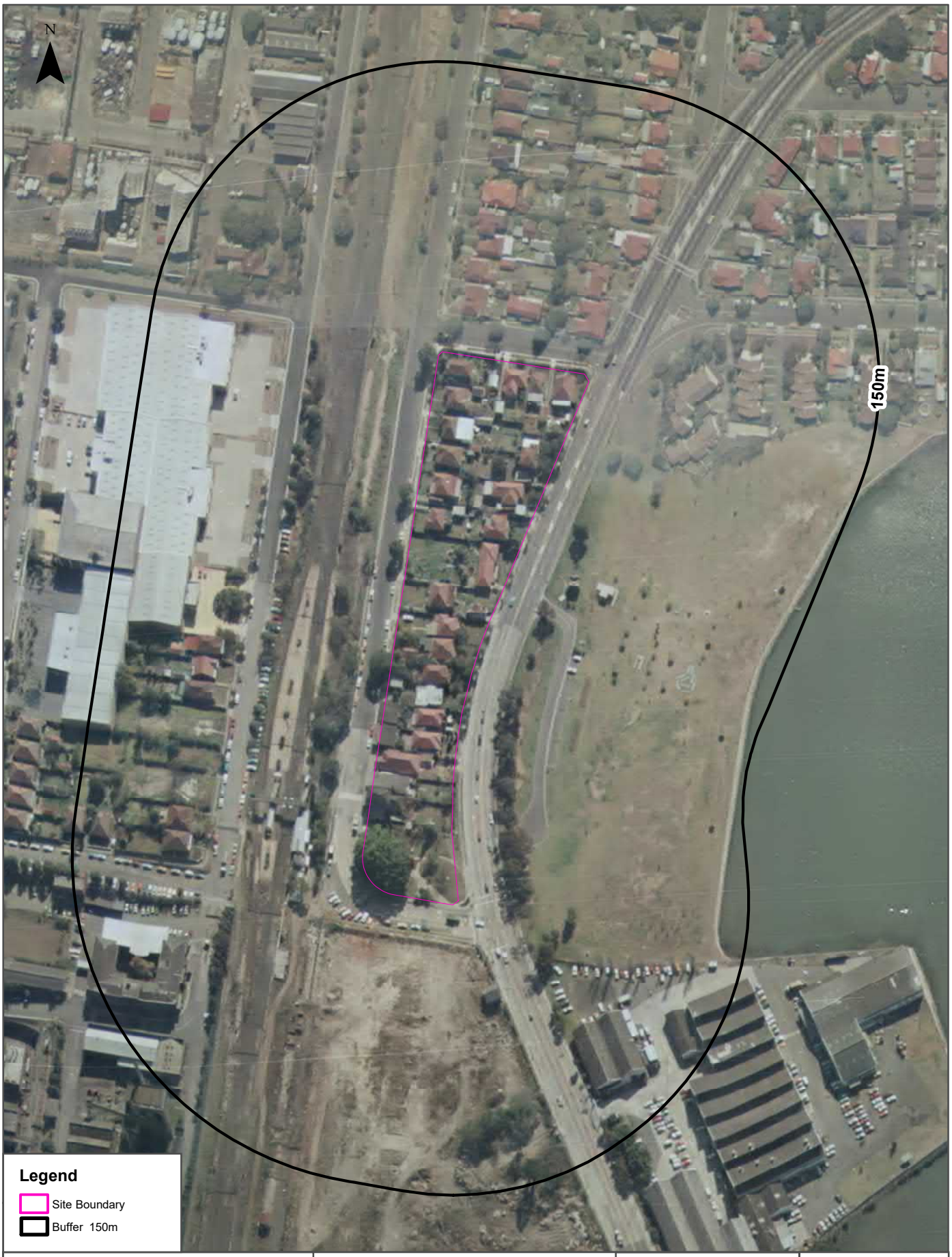
Aerial Imagery 1986

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Aerial Imagery 1982

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Scale: 0 30 60 90 120 Meters	Data Source Aerial Imagery: © NSW Department of Customer Service	Coordinate System: GDA 1994 MGA Zone 56	Date: 07 September 2020

Aerial Imagery 1978

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Scale:	Data Source Aerial Imagery:	Coordinate System:	Date: 03 September 2020
0 30 60 90 120 Meters	© NSW Department of Customer Service	GDA 1994 MGA Zone 56	

Aerial Imagery 1970

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



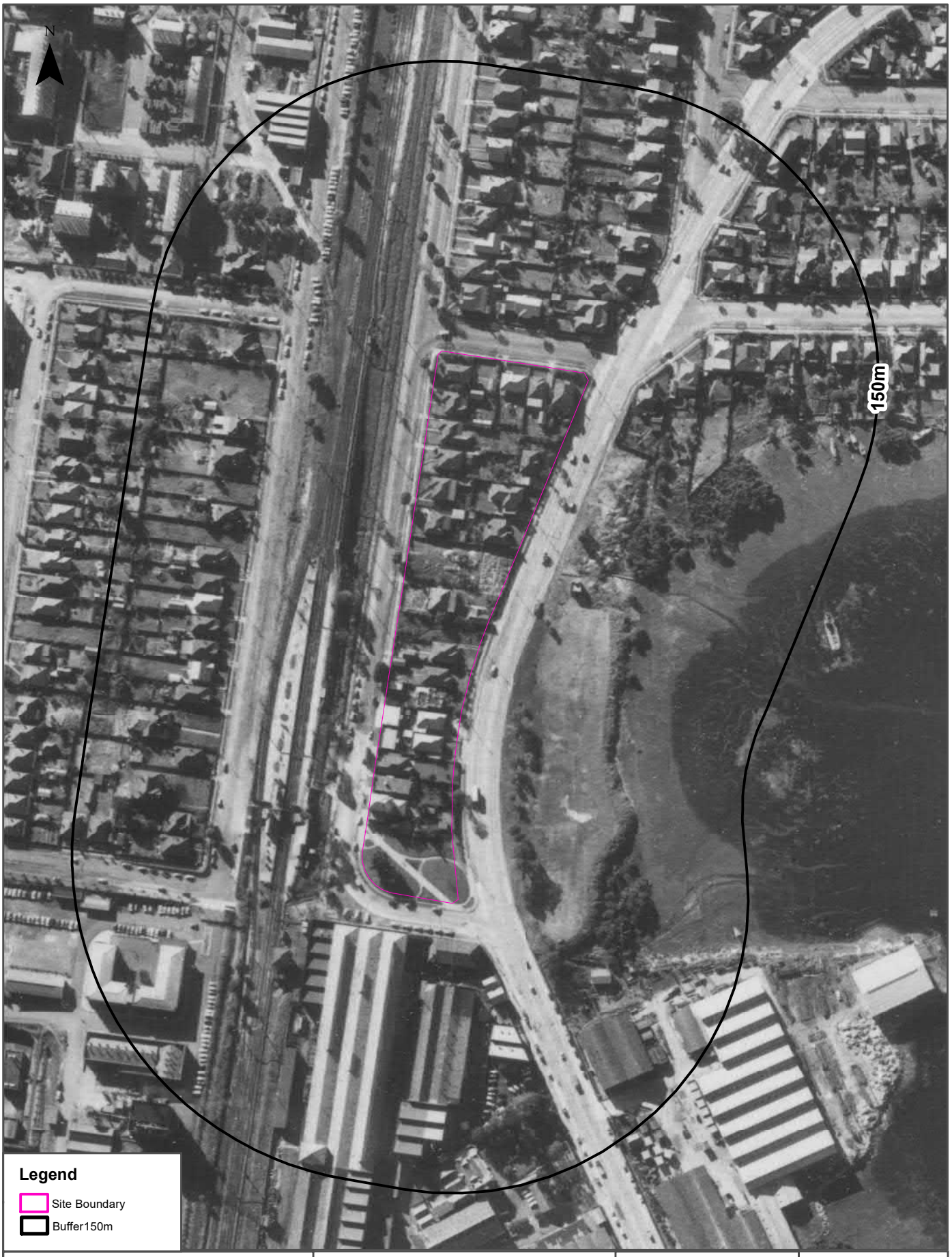
Aerial Imagery 1965

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Aerial Imagery 1961

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Aerial Imagery 1955

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



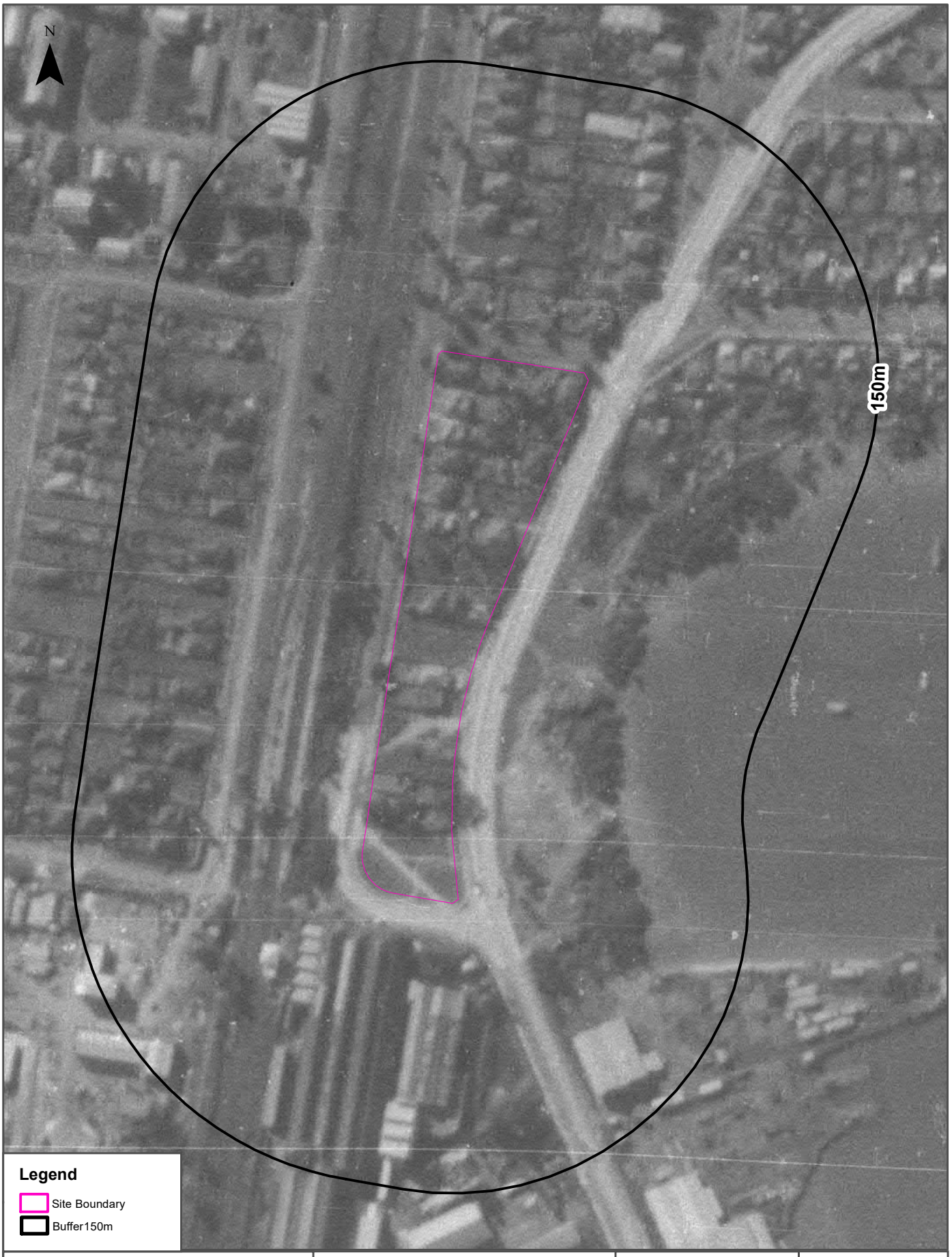
Aerial Imagery 1951

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Aerial Imagery 1949

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Aerial Imagery 1943

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Scale:	Data Sources: Aerial Imagery © Aerometrex Pty Ltd	Coordinate System: GDA 1994 MGA Zone 56	Date: 07 September 2020

0 30 60 90 120
Meters

Aerial Imagery 1930

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



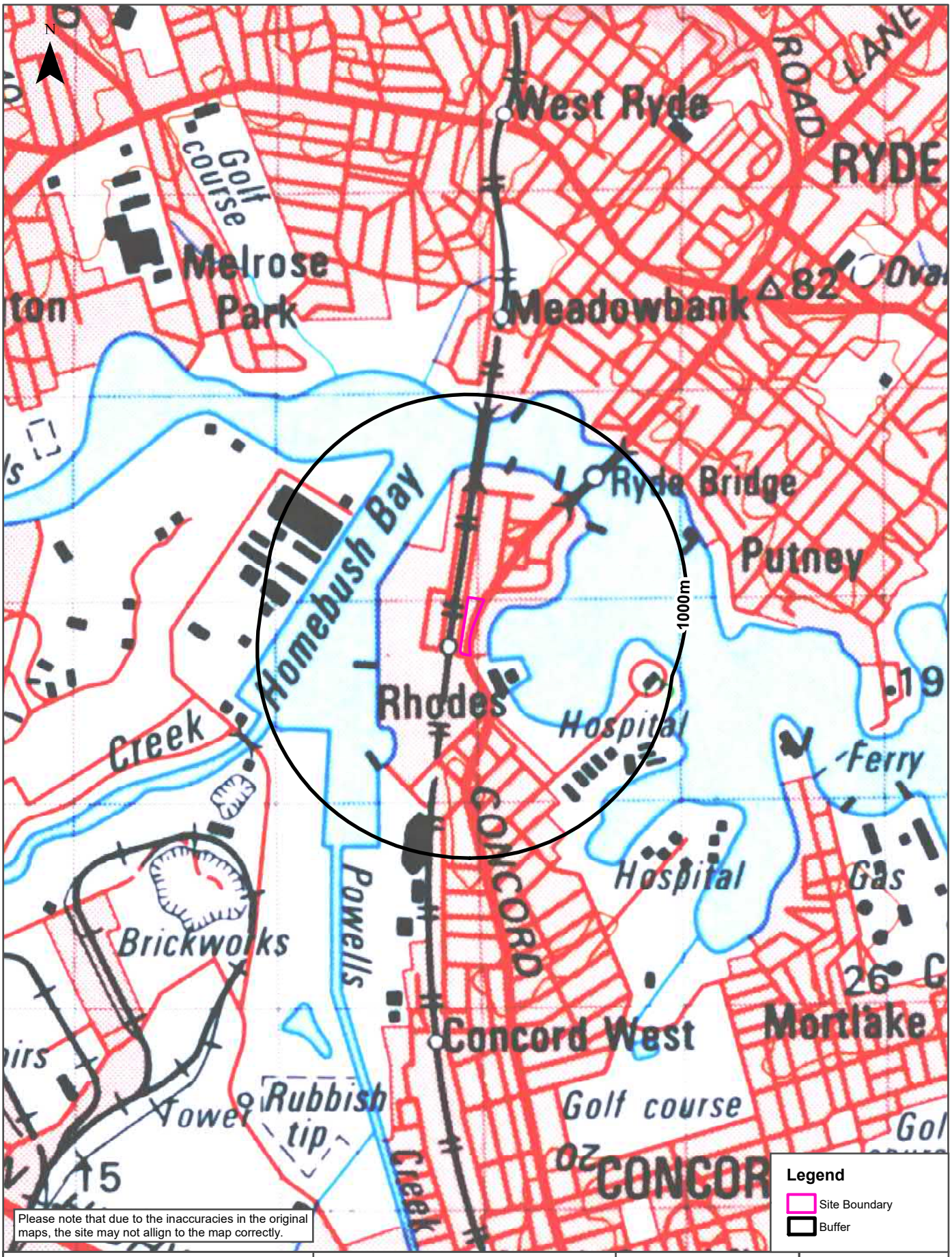
Topographic Map 2015

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



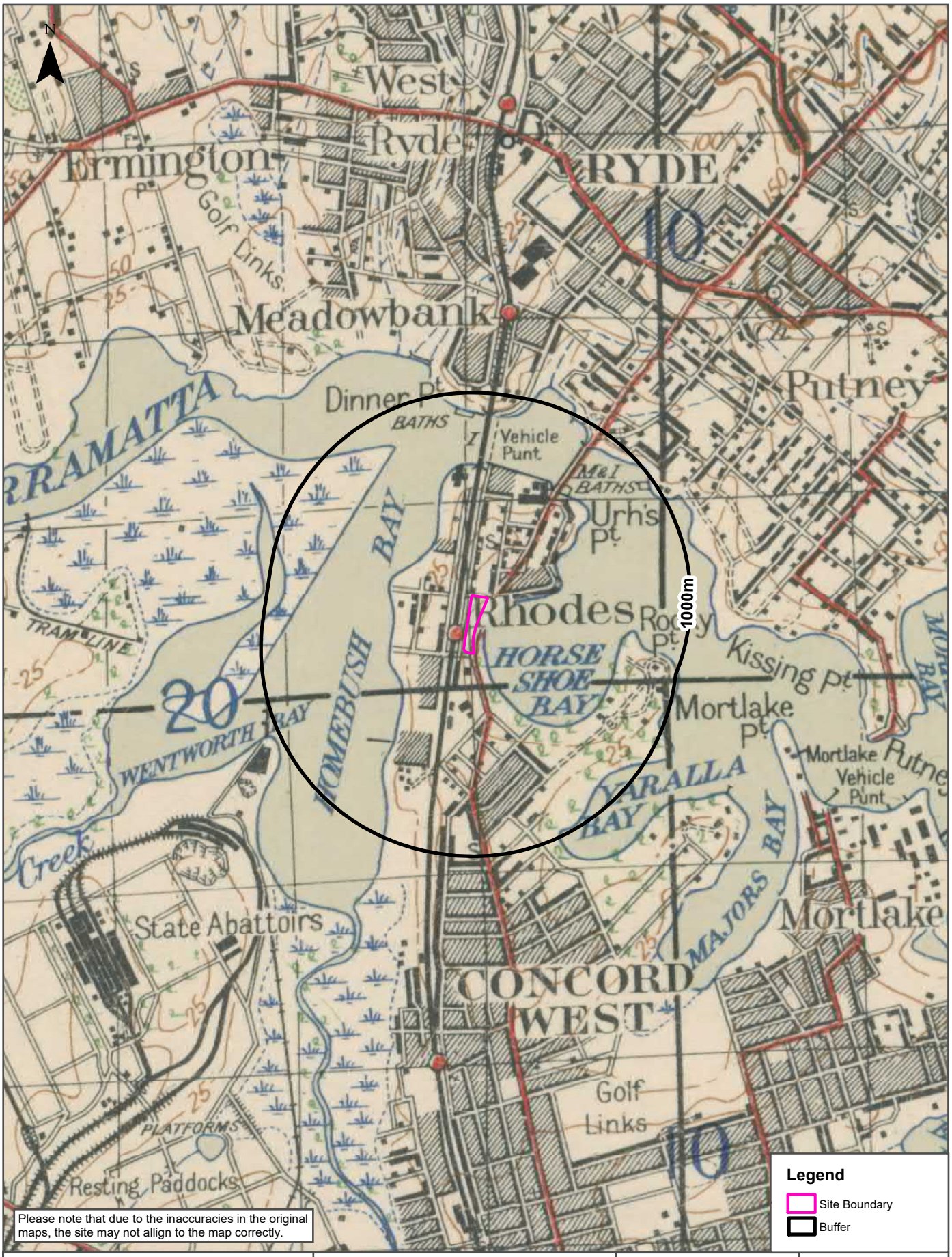
Historical Map 1975

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Historical Map c.1936

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

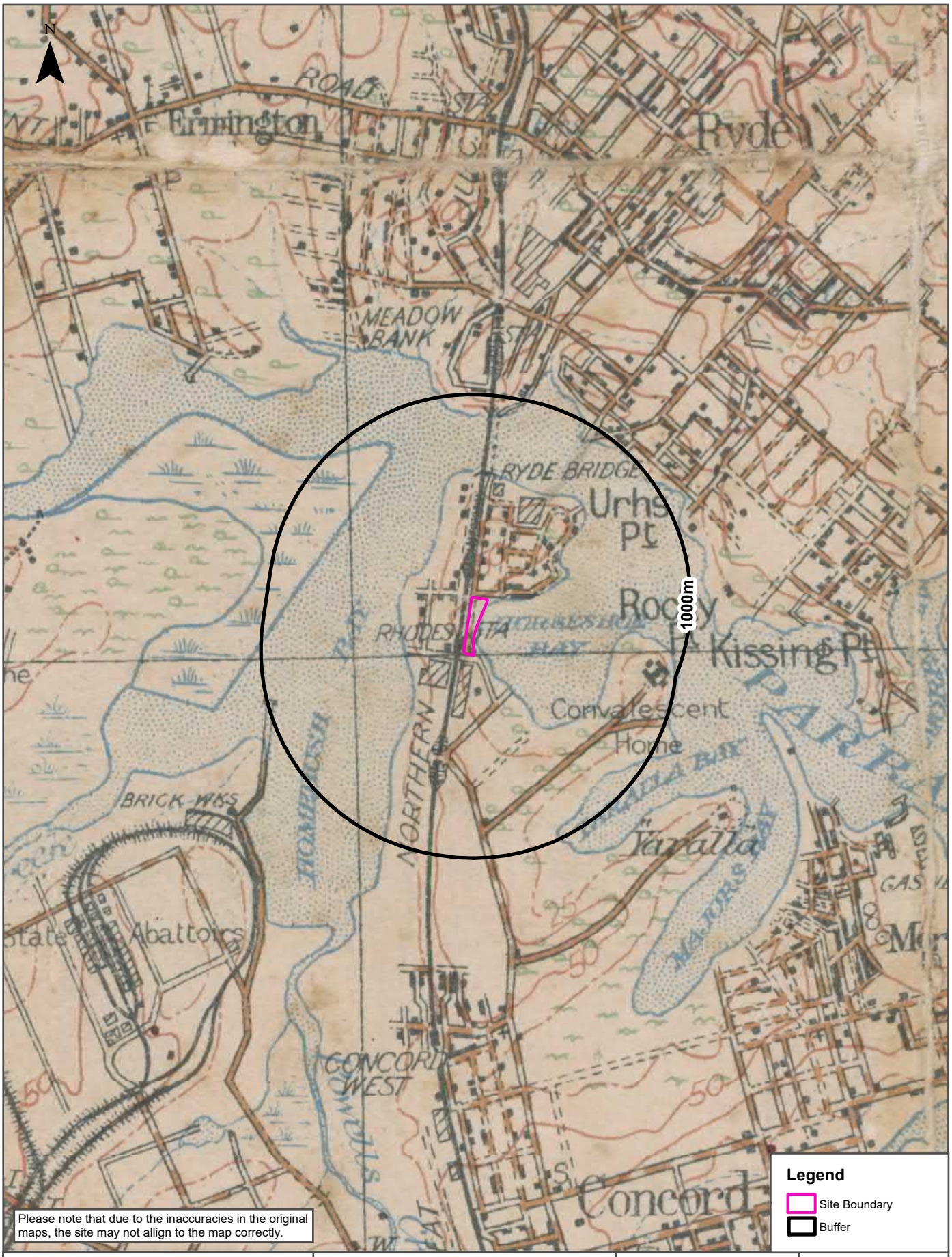


Scale:	Data Sources: Australia 1:63360, Produced by Australian Section Imperial General Staff	Coordinate System: GDA 1994 MGA Zone 56	Date: 07 September 2020

0 125 250 500 750 1,000 1,250 Meters

Historical Map c.1917

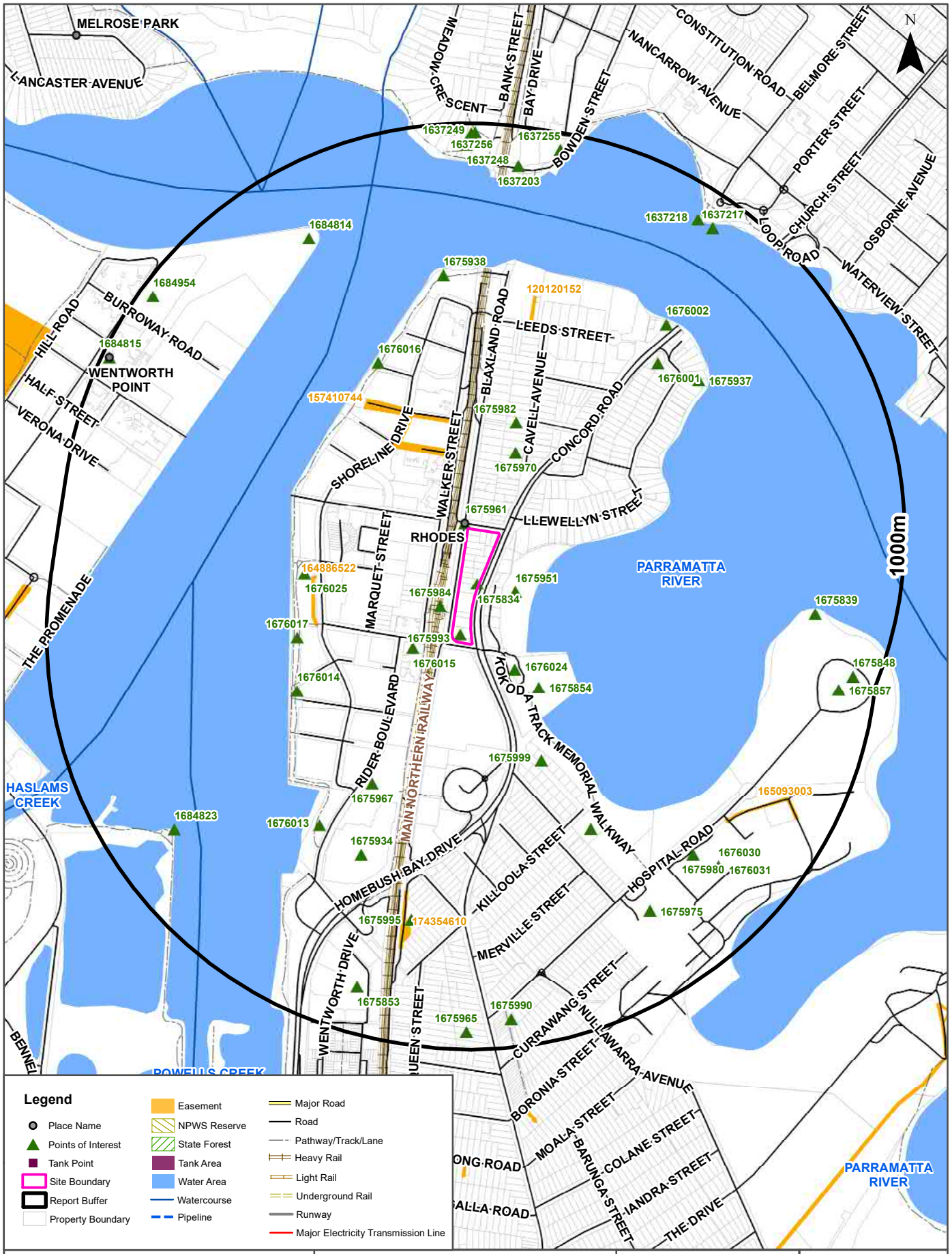
Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Scale: 0 125 250 500 750 1,000 1,250 Meters	Data Sources: Australia 1:63360, Produced by Australian Section Imperial General Staff	Coordinate System: GDA 1994 MGA Zone 56	Date: 07 September 2020

Topographic Features

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Topographic Features

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
1675834	Fire Station	RHODES FIRE STATION	0m	Onsite
1675993	Park	CHURCHILL TUCKER RESERVE	0m	Onsite
1675961	Suburb	RHODES	15m	North
1675984	Railway Station	RHODES RAILWAY STATION	38m	South West
1675951	Park	MCILWAINE PARK	91m	East
1676015	Park	UNION SQUARE	101m	South West
1676024	Parking Area	Parking Area	124m	South East
1675854	Park	BRAYS BAY RESERVE	198m	South East
1675970	Place Of Worship	COPTIC CHURCH	203m	North
1675982	Community Home	CONCORD COMMUNITY HOSTEL	275m	North
1675999	Park	RHODES PARK	335m	South
1676025	Park	FORESHORE PARK	381m	West
1676017	Park	HOMEBUSH BAY CORSO	381m	West
1676014	Park	LEWIS BERGER PARK	405m	South West
1675967	Post Office	RHODES POST OFFICE	407m	South West
1676016	Park	HOMEBUSH BAY CORSO	465m	North West
1676000	Park	LOVEDALE PLACE	543m	South East
1676013	Park	LEWIS BERGER PARK	565m	South West
1676001	Park	KING GEORGE V MEMORIAL PARK	574m	North East
1675934	Shopping Centre	RHODES SHOPPING CENTRE	576m	South
1675937	Headland	UHRS POINT	621m	North East
1675938	Headland	RHODES POINT	627m	North
1676002	Park	UHRS POINT RESERVE	659m	North East
1675995	Park	MUTTON RESERVE	695m	South
1675980	Community Home	INNER WEST TRANSITIONAL AGED CARE SERVICE	754m	South East
1675975	General Hospital	CONCORD REPATRIATION GENERAL HOSPITAL	793m	South East
1675839	Headland	ROCKY POINT	803m	East
1684814	Headland	WENTWORTH POINT	816m	North West
1676030	Community Medical Centre	CONCORD REPATRIATION GENERAL HOSPITAL BUILDING 19	820m	South East
1676031	Community Medical Centre	SYDNEY HEALTH AGED CHRONIC CARE AND REHABILITATION	820m	South East
1684823	Observation Tower	Observation Tower	833m	South West

Map Id	Feature Type	Label	Distance	Direction
1675853	Park	BRADLEY RESERVE	887m	South
1637203	Headland	CHARITY POINT	903m	North
1675857	Psychiatric Hospital	THOMAS WALKER HOSPITAL	911m	East
1637218	Wharf	RYDE WHARF	916m	North East
1637217	Wharf	RYDE WHARF	919m	North East
1675990	Place Of Worship	PRESBYTERIAN CHURCH	931m	South
1675848	Special School	RIVENDELL SCHOOL	940m	East
1637248	Monument	MEADOWBANK WW1 MEMORIAL	946m	North
1637255	Park	HELENE PARK	957m	North
1675965	Primary School	CONCORD WEST PUBLIC SCHOOL	957m	South
1684954	Primary School	WENTWORTH POINT PUBLIC SCHOOL	965m	North West
1637250	Monument	ARMENIAN GENOCIDE MEMORIAL	974m	North
1637249	Monument	WW2 MEMORIAL WALKWAY	977m	North
1684815	Suburb	WENTWORTH POINT	979m	North West
1637256	Park	MEMORIAL PARK	986m	North

Topographic Data Source: © Land and Property Information (2015)
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Topographic Features

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Tanks (Areas)

What are the Tank Areas located within the dataset buffer?
Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
	No records in buffer					

Tanks (Points)

What are the Tank Points located within the dataset buffer?
Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
	No records in buffer					

Tanks Data Source: © Land and Property Information (2015)
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Major Easements

What Major Easements exist within the dataset buffer?
Note. Easements provided by LPI are not at the detail of local governments. They are limited to major easements such as Right of Carriageway, Electrical Lines (66kVa etc.), Easement to drain water & Significant subterranean pipelines (gas, water etc.).

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
157410744	Primary	Right of way	variable	186m	North West
164886522	Primary	Right of way		332m	West
120120152	Primary	Undefined		527m	North
174354610	Primary	Right of way	6.095m & var	629m	South
165093003	Primary	Right of way		762m	South East

Easements Data Source: © Land and Property Information (2015)
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Topographic Features

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

State Forest

What State Forest exist within the dataset buffer?

State Forest Number	State Forest Name	Distance	Direction
N/A	No records in buffer		

State Forest Data Source: © NSW Department of Finance, Services & Innovation (2018)
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National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the dataset buffer?

Reserve Number	Reserve Type	Reserve Name	Gazetted Date	Distance	Direction
N/A	No records in buffer				

NPWS Data Source: © NSW Department of Finance, Services & Innovation (2018)
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Elevation Contours (m AHD)

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Hydrogeology & Groundwater

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Hydrogeology

Description of aquifers on-site:

Description
Porous, extensive aquifers of low to moderate productivity

Description of aquifers within the dataset buffer:

Description
Porous, extensive aquifers of low to moderate productivity

Hydrogeology Map of Australia : Commonwealth of Australia (Geoscience Australia)
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Botany Groundwater Management Zones

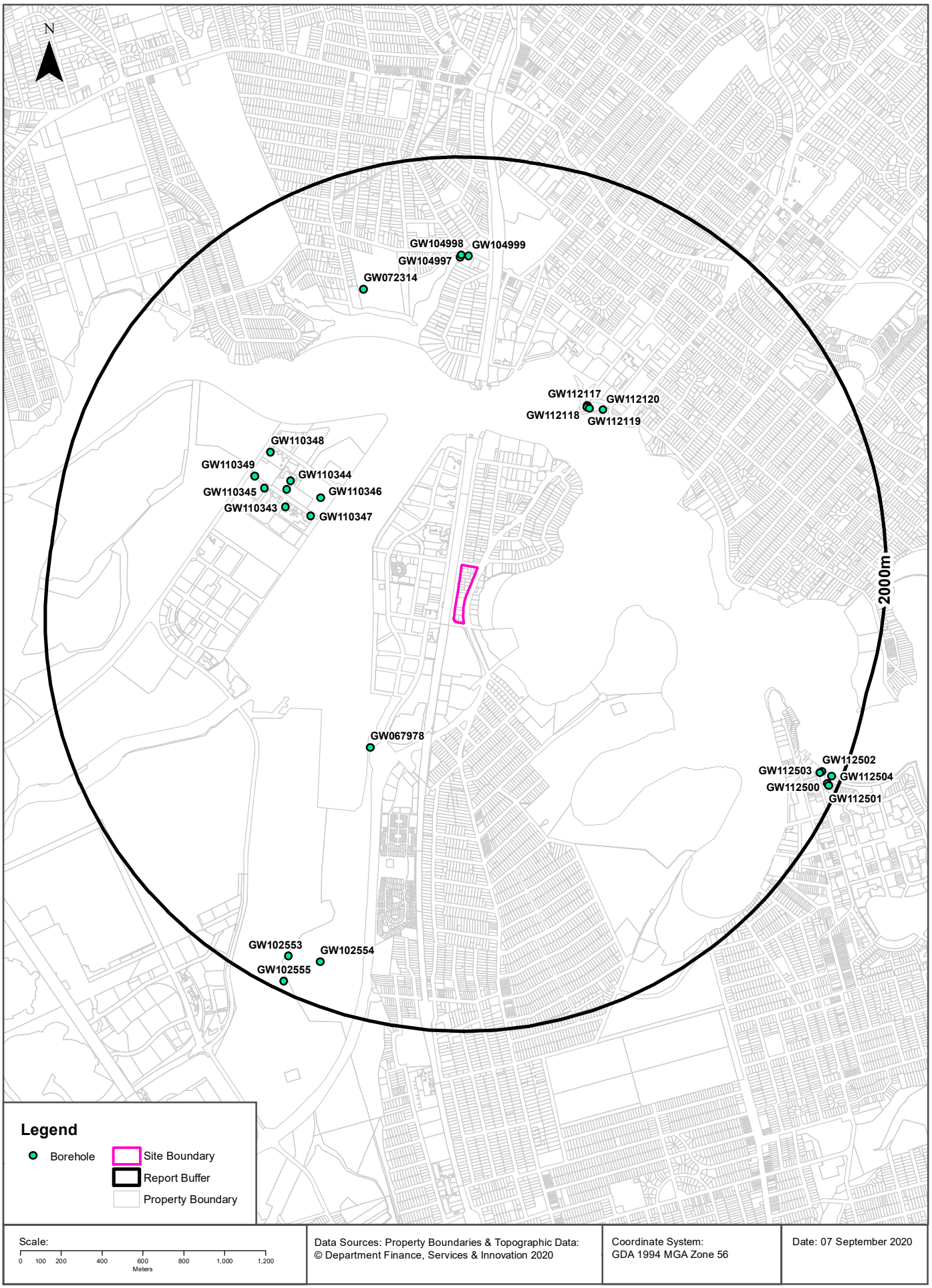
Groundwater management zones relating to the Botany Sand Beds aquifer within the dataset buffer:

Management Zone No.	Restriction	Distance	Direction
N/A	No records in buffer		

Botany Groundwater Management Zones Data Source : NSW Department of Primary Industries

Groundwater Boreholes

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Hydrogeology & Groundwater

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Groundwater Boreholes

Boreholes within the dataset buffer:

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW067978	10BL145562	Bore	Private	Test Bore	Irrigation, Test Bore		05/05/1992	180.00	180.00	12000	0.00	3.000		745m	South West
GW110346	10BL155257	Bore	Private	Monitoring Bore	Monitoring Bore		19/04/1994	3.50	3.50		0.75			764m	North West
GW110347	10BL155257	Bore	Private	Monitoring Bore	Monitoring Bore		11/07/1994	3.50	3.50		1.07			776m	North West
GW110343	10BL155257	Bore	Private	Monitoring Bore	Monitoring Bore		18/04/1994	4.00	4.00		0.90			907m	North West
GW107955	10BL161407	Bore		Monitoring Bore	Monitoring Bore		01/01/2003	5.00	5.00					931m	North West
GW110344	10BL155257	Bore	Private	Monitoring Bore	Monitoring Bore		18/04/1994	3.50	3.50		1.37			933m	North West
GW112118	10BL161257	Bore	Local Govt	Monitoring Bore	Monitoring Bore		13/11/2002	4.00	4.00					951m	North East
GW112119	10BL161257	Bore	Local Govt	Monitoring Bore	Monitoring Bore		13/11/2002	4.00	4.00					952m	North East
GW112117	10BL161257	Bore	Local Govt	Monitoring Bore	Monitoring Bore		13/11/2002	2.50	2.50					959m	North East
GW112120	10BL161257	Bore	Local Govt	Monitoring Bore	Monitoring Bore		13/11/2002	2.50	2.50					988m	North East
GW110345	10BL155257	Bore	Private	Monitoring Bore	Monitoring Bore		19/04/1994	3.50	3.50		0.68			1036m	North West
GW110348	10BL155257	Bore	Private	Monitoring Bore	Monitoring Bore		11/07/1994	3.50	3.50		0.99			1086m	North West
GW110349	10BL155257	Bore	Private	Monitoring Bore	Monitoring Bore		12/07/1994	3.50	3.50		1.04			1103m	North West
GW072314	10BL155108, 10BL156495	Bore	Local Govt	Irrigation, Test Bore	Irrigation		26/07/1994	150.00	150.00	490		0.800		1433m	North
GW104997	10BL160464	Bore		Monitoring Bore	Monitoring Bore		20/08/2001	2.40	2.40	260	2.32			1508m	North
GW104999	10BL160464	Bore		Monitoring Bore	Monitoring Bore		20/08/2001	3.10	3.60	248	3.54			1513m	North
GW104998	10BL160464	Bore		Monitoring Bore	Monitoring Bore		20/08/2001	3.10	3.10	279	2.50			1517m	North
GW102554	10BL157703	Bore		Monitoring Bore	Monitoring Bore		01/01/1996	4.00	4.00		1.83			1793m	South
GW102553	10BL157703	Bore		Monitoring Bore	Monitoring Bore		01/01/1996	4.00	4.00		1.83			1831m	South West
GW112503	10BL157660	Bore	Mines	Monitoring Bore	Monitoring Bore	AGL	01/05/1992	5.00	5.00					1893m	South East
GW112502	10BL157660	Bore	Mines	Monitoring Bore	Monitoring Bore	AGL	01/05/1992	8.45	8.45					1901m	South East
GW112500	10BL157660	Bore	Mines	Monitoring Bore	Monitoring Bore	AGL	01/05/1992	1.50	1.50					1948m	South East
GW112504	10BL157660	Bore	Mines	Monitoring Bore	Monitoring Bore	AGL	30/04/1992	9.95	9.95					1952m	South East
GW102555	10BL157703	Bore		Monitoring Bore	Monitoring Bore		01/01/1996	4.00	4.00		1.83			1952m	South West
GW112501	10BL157660	Bore	Mines	Monitoring Bore	Monitoring Bore	AGL	01/05/1992	3.05	3.05					1957m	South East

Borehole Data Source : NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corporation for all bores prefixed with GW. All other bores © Commonwealth of Australia (Bureau of Meteorology) 2015. Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

Hydrogeology & Groundwater

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Driller's Logs

Drill log data relevant to the boreholes within the dataset buffer:

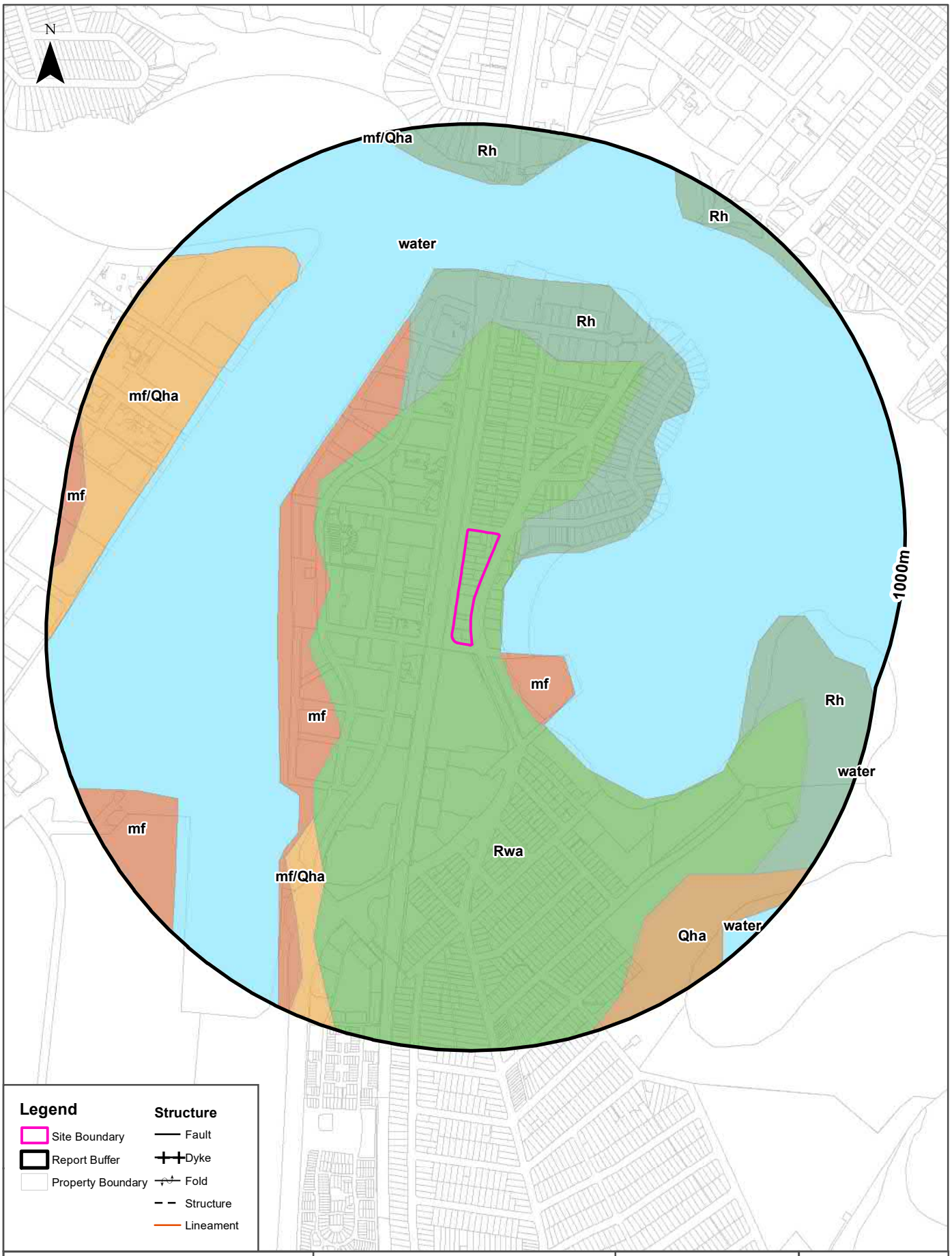
Groundwater No	Drillers Log	Distance	Direction
GW067978	0.00m-1.80m SOIL, CLAY 1.80m-12.70m WEATHERED SHALE 12.70m-29.50m SHALE, MICACEOUS, SILTY 29.50m-45.00m I/B FIG GREY SST AND SH 45.00m-59.50m WH CALC SST, AND SLST51-55M 59.50m-78.00m I/B BR SST AND THIN SLST CALCAREOUSTO 70M 78.00m-121.00m WH F.G. SST, MORE SILTY96-113, MASSIVE 90-96 AND 113-121M 121.00m-142.00m GREY F.G. SLST AND SH 142.00m-156.00m WL/GREY KAOL F.G. SST WITH SH, AND CGLAT 154M 156.00m-180.00m NO SAMPLE RECOVERY	745m	South West
GW110346	0.00m-0.10m GRAVELLY SILT SOFT,BROWN 0.10m-3.50m SILTY SAND,SOFT,COHESIVE,GREY	764m	North West
GW110347	0.00m-0.60m SILTY SAND 0.60m-0.80m CLAY,DRY HARD,COHESIVE 0.80m-0.90m SHALE HARD 0.90m-1.00m CLAY MOIST,COHESIVE 1.00m-1.70m SHELLY CLAY 1.70m-3.50m CLAY,WET,STICKY	776m	North West
GW110343	0.00m-0.10m BITUMEN 0.10m-0.40m GRAVELLY CLAY,FIRM,STICKY,GRAVEL 0.40m-0.70m SILTSTONE,HARD,L/BROWN 0.70m-2.20m GRAVELLY SILT,SOFT,STICKY 2.20m-3.00m SILTY CLAY 3.00m-4.00m CLAY SOFT,STICKY,GREY	907m	North West
GW110344	0.00m-0.60m SILTY SAND BROWN TO GREY 0.60m-0.90m GRAVELLY CLAY 0.90m-2.80m GRAVELLY SILT SOFT,STICKY 2.80m-3.50m CLAY,SOFT,COHESIVE,STICKY	933m	North West
GW110345	0.00m-0.20m CONCRETE 0.20m-0.90m GRAVELLY CLAY 0.90m-1.50m CLAY,FIRM,STICKY 1.50m-3.10m CLAY SOFT,COHESIVE,GREY 3.10m-3.50m CLAY FIRM,DARK GREY	1036m	North West
GW110348	0.00m-0.30m CONCRETE 0.30m-0.60m SHELLY BAND,LOOSE,M/GRAINED 0.60m-1.00m CLAY,GREY,COHESIVE,STICKY 1.00m-1.20m SHELLY SAND,LOOSE, M/GRAINED 1.20m-2.20m CLAYEY SHELLY SAND 2.20m-3.00m CLAY,MOIST,COHESIVE,STICKY 3.00m-3.50m SHELLY CLAY,WET,STICKY,SHELL FRAGS.	1086m	North West
GW110349	0.00m-0.17m CONCRETE 0.17m-0.50m GRAVELLY CLAY,MOIST,COHESIVE,YELLOW 0.50m-0.80m CLAY,MOIST,STICKY,GREY 0.80m-1.00m SHELLY SANDY CLAY 1.00m-2.40m SHELLY CLAY,MOIST,HARD 2.40m-3.50m SHELLY CLAY,MOIST,COHESIVE,STICKY	1103m	North West

Groundwater No	Drillers Log	Distance	Direction
GW072314	0.00m-1.00m TOP SOIL 1.00m-3.70m YELLOW MED GRAIN SANDSTONE 3.70m-4.10m GREY CLAY 4.10m-8.50m YELLOW MED GRAIN SANDSTONE 8.50m-9.20m GREY CLAY 9.20m-15.90m GREY FINE GRAIN SANDSTONE CLAY MATRIX 15.90m-37.30m GREY MED GRAIN SANDSTONE 37.30m-52.80m GREY MEDIUM GRAIN SANDSTONE CLAY MATRIX 52.80m-61.20m GREY MED GRAIN SANDSTONE 61.20m-72.00m LIGHT GREY COARSE GRAIN SANDSTONE 72.00m-74.50m LIGHT GREY COARSE GRAIN SANDSTONE 74.50m-76.00m QUARTZ/SHALE CROSS BED 76.00m-84.30m GREY MED GRAIN SANDSTONE WITH CLAY MATRIX 84.30m-118.00m GREY COARSE GRAIN CEMENTED SANDSTONE 118.00m-123.50m GREY COARSE GRAIN SANDSTONE WITH SMALL PEBBLE QUARTZ MATRIX 123.50m-125.50m DARK GREY MED GRAIN CEMENTED SANDSTONE 125.50m-130.30m LIGHT GREY COARSE GRAIN SANDSTONE WITH SMALL PEBBLE QUARTZ MATRIX 130.30m-135.60m DARK GREY SHALE CROSS BED 135.60m-138.20m LIGHT GREY COARSE GRAIN SANDSTONE WITH SMALL PEBBLE QUARTZ MATRIX 138.20m-150.00m GREY COARSE GRAIN CEMENTED SANDSTONE	1433m	North
GW104997	0.00m-0.70m FILL,CLAYEY SAND 0.70m-1.50m FILL,SILTY CLAYEY SAND 1.50m-2.40m SILTY SANDY CLAY,GREY	1508m	North
GW104999	0.00m-0.90m FILL,CLAYEY SAND BROWN 0.90m-1.30m FILL, SILTY CLAYEY SAND GREY 1.30m-3.60m CLAY,SANDY,MOTTED GREY	1513m	North
GW104998	0.00m-0.90m FILL,CLAYEY SAND,BROWN 0.90m-1.40m FILL,SILTY CLAYEY SAND,GREY 1.40m-3.10m CLAY,SANDY,MOTTED GREY	1517m	North

Drill Log Data Source: NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corp
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Geology 1:100,000

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Geology

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Geological Units

What are the Geological Units onsite?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Rwa	Black to dark grey shale and laminate	Ashfield Shale	Wianamatta Group		Triassic		Sydney	1:100,000

What are the Geological Units within the dataset buffer?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
mf	Man-made fill. Dredged estuarine sand and mud, demolition rubble, industrial and household waste.				Quaternary		Sydney	1:100,000
mf/Qha	Man-made fill (dredged estuarine sand and mud, demolition rubble, industrial and household waste) overlying silty to peaty quartz sand, silt and clay with ferruginous & humic cementation in places and common shell layers				Quaternary		Sydney	1:100,000
Qha	Silty to peaty quartz sand, silt, and clay. Ferruginous and humic cementation in places. Common shell layers				Quaternary		Sydney	1:100,000
Rh	Medium to coarse grained quartz sandstone, very minor shale and laminate lenses				Triassic		Sydney	1:100,000
Rwa	Black to dark grey shale and laminate	Ashfield Shale	Wianamatta Group		Triassic		Sydney	1:100,000
water							Sydney	1:100,000

Geological Structures

What are the Geological Structures onsite?

Feature	Name	Description	Map Sheet	Dataset
No features				1:100,000

What are the Geological Structures within the dataset buffer?

Feature	Name	Description	Map Sheet	Dataset
No features				1:100,000

Geological Data Source : NSW Department of Industry, Resources & Energy
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Naturally Occurring Asbestos Potential

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Naturally Occurring Asbestos Potential

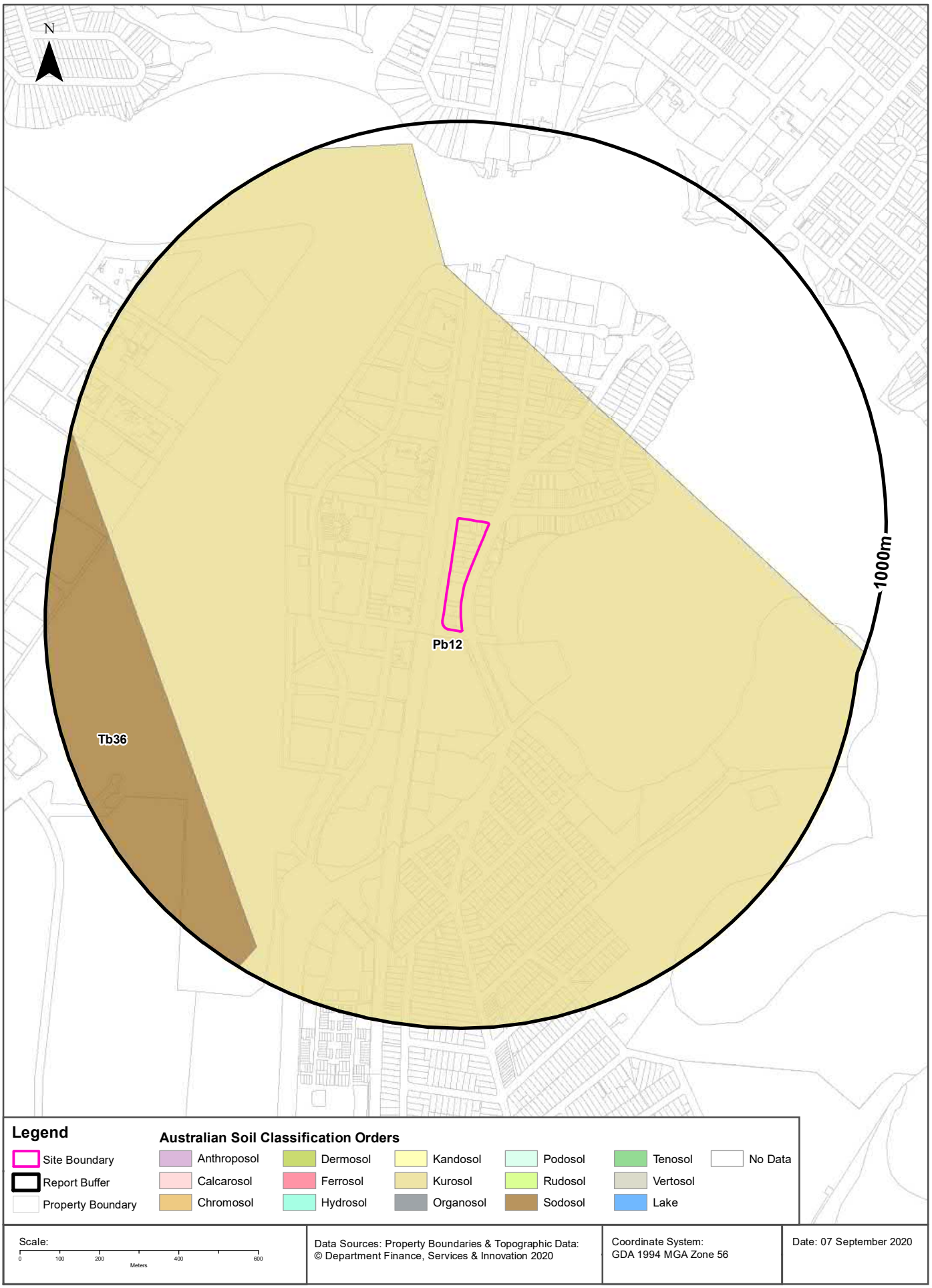
Naturally Occurring Asbestos Potential within the dataset buffer:

Potential	Sym	Strat Name	Group	Formation	Scale	Min Age	Max Age	Rock Type	Dom Lith	Description	Dist	Dir
No records in buffer												

Mining Subsidence District Data Source: © State of New South Wales through NSW Department of Industry, Resources & Energy

Atlas of Australian Soils

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Soils

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Atlas of Australian Soils

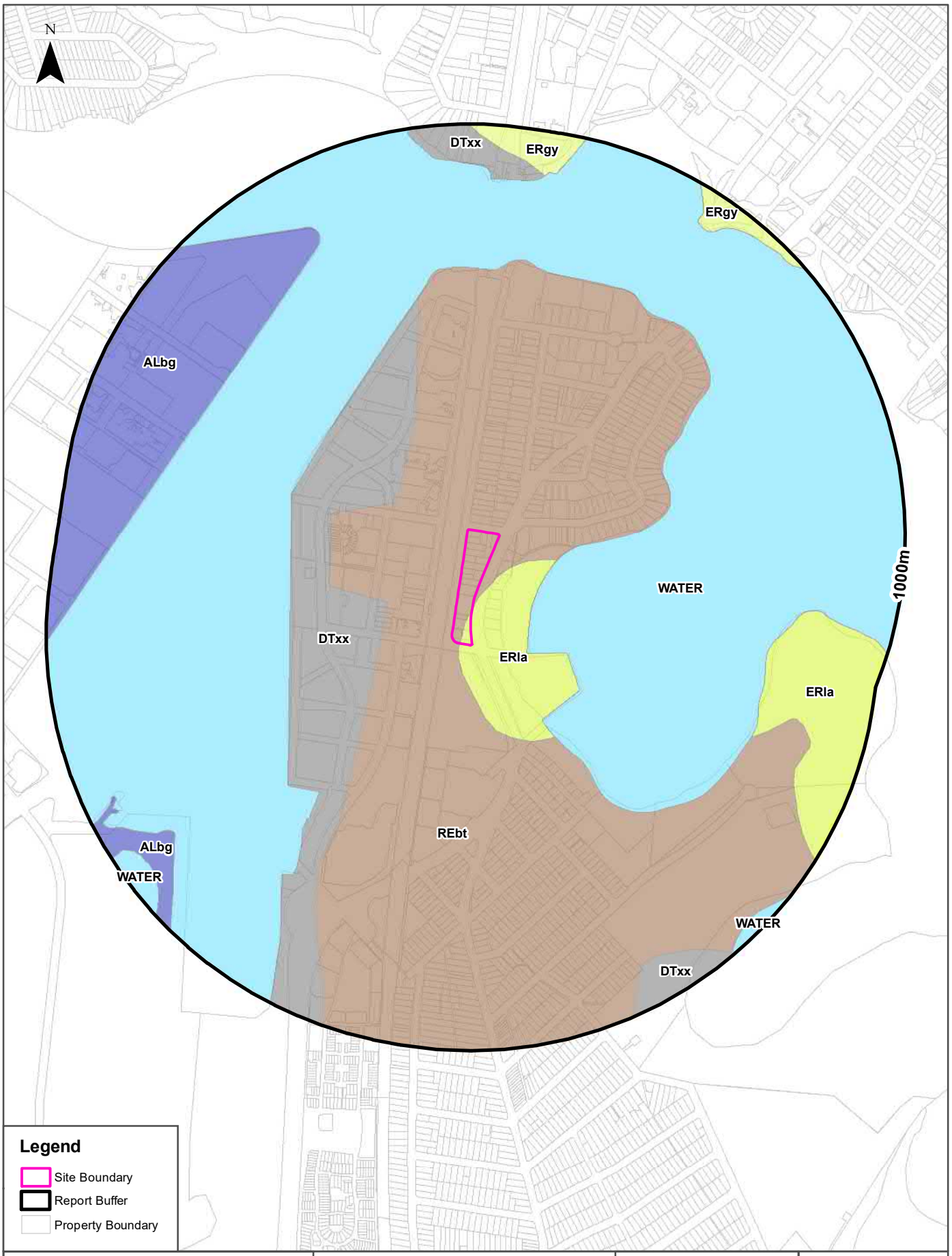
Soil mapping units and Australian Soil Classification orders within the dataset buffer:

Map Unit Code	Soil Order	Map Unit Description	Distance
Pb12	Kurosol	Gently rolling to rounded hilly country with some steep slopes and broad valleys: chief soils are hard acidic red soils (Dr2.21) with hard neutral and acidic yellow mottled soils (Dy3.42 and Dy3.41) on lower slopes and in valleys. Associated are small areas of various soils including (Gn3.54) on some ridges, (Dr3.31) on some slopes; (Dr2.23) in saddles and some mid-slope positions, and some low- lying swampy areas of (Uf6) soils and (Uc1.2) soils with peaty surfaces. Small areas of other soils such as (Db1.2) are likely throughout.	0m
Tb36	Sodosol	Undulating: chief soils are hard acidic yellow mottled soils (Dy3.41) usually containing some ironstone gravels throughout the profile. Associated are small areas of units Pb12 and Pb13.	716m

Atlas of Australian Soils Data Source: CSIRO
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Soil Landscapes

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Soils

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Soil Landscapes

What are the onsite Soil Landscapes?

Soil Code	Name	Group	Process	Map Sheet	Scale
ERla	LAMBERT		EROSIONAL	Sydney	1:100,000
REbt	BLACKTOWN		RESIDUAL	Sydney	1:100,000

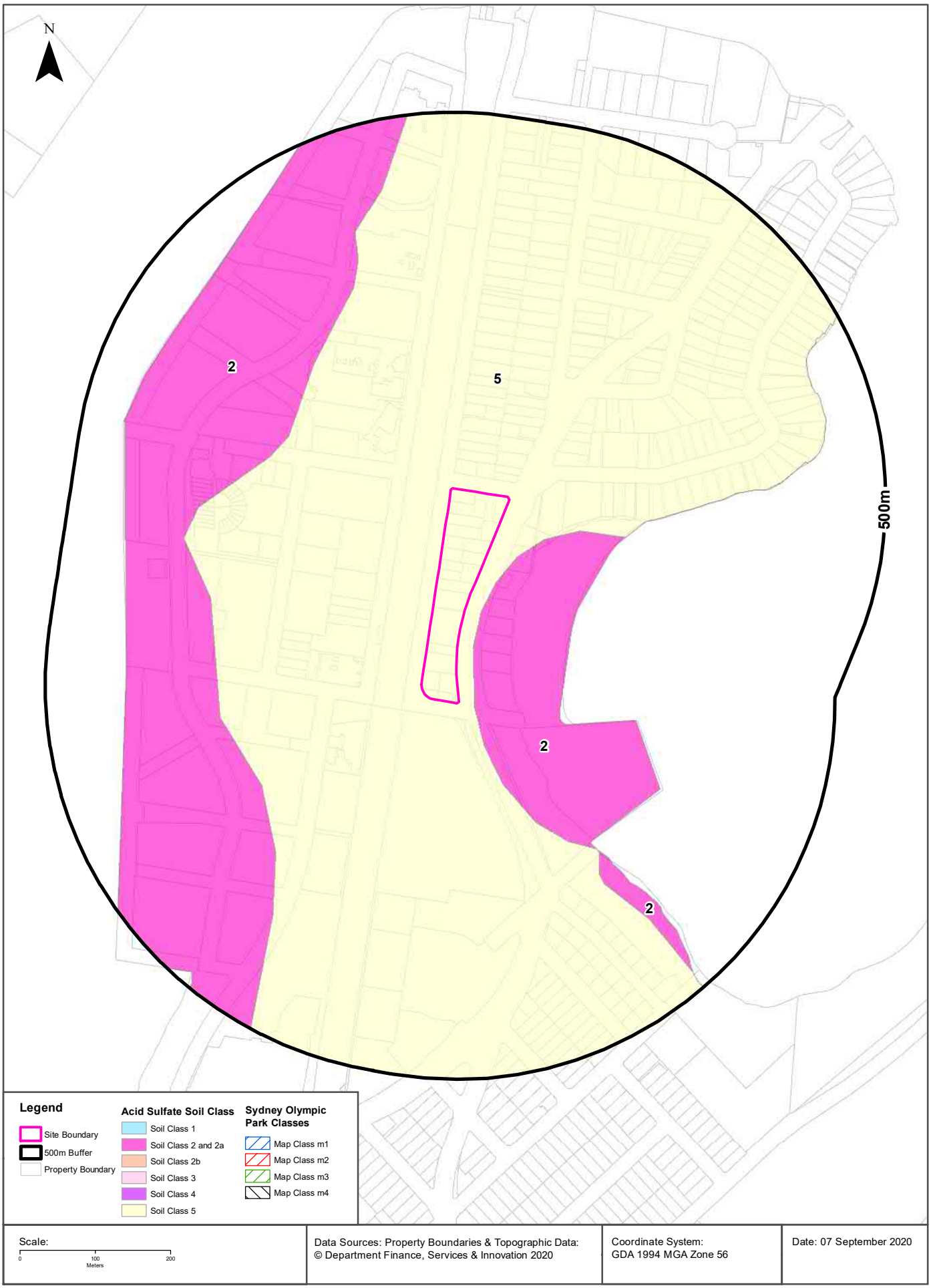
What are the Soil Landscapes within the dataset buffer?

Soil Code	Name	Group	Process	Map Sheet	Scale
ALbg	BIRRONG		ALLUVIAL	Sydney	1:100,000
DTxx	DISTURBED TERRAIN		DISTURBED TERRAIN	Sydney	1:100,000
ERgy	GYMEA		EROSIONAL	Sydney	1:100,000
ERla	LAMBERT		EROSIONAL	Sydney	1:100,000
REbt	BLACKTOWN		RESIDUAL	Sydney	1:100,000
WATER	WATER		WATER	Sydney	1:100,000

Soils Landscapes Data Source : NSW Office of Environment and Heritage
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Acid Sulfate Soils

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Acid Sulfate Soils

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Environmental Planning Instrument - Acid Sulfate Soils

What is the on-site Acid Sulfate Soil Plan Class that presents the largest environmental risk?

Soil Class	Description	EPI Name
5	Works within 500 metres of adjacent Class 1, 2, 3, or 4 land that is below 5 metres AHD and by which the watertable is likely to be lowered below 1 metre AHD on adjacent Class 1, 2, 3 or 4 land, present an environmental risk	Canada Bay Local Environmental Plan 2013

If the on-site Soil Class is 5, what other soil classes exist within 500m?

Soil Class	Description	EPI Name	Distance	Direction
2	Works below natural ground surface present an environmental risk; Works by which the watertable is likely to be lowered present an environmental risk	Canada Bay Local Environmental Plan 2013	20m	South East

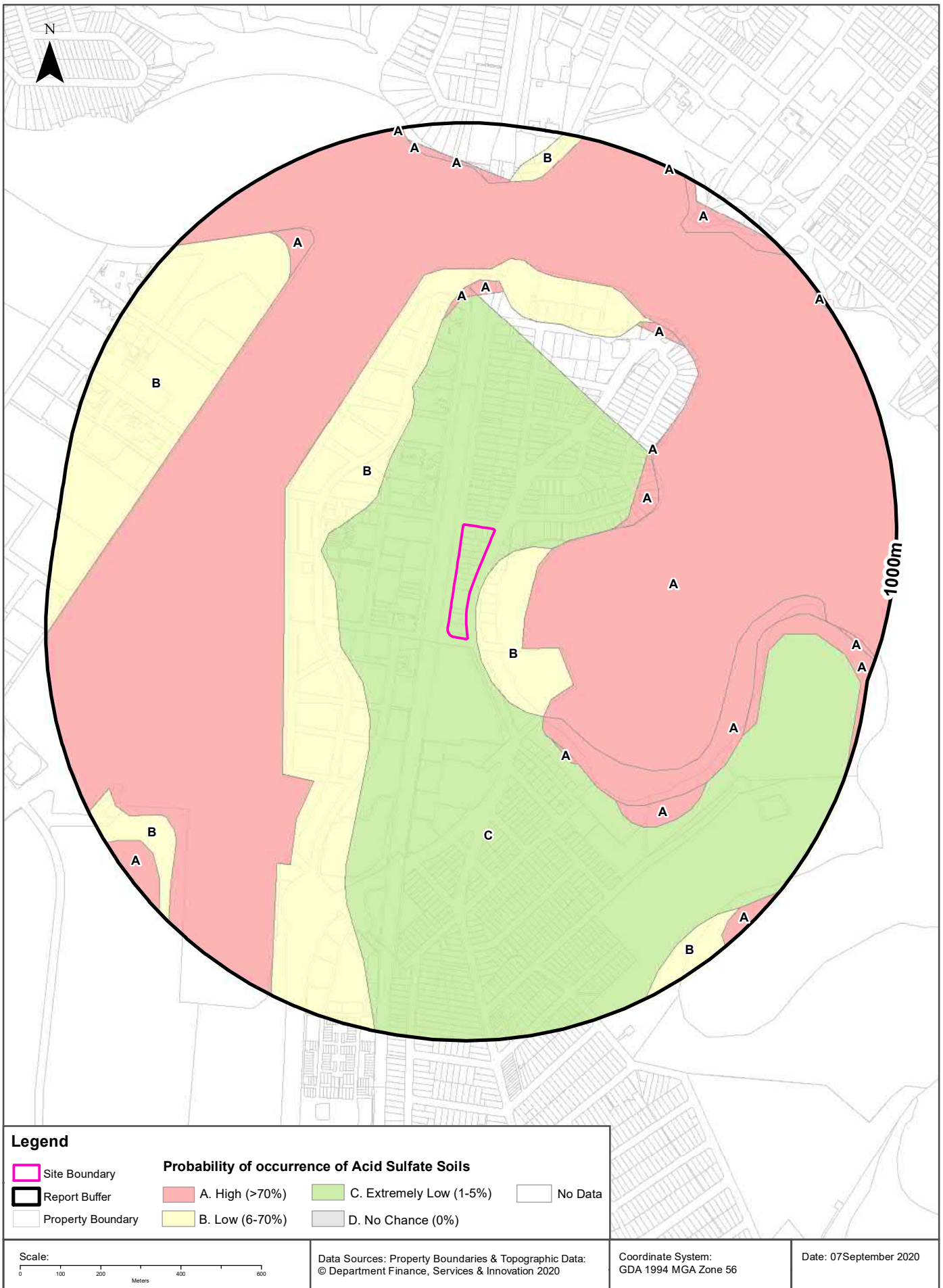
What Sydney Olympic Park Acid Sulfate map classes exist within 500m?

Map Class	Description	EPI Name	Distance	Direction
N/A	No records within buffer			

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Atlas of Australian Acid Sulfate Soils

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Acid Sulfate Soils

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Atlas of Australian Acid Sulfate Soils

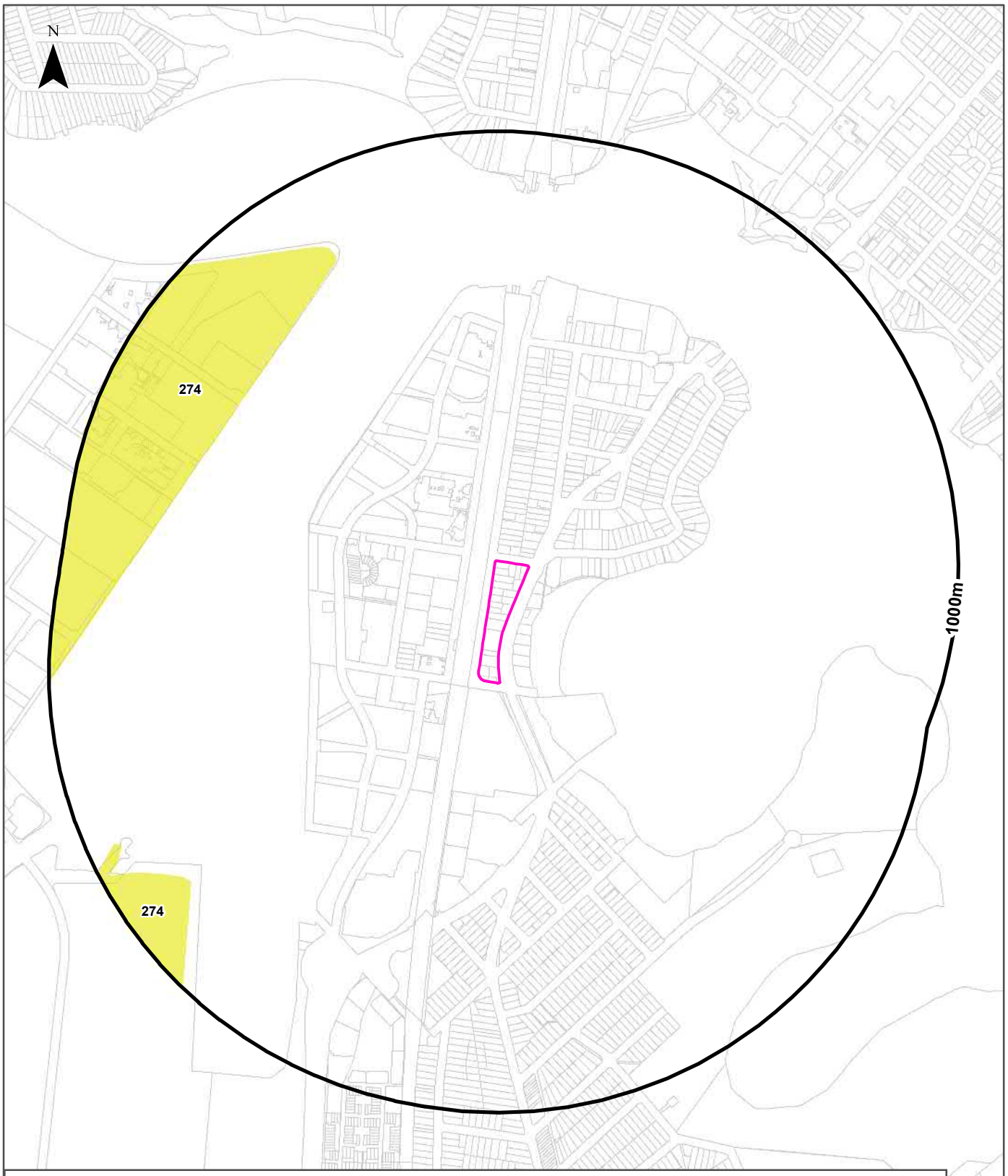
Atlas of Australian Acid Sulfate Soil categories within the dataset buffer:

Class	Description	Distance
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	0m
B	Low Probability of occurrence. 6-70% chance of occurrence.	20m
A	High Probability of occurrence. >70% chance of occurrence.	132m

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO
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Dryland Salinity

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Legend

- Site Boundary
- Report Buffer
- Property Boundary

Dryland Salinity - National Assessment

- Delineated risk area but no high hazard or risk rating for either 2000, 2020, 2050
- High hazard or risk in 2050 only
- High hazard or risk defined for 2050, but no assessment made for 2000 or 2020
- High hazard or risk in 2020 and 2050
- High hazard or risk in 2000 and 2050. 2020 not defined as high hazard
- High hazard or risk defined for all years: 2000, 2020, 2050

Salinity Potential of Western Sydney

- Area of Known Salinity
- Area of High Salinity Potential
- Area of Moderate Salinity Potential
- Area of Very Low Salinity Potential
- Area of Water

Scale: 0 100 200 400 600 Meters

Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2020

Coordinate System: GDA 1994 MGA Zone 56

Date: 07 September 2020

Dryland Salinity

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Dryland Salinity - National Assessment

Is there Dryland Salinity - National Assessment data onsite?

No

Is there Dryland Salinity - National Assessment data within the dataset buffer?

No

What Dryland Salinity assessments are given?

Assessment 2000	Assessment 2020	Assessment 2050	Distance	Direction
N/A	N/A	N/A	N/A	N/A

Dryland Salinity Data Source : National Land and Water Resources Audit
The Commonwealth and all suppliers of source data used to derive the maps of "Australia, Forecast Areas Containing Land of High Hazard or Risk of Dryland Salinity from 2000 to 2050" do not warrant the accuracy or completeness of information in this product. Any person using or relying upon such information does so on the basis that the Commonwealth and data suppliers shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information. Any persons using this information do so at their own risk.
In many cases where a high risk is indicated, less than 100% of the area will have a high hazard or risk.

Dryland Salinity Potential of Western Sydney

Dryland Salinity Potential of Western Sydney within the dataset buffer?

Feature Id	Classification	Description	Distance	Direction
274	MODERATE	Area of Moderate Salinity Potential	700m	West

Dryland Salinity Potential of Western Sydney Data Source : NSW Office of Environment and Heritage
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Mining

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Mining Subsidence Districts

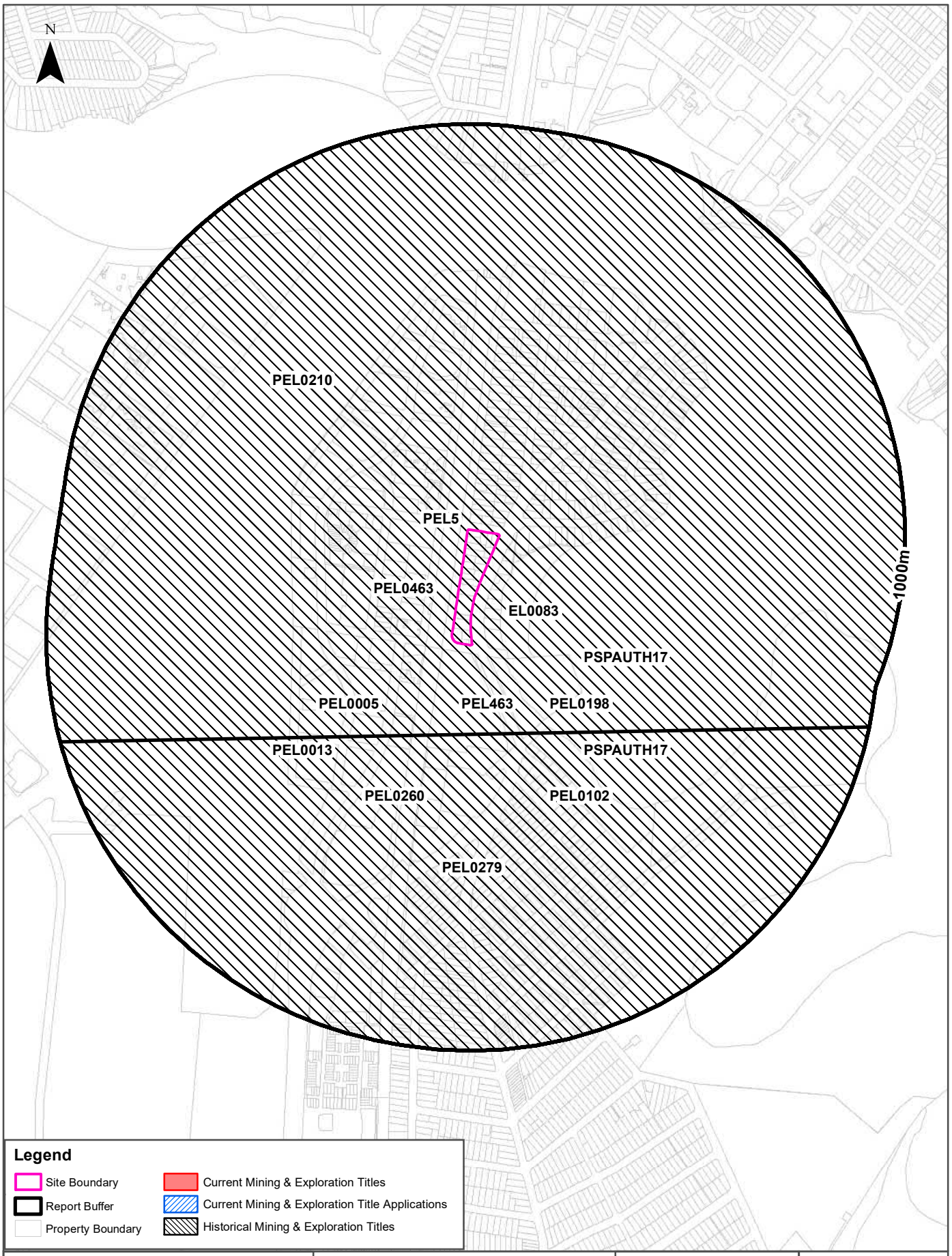
Mining Subsidence Districts within the dataset buffer:

District	Distance	Direction
There are no Mining Subsidence Districts within the report buffer		

Mining Subsidence District Data Source: © Land and Property Information (2016)
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Mining & Exploration Titles

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Mining

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Current Mining & Exploration Titles

Current Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Grant Date	Expiry Date	Last Renewed	Operation	Resource	Minerals	Dist (m)	Dir'
N/A	No Records in Buffer								

Current Mining & Exploration Titles Data Source: © State of New South Wales through NSW Department of Industry

Current Mining & Exploration Title Applications

Current Mining & Exploration Title Applications within the dataset buffer:

Application Ref	Applicant	Application Date	Operation	Resource	Minerals	Dist (m)	Dir'
N/A	No Records in Buffer						

Current Mining & Exploration Title Applications Data Source: © State of New South Wales through NSW Department of Industry

Mining

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Historical Mining & Exploration Titles

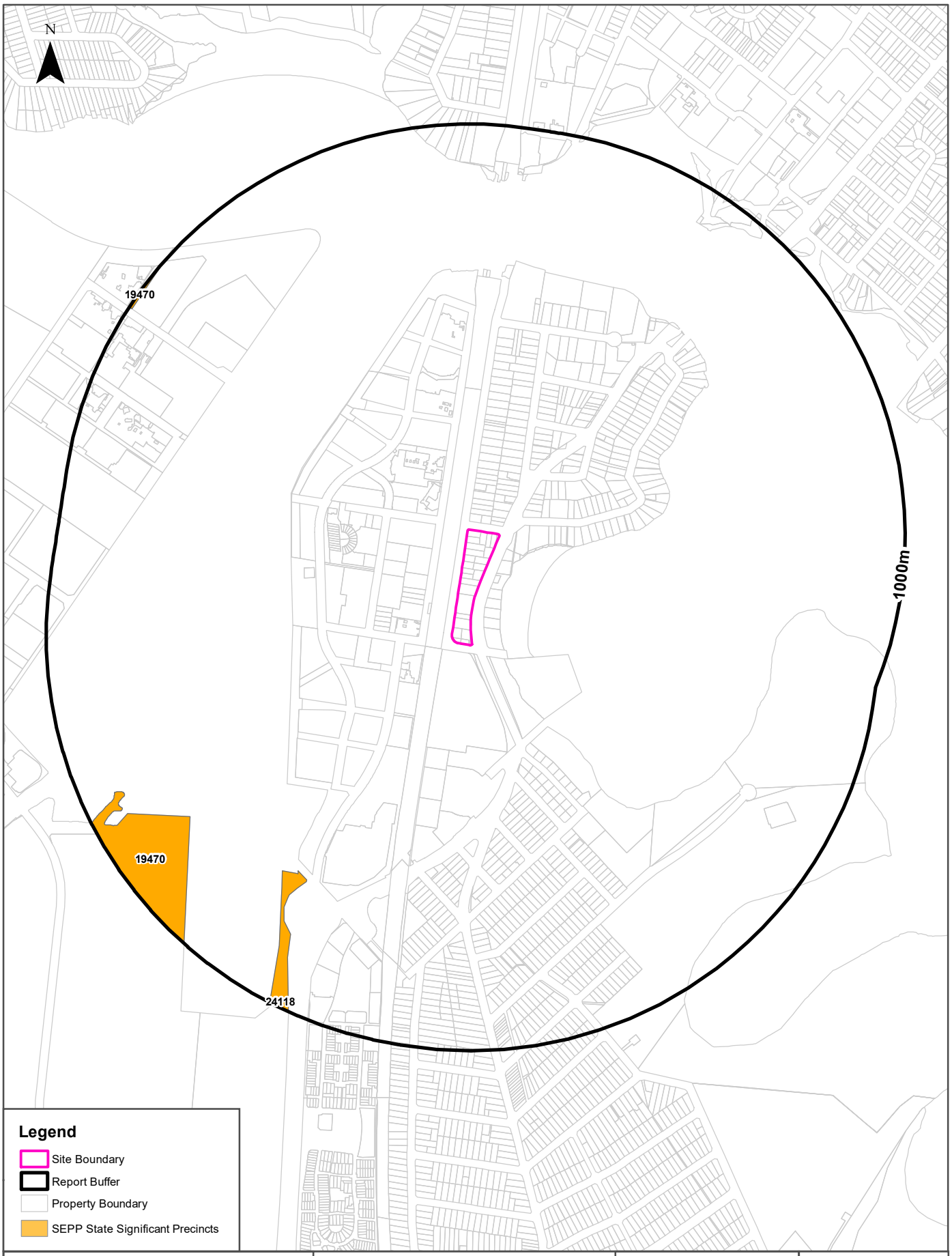
Historical Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Start Date	End Date	Resource	Minerals	Dist (m)	Dir'
EL0083	CONTINENTAL OIL CO OF AUSTRALIA LIMITED	01 Feb 1967	01 Feb 1968	MINERALS		0m	Onsite
PEL0005	AGL UPSTREAM INVESTMENTS PTY LIMITED	11/11/1993	4/03/2015	PETROLEUM	Petroleum	0m	Onsite
PEL0013	AUSTRALIAN OIL AND GAS CORPORATION LTD			PETROLEUM	Petroleum	0m	Onsite
PEL0102	AUSTRALIAN OIL AND GAS CORPORATION LTD			PETROLEUM	Petroleum	0m	Onsite
PEL0198	JOHN STREVENS (TERRIGAL) NL			PETROLEUM	Petroleum	0m	Onsite
PEL0210	THE AUSTRALIAN GAS LIGHT COMPANY (AGL), NORTH BULLI COLLIERIES PTY LTD			PETROLEUM	Petroleum	0m	Onsite
PEL0260	NORTH BULLI COLLIERIES PTY LTD, AGL PETROLEUM OPERATIONS PTY LTD, THE AUSTRALIAN GAS LIGHT CO.	9/09/1981	8/03/1993	PETROLEUM	Petroleum	0m	Onsite
PEL0463	DART ENERGY (APOLLO) PTY LTD	22/10/2008	6/03/2015	PETROLEUM	Petroleum	0m	Onsite
PEL463	DART ENERGY (APOLLO) PTY LTD			MINERALS		0m	Onsite
PEL5	AGL UPSTREAM INVESTMENTS PTY LIMITED			MINERALS		0m	Onsite
PSPAUTH17	MACQUARIE ENERGY PTY LTD			MINERALS		0m	Onsite
PSPAUTH17	MACQUARIE ENERGY PTY LTD	8/03/2007	7/03/2008	PETROLEUM	Petroleum	0m	Onsite
PEL0279	THE ELECTRICITY COMMISSION OF NSW (TRADING AS PACIFIC POWER)	17/04/1990	11/11/1993	PETROLEUM	Petroleum	219m	South

Historical Mining & Exploration Titles Data Source: © State of New South Wales through NSW Department of Industry

SEPP State Significant Precincts

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



State Environmental Planning Policy

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

State Significant Precincts

What SEPP State Significant Precincts exist within the dataset buffer?

Map Id	Precinct	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
24118	Sydney Olympic Park	State Environmental Planning Policy (State Significant Precincts) 2005	31/08/2018	31/08/2018	31/08/2018	State Environmental Planning Policy (State Significant Precincts) Amendment (Sydney Olympic Park) 2017	684m	South
19470	Sydney Olympic Park	State Environmental Planning Policy (State Significant Precincts) 2005	31/08/2018	31/08/2018	31/08/2018	State Environmental Planning Policy (State Significant Precincts) Amendment (Sydney Olympic Park) 2017	781m	South West

State Environment Planning Policy Data Source: NSW Crown Copyright - Planning & Environment
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EPI Planning Zones

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Scale: 0 100 200 400 600 Meters	Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2020 Planning: NSW Crown Copyright - Planning & Environment	Coordinate System: GDA 1994 MGA Zone 56	Date: 07 September 2020

Environmental Planning Instrument

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Land Zoning

What EPI Land Zones exist within the dataset buffer?

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
R3	Medium Density Residential		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		0m	Onsite
B1	Neighbourhood Centre		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		0m	Onsite
RE1	Public Recreation		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		0m	Onsite
SP2	Infrastructure	Classified Road	Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		0m	South East
B7	Business Park		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		20m	South
SP2	Infrastructure	Railway	Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		21m	South
RE1	Public Recreation		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		28m	South East
R3	Medium Density Residential		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		37m	North East
B4	Mixed Use		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		61m	South West
R4	High Density Residential		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		65m	North West
R2	Low Density Residential		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		177m	North
R2	Low Density Residential		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		295m	North East
E2	Environmental Conservation		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		298m	South East
R2	Low Density Residential		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		317m	South
B1	Neighbourhood Centre		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		324m	West
RE1	Public Recreation		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		332m	South West
RE1	Public Recreation		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		371m	North
IN1	General Industrial		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		389m	North
RE1	Public Recreation		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		488m	South East
RE1	Public Recreation		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		489m	North East
RE1	Public Recreation		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		554m	North East
SP2	Infrastructure	Hospital	Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		566m	South East
SP2	Infrastructure	Classified Road	Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		593m	South
RE1	Public Recreation		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		627m	North
RE1	Public Recreation		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		629m	South
B4	Mixed Use		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		634m	South

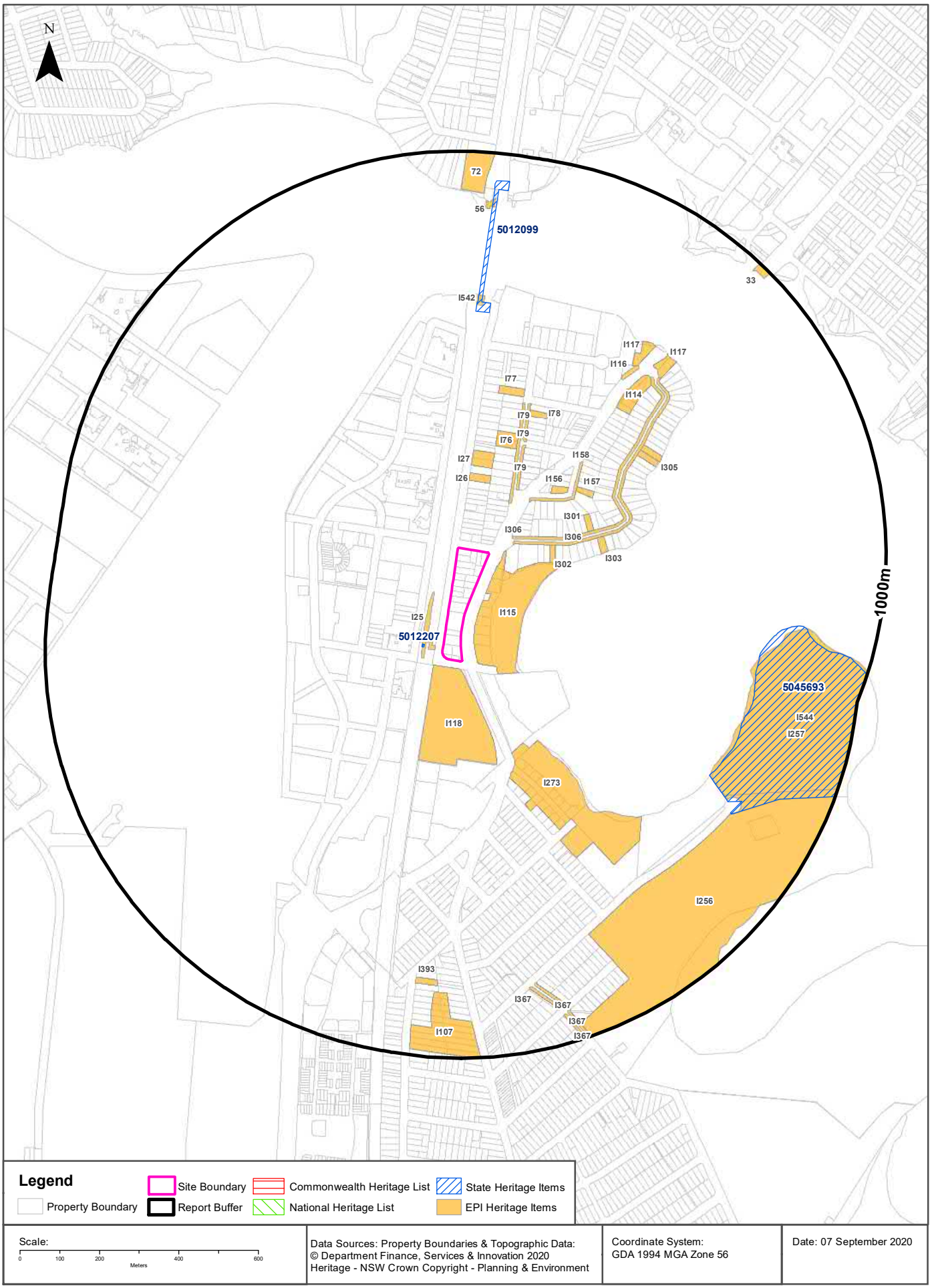
Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
E2	Environmental Conservation		State Environmental Planning Policy (State Significant Precincts) 2005	24/03/2016	24/03/2016	05/06/2020	State Environmental Planning Policy (Major Development) Amendment (State Significant Precincts) 2016	684m	South
B1	Neighbourhood Centre		Auburn Local Environmental Plan 2010	04/07/2014	04/07/2014	06/07/2018	State Environmental Planning Policy Amendment (Wentworth Point Urban Activation Precinct) 2014	700m	North West
DM	Deferred Matter		Auburn Local Environmental Plan 2010	04/07/2014	04/07/2014	06/07/2018	State Environmental Planning Policy Amendment (Wentworth Point Urban Activation Precinct) 2014	700m	West
R4	High Density Residential		Auburn Local Environmental Plan 2010	04/07/2014	04/07/2014	06/07/2018	State Environmental Planning Policy Amendment (Wentworth Point Urban Activation Precinct) 2014	707m	North West
RE1	Public Recreation		Auburn Local Environmental Plan 2010	04/07/2014	04/07/2014	06/07/2018	State Environmental Planning Policy Amendment (Wentworth Point Urban Activation Precinct) 2014	722m	North West
R3	Medium Density Residential		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		736m	South
IN1	General Industrial		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		765m	South
E2	Environmental Conservation		State Environmental Planning Policy (State Significant Precincts) 2005	24/03/2016	24/03/2016	24/03/2016	State Environmental Planning Policy (Major Development) Amendment (State Significant Precincts) 2016	781m	South West
E2	Environmental Conservation		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		782m	East
SP2	Infrastructure	Railways	Ryde Local Environmental Plan 2014	10/04/2015	10/04/2015	18/01/2019	Amendment No 2	860m	North
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	18/01/2019		867m	North
B1	Neighbourhood Centre		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		885m	South
B4	Mixed Use		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	18/01/2019		886m	North East
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	18/01/2019		894m	North East
E2	Environmental Conservation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	18/01/2019		917m	North
E2	Environmental Conservation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	18/01/2019		935m	North
E2	Environmental Conservation		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		943m	South East

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	18/01/2019		973m	North East
SP2	Infrastructure	Classified Road	Ryde Local Environmental Plan 2014	10/04/2015	10/04/2015	18/01/2019	Amendment No 2	973m	North East
E2	Environmental Conservation		Canada Bay Local Environmental Plan 2013	02/08/2013	02/08/2013	05/06/2020		989m	East
B1	Neighbourhood Centre		State Environmental Planning Policy (State Significant Precincts) 2005	24/03/2016	24/03/2016	24/03/2016	State Environmental Planning Policy (Major Development) Amendment (State Significant Precincts) 2016	992m	North West
RE1	Public Recreation		State Environmental Planning Policy (State Significant Precincts) 2005	24/03/2016	24/03/2016	24/03/2016	State Environmental Planning Policy (Major Development) Amendment (State Significant Precincts) 2016	999m	North West

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Heritage Items

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Heritage

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Commonwealth Heritage List

What are the Commonwealth Heritage List Items located within the dataset buffer?

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

Heritage Data Source: Australian Government Department of the Environment and Energy - Heritage Branch
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National Heritage List

What are the National Heritage List Items located within the dataset buffer?
Note. Please click on Place Id to activate a hyperlink to online website.

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

Heritage Data Source: Australian Government Department of the Environment and Energy - Heritage Branch
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State Heritage Register - Curtilages

What are the State Heritage Register Items located within the dataset buffer?

Map Id	Name	Address	LGA	Listing Date	Listing No	Plan No	Distance	Direction
5012207	Rhodes Railway Station group	Blaxland Road, Rhodes	Canada Bay	02/04/1999	01235	2570	48m	South West
5012099	Meadowbank rail bridge over Parramatta River	Main Northern railway, Meadowbank/Rhodes	Canada Bay	02/04/1999	01189	2584	598m	North
5045693	Thomas Walker Convalescent Hospital	Hospital Road, Concord West	Canada Bay	02/04/1999	00115	244	686m	East

Heritage Data Source: NSW Crown Copyright - Office of Environment & Heritage
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Environmental Planning Instrument - Heritage

What are the EPI Heritage Items located within the dataset buffer?

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I118	Rhodes Industrial Park - grounds	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	19m	South

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I25	Rhodes Railway Station - Platforms 2 & 3	Item - General	State	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	21m	South West
I115	McIlwaine Park - landscape	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	28m	East
I306	Street trees - landscape	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	65m	North East
I306	Street trees - landscape	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	70m	North East
I79	Street trees - landscape	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	135m	North
I302	House 'Kilcreggan'	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	152m	North East
I158	Street trees - landscape	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	165m	North East
I26	House and garden	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	173m	North
I79	Street trees - landscape	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	175m	North East
I27	Rhodes Public School	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	211m	North
I156	House	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	217m	North East
I301	House	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	254m	North East
I273	Rhodes Park Kokoda Trail Memorial - landscape	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	257m	South East
I76	Concord Community Hostel - grounds only - landscape	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	268m	North
I157	House 'Cressbrooke'	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	270m	North East
I303	House	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	274m	East
I79	Street trees - landscape	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	293m	North
I78	House	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	360m	North
I77	Warehouse	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	402m	North
I304	House	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	448m	North East
I305	House 'Monaro' and garden	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	462m	North East
I114	King George V Park - landscape	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	488m	North East
I116	Ryde Bridge street trees (Ryde Bridge approach) - landscape	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	550m	North East

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I117	Uhr's Point Reserve - landscape	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	593m	North East
I117	Uhr's Point Reserve - landscape	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	614m	North East
I542	Meadowbank Rail Bridge over Parramatta River	Item - General	State	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	616m	North
I544	Joanna Walker Memorial Children's Hospital	Item - General	State	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	686m	East
I257	Thomas Walker Hospital Group - main building, former children's hospital, former stables, former cot	Item - General	State	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	686m	East
I256	Concord Repatriation Hospital - original main building, grounds and layout	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	725m	South East
I393	House	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	802m	South
I367	Street trees - landscape	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	830m	South
I107	Concord West Public School - school	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	834m	South
I367	Street trees - landscape	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	837m	South
56	Meadowbank Railway Bridge over Parramatta River	Item - General	State	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	23/11/2018	860m	North
72	Memorial Park (obelisk)	Item - General	Local	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	23/11/2018	897m	North
I367	Street trees - landscape	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	916m	South
I367	Street trees - landscape	Item - General	Local	Canada Bay Local Environmental Plan 2013	19/07/2013	02/08/2013	14/09/2018	926m	South
33	Bridge	Item - General	Local	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	23/11/2018	973m	North East

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Natural Hazards

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Bush Fire Prone Land

What are the nearest Bush Fire Prone Land Categories that exist within the dataset buffer?

Bush Fire Prone Land Category	Distance	Direction
No records within buffer		

NSW Bush Fire Prone Land - © NSW Rural Fire Service under Creative Commons 4.0 International Licence

Ecological Constraints - Native Vegetation & RAMSAR Wetlands

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Ecological Constraints

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Native Vegetation

What native vegetation exists within the dataset buffer?

Map ID	Map Unit Name	Threatened Ecological Community NSW	Threatened Ecological Community EPBC Act	Understorey	Disturbance	Disturbance Index	Dominant Species	Dist	Direction
Urban_E/N	Urban_E/N: Urban Exotic/Native			00: Not assessed	00: Not assessed	0: Not assessed	Urban Exotic/Native	0m	Onsite
S_SW01	S_SW01: Estuarine Mangrove Forest			00: Not assessed	00: Not assessed	0: Not assessed	Mangroves	139m	South East
S_WSF09	S_WSF09: Sydney Turpentine-Ironbark Forest	Sydney Turpentine Ironbark Forest	Turpentine Ironbark Forest (possible)	15: Grassy natives and exotics	31: Parkland open understorey	4: Very high	S.glomulifera/E.paniculata/E.resinifera	362m	South East
S_FoW05	S_FoW05: Riverflat Paperbark Swamp Forest	Swamp Sclerophyll Forest on Coastal Floodplains		30: Melaleuca dominant	25: Edge disturbances only	2: Moderate	M.stypheliodes/M.linariifolia	459m	South East
S_FoW08	S_FoW08: Estuarine Swamp Oak Forest	Swamp Oak Floodplain Forest		31: Saltmarsh	99: No visible disturbance	5: No visible disturbance	C.glauca	519m	South East
S_SW02	S_SW02: Estuarine Saltmarsh	Coastal Saltmarsh	Subtropical and Temperate Coastal Saltmarsh (possible)	00: Not assessed	00: Not assessed	0: Not assessed	S.repens/S.quinqueflora/S.virginicusJ.krausii	561m	South East
Weed_Ex	Weed_Ex: Weeds and Exotics			00: Not assessed	00: Not assessed	0: Not assessed	Exotic Species >90%cover	721m	East
Cleared	Cleared			00: Not assessed	00: Not assessed	0: Not assessed	Cleared	839m	South West
Art_WL	Art_WL: Artificial Wetland			00: Not assessed	00: Not assessed	0: Not assessed	Artificial wetland	902m	South West
S_WSF08	S_WSF08: Sydney Foreshores Shale Forest			15: Grassy natives and exotics	20: Previously cleared 1943	3: High	E.tereticornis/A.costataE.botryoides/E.punctata	913m	North
Plant_n	Plant_n: Plantation (native and/or exotic)			00: Not assessed	00: Not assessed	0: Not assessed	Native or Exotic Plantations	944m	South West

Native Vegetation of the Sydney Metropolitan Area : NSW Office of Environment and Heritage
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Ramsar Wetlands

What Ramsar Wetland areas exist within the dataset buffer?

Map Id	Ramsar Name	Wetland Name	Designation Date	Source	Distance	Direction
N/A	No records in buffer					

Ramsar Wetlands Data Source: © Commonwealth of Australia - Department of Environment

Ecological Constraints - Groundwater Dependent Ecosystems Atlas

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Ecological Constraints

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

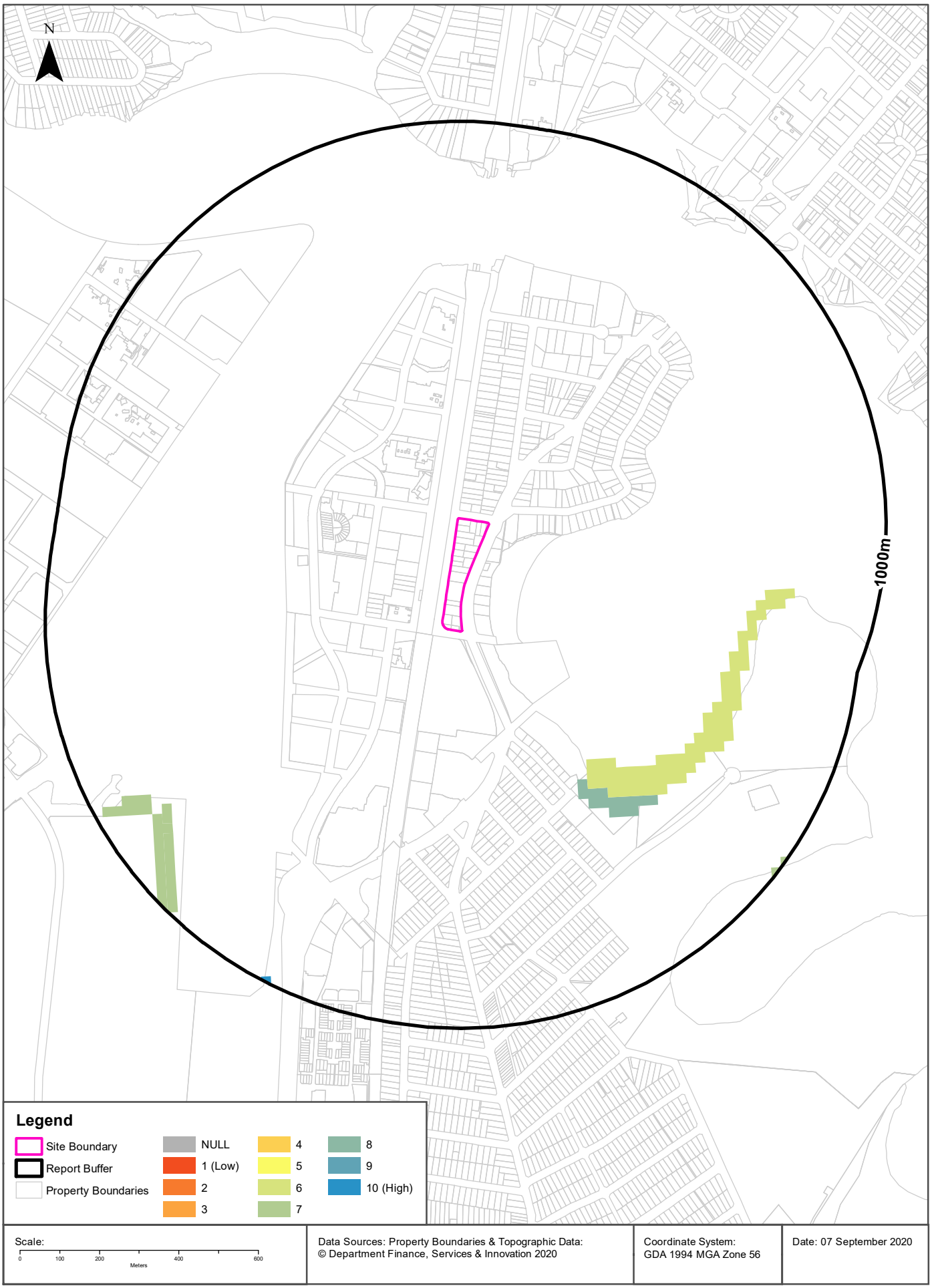
Groundwater Dependent Ecosystems Atlas

Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
Terrestrial	High potential GDE - from national assessment	Undulating to low hilly country, mainly on shale.	Vegetation		448m
Terrestrial	Moderate potential GDE - from national assessment	Undulating to low hilly country, mainly on shale.	Vegetation	Consolidated sedimentary	980m

Groundwater Dependent Ecosystems Atlas Data Source: The Bureau of Meteorology
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Ecological Constraints - Inflow Dependent Ecosystems Likelihood

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138



Ecological Constraints

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
Terrestrial	6	Undulating to low hilly country, mainly on shale.	Vegetation		448m
Terrestrial	8	Undulating to low hilly country, mainly on shale.	Vegetation	Consolidated sedimentary	473m
Terrestrial	7	Undulating to low hilly country, mainly on shale.	Vegetation		817m
Terrestrial	10	Undulating to low hilly country, mainly on shale.	Vegetation	Consolidated sedimentary	980m

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology
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Ecological Constraints

Concord Road, Blaxland Road and Llewellyn Street, Rhodes, NSW 2138

NSW BioNet Atlas

Species on the NSW BioNet Atlas that have a NSW or federal conservation status, a NSW sensitivity status, or are listed under a migratory species agreement, and are within 10km of the site?

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Amphibia	Heleioporus australiacus	Giant Burrowing Frog	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Amphibia	Litoria aurea	Green and Golden Bell Frog	Endangered	Not Sensitive	Vulnerable	
Animalia	Amphibia	Pseudophryne australis	Red-crowned Toadlet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Actitis hypoleucos	Common Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Anseranas semipalmata	Magpie Goose	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Not Sensitive	Critically Endangered	
Animalia	Aves	Apus pacificus	Fork-tailed Swift	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Ardenna carneipes	Flesh-footed Shearwater	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Ardenna grisea	Sooty Shearwater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Ardenna pacifica	Wedge-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Ardenna tenuirostris	Short-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Arenaria interpres	Ruddy Turnstone	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Artamus cyanopterus cyanopterus	Dusky Woodswallow	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Botaurus poiciloptilus	Australasian Bittern	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Burhinus grallarius	Bush Stone-curlew	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Calidris acuminata	Sharp-tailed Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris canutus	Red Knot	Not Listed	Not Sensitive	Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris ferruginea	Curlew Sandpiper	Endangered	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris melanotos	Pectoral Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Calidris ruficollis	Red-necked Stint	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris tenuirostris	Great Knot	Vulnerable	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Endangered Population, Vulnerable	Category 3	Not Listed	
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Calyptorhynchus banksii samueli	Red-tailed Black-Cockatoo (inland subspecies)	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Calyptorhynchus lathami	Glossy Black-Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Carterornis leucotis	White-eared Monarch	Vulnerable	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Certhionyx variegatus	Pied Honeyeater	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Charadrius leschenaultii	Greater Sand-plover	Vulnerable	Not Sensitive	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Charadrius veredus	Oriental Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Chlidonias leucopterus	White-winged Black Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Circus assimilis	Spotted Harrier	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Cuculus optatus	Oriental Cuckoo	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Ephippiorhynchus asiaticus	Black-necked Stork	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Epthianura albifrons	White-fronted Chat	Endangered Population, Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Falco hypoleucos	Grey Falcon	Endangered	Category 2	Not Listed	
Animalia	Aves	Falco subniger	Black Falcon	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Gallinago hardwickii	Latham's Snipe	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Gelochelidon nilotica	Gull-billed Tern	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Glossopsitta pusilla	Little Lorikeet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Haematopus longirostris	Pied Oystercatcher	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Haliaeetus leucogaster	White-bellied Sea-Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hieraaetus morphnoides	Little Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hirundapus caudacutus	White-throated Needletail	Not Listed	Not Sensitive	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Hydroprogne caspia	Caspian Tern	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Ixobrychus flavicollis	Black Bittern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Lathamus discolor	Swift Parrot	Endangered	Category 3	Critically Endangered	
Animalia	Aves	Limicola falcinellus	Broad-billed Sandpiper	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Limosa lapponica	Bar-tailed Godwit	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Limosa limosa	Black-tailed Godwit	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Lophochroa leadbeateri	Major Mitchell's Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Lophoictinia isura	Square-tailed Kite	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Manorina melanotis	Black-eared Miner	Critically Endangered	Not Sensitive	Endangered	
Animalia	Aves	Motacilla flava	Yellow Wagtail	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Neophema pulchella	Turquoise Parrot	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Nettapus coromandelianus	Cotton Pygmy-Goose	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Ninox connivens	Barking Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Ninox strenua	Powerful Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Numenius madagascariensis	Eastern Curlew	Not Listed	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Numenius minutus	Little Curlew	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Numenius phaeopus	Whimbrel	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Onychoprion fuscata	Sooty Tern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pandion cristatus	Eastern Osprey	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Petroica boodang	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Petroica phoenicea	Flame Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Philomachus pugnax	Ruff	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Pluvialis fulva	Pacific Golden Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Pluvialis squatarola	Grey Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Polytelis anthopeplus monarchoides	Regent Parrot (eastern subspecies)	Endangered	Category 3	Vulnerable	
Animalia	Aves	Polytelis swainsonii	Superb Parrot	Vulnerable	Category 3	Vulnerable	
Animalia	Aves	Pterodroma leucoptera leucoptera	Gould's Petrel	Vulnerable	Not Sensitive	Endangered	
Animalia	Aves	Ptilinopus regina	Rose-crowned Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Ptilinopus superbus	Superb Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Rostratula australis	Australian Painted Snipe	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Sterna hirundo	Common Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Sternula albifrons	Little Tern	Endangered	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Stictonetta naevosa	Freckled Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Thalassarche melanophris	Black-browed Albatross	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Aves	Thalasseus bergii	Crested Tern	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Thinornis rubricollis	Hooded Plover	Critically Endangered	Not Sensitive	Vulnerable	
Animalia	Aves	Tringa brevipes	Grey-tailed Tattler	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tringa glareola	Wood Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tringa nebularia	Common Greenshank	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tringa stagnatilis	Marsh Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tyto longimembris	Eastern Grass Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Tyto novaehollandiae	Masked Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Tyto tenebricosa	Sooty Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Xenus cinereus	Terek Sandpiper	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Gastropoda	Meridolum corneovirens	Cumberland Plain Land Snail	Endangered	Not Sensitive	Not Listed	
Animalia	Gastropoda	Pommerhelix duralensis	Dural Land Snail	Endangered	Not Sensitive	Endangered	
Animalia	Insecta	Petalura gigantea	Giant Dragonfly	Endangered	Not Sensitive	Not Listed	
Animalia	Mammalia	Arctocephalus forsteri	New Zealand Fur-seal	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Arctocephalus pusillus doriferus	Australian Fur-seal	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Cercartetus nanus	Eastern Pygmy-possum	Vulnerable	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Mammalia	Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	Dasyurus viverrinus	Eastern Quoll	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Falsistrellus tasmaniensis	Eastern False Pipistrelle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Macrotis lagotis	Bilby	Presumed Extinct	Not Sensitive	Vulnerable	
Animalia	Mammalia	Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus australis	Little Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus orianae oceanensis	Large Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Myotis macropus	Southern Myotis	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Perameles bougainville fasciata	Western Barred Bandicoot (mainland)	Presumed Extinct	Not Sensitive	Extinct	
Animalia	Mammalia	Perameles nasuta	Long-nosed Bandicoot	Endangered Population	Not Sensitive	Not Listed	
Animalia	Mammalia	Petauroides volans	Greater Glider	Not Listed	Not Sensitive	Vulnerable	
Animalia	Mammalia	Petaurus australis	Yellow-bellied Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Petaurus norfolcensis	Squirrel Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Phascogale tapoatafa	Brush-tailed Phascogale	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Phascolarctos cinereus	Koala	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Pseudomys gracilicaudatus	Eastern Chestnut Mouse	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Scoteanax rueppellii	Greater Broad-nosed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Antaresia stimsoni	Stimson's Python	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Aspidites ramsayi	Woma	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Caretta caretta	Loggerhead Turtle	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Chelonia mydas	Green Turtle	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Reptilia	Diplodactylus platyurus	Eastern Fat-tailed Gecko	Endangered	Not Sensitive	Not Listed	
Animalia	Reptilia	Lucasium stenodactylum	Crowned Gecko	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Pseudonaja modesta	Ringed Brown Snake	Endangered	Not Sensitive	Not Listed	
Animalia	Reptilia	Tiliqua occipitalis	Western Blue-tongued Lizard	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Uvidicolus sphyrurus	Border Thick-tailed Gecko	Vulnerable	Not Sensitive	Vulnerable	
Fungi	Flora	Camarophyllopsis kearneyi		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe anomala var. ianthinomarginata		Vulnerable	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe aurantipes		Vulnerable	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe austropratensis		Endangered	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Fungi	Flora	Hygrocybe collucera		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe griseoramosa		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe lanecovensis		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe reesiae		Vulnerable	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe rubronivea		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Acacia bynoeana	Bynoe's Wattle	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Acacia clunies-rossiae	Kanangra Wattle	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Acacia pubescens	Downy Wattle	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Acacia terminalis subsp. terminalis	Sunshine Wattle	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Callistemon linearifolius	Netted Bottle Brush	Vulnerable	Category 3	Not Listed	
Plantae	Flora	Darwinia biflora		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Darwinia peduncularis		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Deyeuxia appressa		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Dillwynia tenuifolia		Endangered Population, Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Dillwynia tenuifolia		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Epacris purpurascens var. purpurascens		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus camfieldii	Camfield's Stringybark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus leucoxylon subsp. pruinosa	Yellow Gum	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus nicholii	Narrow-leaved Black Peppermint	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus scoparia	Wallangarra White Gum	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Genoplesium baueri	Bauer's Midge Orchid	Endangered	Category 2	Endangered	
Plantae	Flora	Grammitis stenophylla	Narrow-leaf Finger Fern	Endangered	Category 3	Not Listed	
Plantae	Flora	Grevillea beadleana	Beadle's Grevillea	Endangered	Category 3	Endangered	
Plantae	Flora	Grevillea hilliana	White Yiel Yiel	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Hibbertia spanantha	Julian's Hibbertia	Critically Endangered	Category 2	Critically Endangered	
Plantae	Flora	Isotoma fluviatilis subsp. fluviatilis		Not Listed	Not Sensitive	Extinct	
Plantae	Flora	Leptospermum deanei		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Macadamia integrifolia	Macadamia Nut	Not Listed	Not Sensitive	Vulnerable	
Plantae	Flora	Macadamia tetraphylla	Rough-shelled Bush Nut	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Melaleuca deanei	Deane's Paperbark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Persoonia hirsuta	Hairy Geebung	Endangered	Category 3	Endangered	
Plantae	Flora	Persoonia nutans	Nodding Geebung	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Pimelea curviflora var. curviflora		Vulnerable	Not Sensitive	Vulnerable	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Pimelea spicata	Spiked Rice-flower	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Pomaderris prunifolia	Plum-leaf Pomaderris	Endangered Population	Not Sensitive	Not Listed	
Plantae	Flora	Prostanthera marifolia	Seaforth Mintbush	Critically Endangered	Category 3	Critically Endangered	
Plantae	Flora	Pultenaea pedunculata	Matted Bush-pea	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Rhodamnia rubescens	Scrub Turpentine	Critically Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Syzygium paniculatum	Magenta Lilly Pilly	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Tetratheca glandulosa		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Tetratheca juncea	Black-eyed Susan	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Triplarina imbricata	Creek Triplarina	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Wahlenbergia multicaulis	Tadgell's Bluebell	Endangered Population	Not Sensitive	Not Listed	
Plantae	Flora	Wilsonia backhousei	Narrow-leafed Wilsonia	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Zannichellia palustris		Endangered	Not Sensitive	Not Listed	

Data does not include NSW category 1 sensitive species.

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LC Code	Location Confidence
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General area or suburb match	Georeferenced with the confidence of the general/approximate area
Road match	Georeferenced to the road or rail
Road intersection	Georeferenced to the road intersection
Feature is a buffered point	Feature is a buffered point
Land adjacent to geocoded site	Land adjacent to Georeferenced Site
Network of features	Georeferenced to a network of features

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