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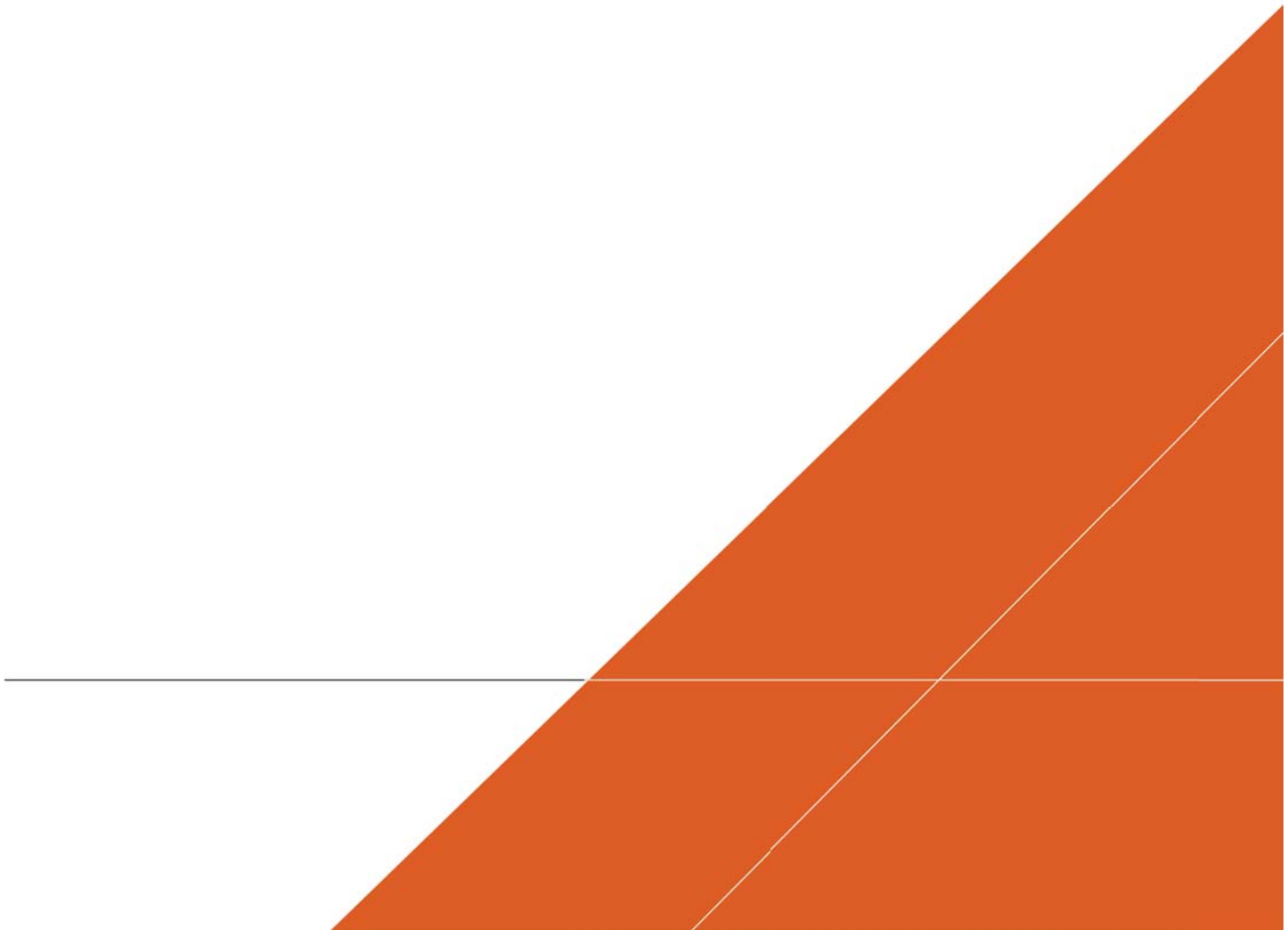
FURTHER SUPPLEMENTARY SOIL CONTAMINATION ASSESSMENT

126 Kent Road, Marsfield NSW 2122

11 NOVEMBER 2019



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ST HILLIERS (NSW) PTY LTD FURTHER SUPPLEMENTARY SOIL CONTAMINATION ASSESSMENT

10035770

126 Kent Road, Marsfield NSW 2122

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2	22.10.2019	Revised Draft to include Additional Test Pitting to WA Guidelines	NP	LM
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CONTENTS

EXECUTIVE SUMMARY 3
Background 3
Objectives 3
Results 4
Conclusions and Recommendations 5

1 INTRODUCTION & BACKGROUND 7
1.1 Objectives 7
1.2 Site Identification 8
1.3 Scope of Work 8

2 LIMITATIONS 11

3 SITE HISTORY 12
3.1 Preliminary Site Investigation (Arcadis 10019954RP01 27 April 2018) 12
3.2 Due Diligence Soil Contamination Assessment (10023978LR01, 30 July 2018) 12

4 ENVIRONMENTAL SETTING 13
4.1 Current Site Use 13
4.2 Topography 13
4.3 Geology 13
4.4 Hydrogeology 13
4.5 Hydrology 14
4.6 Acid Sulfate Soil Risk 14
4.7 Areas of Environmental Concern 14

5 SAMPLING AND ANALYSIS PLAN AND INVESTIGATION METHODOLOGY 16
5.1 Data Quality Objectives (DQO) 16
5.2 Schedule of Works 18
5.3 Sampling and Analysis Plan 19
5.4 Sampling Methodologies 19

6 SOIL ASSESSMENT CRITERIA 22
6.1 Asbestos Assessment 24

7 RESULTS 25
7.1 Field Observations 25
7.2 Test Pit and Soil Sampling Field Observations 25
7.3 Analytical Results 32

8 DATA QUALITY ASSESSMENT 37
8.1 Field Quality Assurance 37
8.2 Laboratory QA/QC 38
8.3 Evaluation of the QA/QC Information Compared to the DQOs 38

9 CONCLUSIONS 40
9.1 Summary of Investigation Findings 40
9.2 Recommendations 41
9.3 Extent of Uncertainties in the Results 41

10 REFERENCES 42
APPENDIX A FIGURES 43
APPENDIX B LOTSEARCH REPORT 44
APPENDIX C SURESEARCH REPORT 45
APPENDIX D FIELD NOTES AND LOGS 46
APPENDIX E RESULTS TABLES 47
APPENDIX F LABORATORY RESULTS 48
APPENDIX G PREVIOUS REPORT 49

APPENDICES

APPENDIX A FIGURES
APPENDIX B LOTSEARCH REPORT
APPENDIX C SURESEARCH REPORT
APPENDIX D FIELD NOTES AND LOGS
APPENDIX E RESULTS TABLES
APPENDIX F LABORATORY RESULTS
APPENDIX G PREVIOUS REPORT

EXECUTIVE SUMMARY

Arcadis Australia Pacific Pty Ltd (Arcadis) was commissioned by St Hilliers (NSW) Pty Ltd (St Hilliers) to complete further Supplementary Soil Contamination Assessment at 126 Kent Road, Marsfield NSW 2122 (herein known as 'the site').

Background

The Site is occupied by Kent Road Public School, and Schools Infrastructure currently have a State Significant Development Approval (SSDA) to undertake development and upgrade works to the school, subject to a number of planning conditions (Conditions B8, B9, B10, D26, D27 and D28 relate specifically to Site Contamination).

Following review of the Preliminary Site Investigation (Arcadis, April 2018), and the Due Diligence Soil Contamination Assessment and Indicative Waste Classification for the Proposed Development (Arcadis, July 2018), together with the preliminary SSDA conditions issued to Schools Infrastructure, Arcadis recommended that a supplementary soil contamination assessment was required.

The site has no history of industrial or commercial use and accordingly does not have a high potential risk for extensive contamination and was used primarily for residential or educational purposes since 1960s. Prior to the 1960s, the site was used for agricultural purposes (potentially market gardens and orchards).

Based on the development site area of 0.55 ha, a total of thirteen (13) soil sample locations was recommended to meet the required minimum number of sampling points to characterise a site in accordance with the relevant industry NSW EPA (1995) Sampling Design Guidelines. Eight (8) sampling locations were completed by hand auger during the Due Diligence Assessment to a depth of 0.3 m, and Arcadis completed a further seven (7) sampling locations to the natural soil profile providing a total of fifteen (15) investigation locations.

Following the observation and positive identification of asbestos containing material (ACM) at three (3) locations (TP-1, TP-3 and TP-4) on site, the sampling density required to effectively characterise the site needed to be reconsidered. In these circumstances, the NSW guidelines default to the Western Australia (WA) 2009 guidelines which require double the density of sampling locations to characterise a site with potential asbestos containing material (PACM) impacts. Therefore, a minimum of twenty-eight (28) test locations are required to characterise and better assess the ACM impacts at this site.

During the further works kick-off meeting on 19 September 2019, the EPA Accredited Auditor advised that the eight hand augered locations to 0.3 m below ground level are not acceptable for use as part of the dataset, but test pitting undertaken on 10 August 2019 as part of the Supplementary Assessment could be used as part of the data set. In order to meet the required density, an additional twenty-one (21) test pits were required across the site.

Objectives

The objective of the two supplementary assessments was to:

- close out the data gaps identified during the due diligence soil assessment (2018).
- provide an increased dataset in accordance with WA guidelines to better characterise ACM impacts in fill material.
- provide a clearer indication of the likely volume of material impacted by ACM.
- characterise the nature and depth of the fill in the proposed development area.
- close out the potential for herbicides and fluorine-based pesticides from former market garden and orchard use.
- determine whether the soils meet the required land use criteria for schools (Low Density Residential for primary schools) in accordance with NEPM and the Sampling Design Guidelines.

- inform the most cost effective and timely solution for remediation/management of asbestos and appropriate classification and disposal during construction.
- prepare a report in general accordance with the NEPC (2013) NEPM and NSW OEH (2011) Guidelines for Consultants Reporting on Contaminated Sites, detailing the findings and recommendations to make the site suitable for proposed development.

Subsequently, these works will address condition B8 (a) of the Development Application and inform on requirements to address conditions B8 (b).

Results

Uncontrolled fill material ranged between approximately 0.1 and 0.9 metres depth below ground level (m bgl) across the site.

With the exception of the presence of bonded asbestos at four of the test pit locations, the reported laboratory results indicate that gross contamination was not present at the site. However, there were some minor exceedances of land use criteria and CT1 General Solid Waste (GSW) criteria from the initial sampling in 2018, as outlined below.

Human Health

Total Recoverable Hydrocarbons (TRH C_{10}-C_{16} less naphthalene) was detected in SB03 (410 mg/kg) and SB07 (270 mg/kg) in excess of Health Screening Level (HSL) A/B of 230 mg/kg (0-1 m) during the 2018 sampling. These exceedances of TRH were not able to be repeated in the 2019 sampling, therefore, the use of the 95% UCL statistical calculation was applied with the resultant concentration being 131.4 mg/kg, below the HSL criteria.

Fragments of PACM were observed to be scattered across some of the surface of the site during the excavation of test pits between 30 September and 2 October 2019. Ten fragments were collected and given their similarity in appearance, three representative fragments were analysed for asbestos. Laboratory analysis confirmed the material to be ACM and therefore the NEPM criteria of no visible asbestos in surface soil has been exceeded. A licensed asbestos assessor should perform a full visual surface clearance and rake the top 100mm where surface fragments were observed.

Ecological Health

TRH >C_{10}-C_{16} less naphthalene at SB03 (410 mg/kg), SB07 (270 mg/kg) and SB08 (150 mg/kg) exceeds the Ecological Screening Levels (ESL) of 120 mg/kg. These exceedances of TRH were not repeated in the 2019 sampling and therefore the use of the 95% UCL statistical calculation was applied. The 95% UCL of 131.4 mg/kg is still marginally in exceedance of the ESL, however the vegetation and trees on the site appear healthy and the site is planned to be developed into two additional classrooms and an office and the shallow soils in question are likely to be removed from site as part of the development.

TRH C_{16}-C_{34} at SB03 (3,000 mg/kg) exceeds the ESL of 1,300 mg/kg. These exceedances of TRH were not repeated in the 2019 sampling and therefore the use of the 95% UCL statistical calculation was applied. The 95% UCL was calculated to be 694.5 mg/kg for C_{16}-C_{34} which is below the land use criteria for Urban Residential soils.

Aesthetic

In addition to where bonded ACM has been reported, anthropogenic materials were observed within the fill material in approximately one third of the locations, comprising of tiles, brick, glass and general poor quality fill building rubbish (note that road base (not including other anthropogenic materials) were found in another one third of the locations). The garden beds also appeared to contain poor quality fill with PACM visually observed in and around many of the raised beds.

Waste

Lead and nickel were reported in exceedance of the General Solid Waste criteria SCC1, however after 95% UCL and running the toxicity characteristic leaching procedure (TCLP) on the samples, the results were below the acceptable criteria for CT1 General Solid Waste. There are licensed recycling facilities in Sydney which can accept CT1 GSW. Note that additional conversations with the proposed

recycler will be required in order to understand if 95% UCL approach is acceptable under their license).

The only contaminant of concern is therefore bonded asbestos at the site, and ACM impacted material would be classified as Special Waste (Asbestos) in a General Solid Waste matrix.

Conclusions and Recommendations

Based on the findings of the assessments and the objectives of the project, the following conclusions are made:

- Gross contamination in soils at the site was not identified during both investigations, with the exception of bonded ACM observed on the surface and top 100 mm at two test pit locations (TP3 and TP12), scattered surface locations near the garden beds and also other locations observed Arcadis, and within the uncontrolled fill at three (3) test pit locations (TP1, TP4, and GB2).
- The presence of bonded ACM at the surface and in the top 10 cm of soil profile (TP3 and TP12) exceeds the land use criteria of 'no visible asbestos' within the top 10 cm and therefore needs to be removed and validated. Arcadis believe that that asbestos fragment reported at TP12 is likely to have been worked into the surface soil as a result of vehicle movements on site as the natural was observed at 0.1 m bgl and the fill material was primarily road base gravels with no suspicious anthropogenic materials.
- ACM was identified and confirmed by laboratory analysis within the fill profile below 10 cm at three (3) of the thirty two (32) locations(TP1, TP4, and GB2) , and exceeded the land use criteria of 0.01% (Residential with access to soils) with the results showing TP1 (0.054%) and TP4 (0.019%). ACM concentration in GB2 is 0.008 w/w%.
- Arcadis understands that approximately 2,500 m^3 of materials require offsite disposal to reach required building levels. Based on the test pit descriptions, Arcadis estimated the total volume of fill across the site to be approximately 2,275 m^3 +/- 10% (7,600 m^2 x 0.30 m) not allowing for an ex-situ bulking factor.
- Arcadis have assessed the available data in detail and note that:
  - the asbestos fragments reported in the fill material are primarily located in the west of the site and localised to the raised garden beds. Arcadis have taken a conservative buffer around the asbestos impacted test pits and consider these materials to be preliminary-classified as **Special Waste** with a General Solid Waste (GSW) matrix. This area is outlined in red in ***Appendix A, Figure 5***, and the estimated volume requiring disposal as Special Waste with GSW is 1,050 m^3.
  - anthropogenic materials (with no apparent ACM) were observed in the fill material in the southern portion of the site. This area is outlined in blue in ***Appendix A, Figure 5***. The chemical analysis for the fill material from test pits in this section returned concentrations below the **GSW CT1 (Recyclable)** criteria for MET Recycling in Silverwater, EPL 20948. Arcadis suggest a preliminary waste classification for this material as **GSW-R** assuming no ACM and minimal building rubble (to be guided by an experienced contaminated land consultant or hygienist during the excavation work).
  - the remaining fill material observed on site, to the centre, east and north of the site can be preliminary classified as a combination of **GSW-R** and virgin excavated natural material (**VENM**), with the exception of the total recoverable hydrocarbons (TRH) hotspot outlined in green in ***Appendix A, Figure 5*** which would need to be disposed of as **GSW** (or included with the general solid waste with asbestos fragments)**.** This 'hotspot' represents SB03.
  - Arcadis estimate the volume of GSW-R and VENM to be approximately 1,400 m^3 and the "hotspot" volume to be approximately 50 m^3.

Based on the findings of the assessments and the objectives of the project, the following recommendations are made:

- An Asbestos Management Plan needs to be prepared for the site.
- The ACM impacted fill material could be capped on site or disposed offsite as part of the required bulk excavation works. A Remediation Action Plan will need to be prepared if onsite management of the asbestos contaminated fill is a viable option. An Environmental Management Plan (EMP), which will go on title, will have to be prepared. If disposal of asbestos contaminated materials will be the preferred option, the following items should then be included in the AMP negating the requirement for a RAP:
  - guide the removal of ACM impacted material (Emu bob) from the top 10 cm across the site and document the subsequent clearance certificate.
  - appropriately manage the excavation of ACM impacted fill materials in the western portion of the site (outlined in red on ***Appendix A, Figure 5***) which will be excavated and appropriately disposed during construction of the new buildings. By removing this material, all testpits where ACM has been observed above HIL-A will be removed negating the need for a separate Remediation Action Plan. A suitably qualified consultant needs to be engaged to confirm (by visual assessment) that all fill material has been successfully removed from within this area.
  - appropriately manage the excavation of the fill material containing anthropogenic material (outlined in blue on ***Appendix A, Figure 5)***, to ensure that a suitably qualified consultant is present during the works to observe the material being stockpiled and provide expert opinion, and possibly additional sampling to confirm the preliminary classification of the material. If ACM will be observed within this material, the waste classification should be re-classified to Special Waste – GSW.
  - Air monitoring is advised during the removal of all fill material as a conservative measure, and to ensure that if further ACM is identified, the appropriate management and monitoring controls are in place.
  - After excavation works, a short letter report will have to be prepared and provided to the Auditor. The letter report should include observations (and photographic evidence) made by the suitably qualified consultant. Waste disposal dockets should also be included. A clearance certificates should be provided by a licenced asbestos hygienist after all excavation works are completed.
- An unexpected find protocol (UFP) should be included in the Construction Environmental Management Plan (CEMP) to address any additional contamination not identified during assessment (the UFP and AMP could form an Appendix to the CEMP).

1 INTRODUCTION & BACKGROUND

Arcadis Australia Pacific Pty Ltd (Arcadis) was commissioned by St Hilliers (NSW) Pty Ltd (St Hilliers) to complete further Supplementary Soil Contamination Assessment (SSCA) at 126 Kent Road, Marsfield NSW 2122 (herein known as 'the site') following the observation and positive identification of ACM, to further characterise the location and volume of ACM impacted material at the site and subsequent site suitability against NEPM Land Use criteria (HIL A Low Density) applicable to primary schools based on site setting and accessibility to soils. The location of the subject site is shown on **Figure 1, Appendix A.**

The Site is currently occupied by Kent Road Public School, and Schools Infrastructure have a State Significant Development Approval (SSDA) to undertake development and upgrade works to the school, subject to a number of planning conditions (Conditions B8, B9, B10, D26, D27 and D28 relate specifically to Site Contamination). Arcadis understands that building alterations and additions are currently proposed to be made on the area of interest on the site as part of ongoing school upgrades. The proposed development / upgrade works footprint is approximately 5,500 m^2 (0.55 ha).

Based on the development site area, a total of thirteen (13) soil sample locations was recommended to meet the required minimum number of sampling points to characterise a site in accordance with the relevant industry NSW EPA (1995) Sampling Design Guidelines. Eight (8) sampling locations were completed by hand auger during the Due Diligence Assessment to a depth of 0.3 m, and Arcadis completed a further eight (8) sampling locations to the natural soil profile, providing a total of sixteen (16) investigation locations.

Following the observation and positive identification of asbestos containing material (ACM) at three (3) locations (TP-1, TP-3 and TP-4) on site, the sampling density required to effectively characterise the site needed to be reconsidered. In these circumstances, the NSW guidelines default to the Western Australia (WA) 2009 guidelines which require double the density of sampling locations to characterise a site with potential asbestos containing material (PACM) impacts. Therefore, a minimum of twenty-eight (28) test locations are required to characterise and better assess the ACM impacts at this site.

During the further works kick-off meeting on 19 September 2019, the EPA Accredited Auditor advised that the eight hand augered locations to 0.3 m below ground level are not acceptable for use as part of the dataset, but the test pitting undertaken on 10 August 2019 as part of the Supplementary Assessment could be used as part of the data set. In order to meet the required density, an additional twenty-one (21) test pits were required across the site.

1.1 Objectives

The objective of the two supplementary assessments was to:

- close out the data gaps identified during the due diligence soil assessment (2018).
- provide an increased dataset in accordance with WA guidelines to better characterise ACM impacts in fill material.
- provide a clearer indication of the likely volume of material impacted by ACM.
- characterise the nature and depth of the fill in the proposed development area.
- close out the potential for herbicides and fluorine-based pesticides from former market garden and orchard use.
- determine whether the soils meet the required land use criteria for schools (Low Density Residential for primary schools) in accordance with NEPM and the Sampling Design Guidelines.
- inform the most cost effective and timely solution for remediation/management of asbestos and appropriate classification and disposal during construction.
- prepare a report in general accordance with the NEPC (2013) NEPM and NSW OEH (2011) Guidelines for Consultants Reporting on Contaminated Sites, detailing the findings and recommendations to make the site suitable for proposed development.

Subsequently, these works will address condition B8 (a) of the Development Application and inform on requirements to address conditions B8 (b).

1.2 Site Identification

The Site is located at 126 Kent Road, Marsfield NSW 2122, and the Site Location Investigation Area is shown in **Figure 1, Appendix A**. The site details are summarised in Table 1 below.

Table 1 - Site Identification

Site Characteristic	Detail
Street Address	126 Kent Road, Marsfield NSW 2122
Lot and DP Number	Lot 1 – DP1250772 (consolidated from Lot 1 – DP 8612, Lot 1, 2, 3, 4 & 5 – DP 12030, Lot 1 – DP 34283 and Lot 1 – DP 782254)
Local Government Area	Ryde City Council
Land Zoning	'SP2 – Infrastructure – Educational Establishment', 'SP2 – Infrastructure – Classified Road' and 'R2 – Low Density Residential' under the Ryde Local Environmental Plan 2014
Current Site Use	Ryde Public School (Primary School)
Site Coordinates (UTM)	Latitude: -33.787917 Longitude: 151.109105
Site Area	Approximately 5,500 m^2. Arcadis notes that during the volume calculations it appeared that the site are is approximately 7,600 m^2

1.3 Scope of Work

The following scope of work was undertaken by Arcadis on 10 August 2019:

- Completion of a Dial Before You Dig (DBYD) search and engagement of a service locator (SureSearch Pty Ltd) to clear the proposed sampling locations for underground services, prior to intrusive works, including the use of ground penetrating radar (GPR) to aid in the identification of underground services.
- Engagement of Ken Coles Excavations Pty Ltd. (Ken Coles) to complete a total of eight (8) soil test pits across the 5,500 m^2 site using a three (3) ton excavator to a maximum depth of 2.0 m bgl or 0.5 m into natural material (whichever occurs first) to supplement the eight (8) borehole investigation locations from the Due Diligence Soil Contamination Assessment.
- Each test pit was logged in general accordance with the Unified Soil Classification System (USCS). Soil samples from each test pit were collected at regular intervals, changes in geology or at zones of gross contamination. Soil samples were screened using a Photo-ionisation Detector (PID) to detect the potential presence of volatile organic compounds (VOCs).
- At least one soil sample of the fill/near surface material (0.0 – 0.2 m bgl) or one sample from the fill material and underlying natural material was submitted to the NATA accredited laboratory, Analytical Laboratory Services Pty Ltd. (ALS) for selective analysis of the following Contaminants of Potential Concern (CoPC):
  - Total recoverable hydrocarbons (TRH).
  - Benzene, toluene, ethyl benzene, xylenes and naphthalene (BTEXN).

  - Polycyclic aromatic hydrocarbons (PAHs).
  - Eight Priority Heavy Metals (As-arsenic, Cd-cadmium, Cr (III+VI)-chromium, Cu-copper, Pb-lead, Hg-mercury, Ni-nickel and Zn-zinc);
  - Organochlorine/organophosphate pesticides (OCP/OPPs);
  - Polychlorinated Biphenyl (PCBs); and
  - Asbestos (WA NEPM 2013) – surface/fill soils only.
- Quality assurance / quality control (QA/QC) for soil sampling comprised:
  - Collection of two intra-laboratory duplicate (QA1 and QA2 10/08/2019). QA/QC samples underwent selective analysis of the above CoPC.
- One (1) 10 L soil sample was collected from each test pit location (where applicable) for assessment of Asbestos Containing Materials (ACM) in accordance with NEPC (2013) NEPM:
  - Sample screened manually on-site through a 7 mm sieve. Material retained on the sieve was spread out for inspection on a contrasting colour material (recommended for FA).
  - Identified ACM and FA weighed to calculate asbestos soil concentration for individual samples as per NEPC (2013) NEPM.

The following scope of work was undertaken by Arcadis between 30 September and 2 October 2019 to delineate the identified asbestos:

- Completion of a Dial Before You Dig (DBYD) search and engagement of a service locator (SmartScan Pty Ltd) to clear the proposed sampling locations for underground services, prior to intrusive works, including the use of ground penetrating radar (GPR) to aid in the identification of underground services.
- Engagement of Ken Coles Excavations Pty Ltd. (Ken Coles) to complete an additional 25 test pits across the 5,500 m^2 site using a three (3) ton excavator to a maximum depth of 2.0m bgl or 0.3m into natural material (whichever occurs first).
- Supervised the excavation of 25 test pits to 2 m maximum (or 0.3 m into natural soils - whichever occured first).
- Collection of one (1) 10 kg soil sample from each test pit location (where applicable) for assessment of potential Asbestos Containing Materials (PACM) in general accordance with NEPC (2013) NEPM and WA guidelines:
  - Samples were screened manually on-site through a 7 mm sieve. Material retained on the sieve was spread out for inspection on a contrasting colour material (recommended for FA).
  - Identified PACM and FA was weighed to calculate asbestos soil concentration for individual samples as per NEPC (2013) NEPM.
- One sample was collected from the fill / near surface material (0.1-1.0 mbgl) at each location, and one sample from the next fill layer and underlying natural material from every tenth location was submitted to the NATA accredited laboratory ALS for analysis of:
  - Asbestos ID (presence/absence).
  - Asbestos fines/friable asbestos (AF + FA not reported on site from previous sampling).
  - Bulk Density Assessment to inform volumes.
  - Fluoride (Total) to address potential for fluoride-based pesticides.
  - Phenoxy Acid Herbicides, H Triazine Herbicides and Triazine pesticides (Atrazine).

For the two supplementary assessments, the following was undertaken:

- Analytical results have been be compared against the relevant NEPC (2013) NEPM guidelines for HIL-A & HSL-A residential (access to soil) trigger levels.

- Statistical analysis has been performed on the data where exceedances were observed to determine the scale of impact of the exceedance in relation to relevant land use criteria.
- Soil results have been compared to the NSW EPA (2014) Waste Classification Guidelines to provide an indicative in-situ waste classification of site soils.
- Arcadis have provided a preliminary waste classification within this report based on the collected results. We note that additional sampling might be required based on the volume of material to be removed from site during construction (if any).
- Discussion of current contamination, resulting from historical site use and occupation of the premises.
- Prepared a single report for the two supplementary soil assessments in general accordance with the NEPC (2013) NEPM and NSW OEH (2011) Guidelines for Consultants Reporting on Contaminated Sites, detailing the findings and recommendations to make the site suitable for proposed development.

2 LIMITATIONS

The findings of this report are based on the scope of work outlined in **Section 1.3**. Arcadis performed its services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. No warranties expressed or implied are made.

Subject to the scope of work, Arcadis' assessment was limited strictly to identifying the environmental conditions associated with the subject property and does not include evaluation of any other issues. The absence of any identified hazardous or toxic materials should not be interpreted as a guarantee that such materials do not exist on the subject property.

Additionally, unless otherwise stated Arcadis did not conduct soil, air, wastewater or other matrix analyses including asbestos or perform contaminated sampling of any kind. Nor did Arcadis investigate any waste material from the property that may have been disposed of at the site or undertake an assessment or review of related site waste management practices.

All conclusions and recommendations regarding the property are the professional opinions of the Arcadis personnel involved with the project, subject to the qualifications made above.

While normal assessments of data reliability have been made, Arcadis assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements or sources outside of Arcadis, or developments resulting from situations outside the scope of this project.

Arcadis is not engaged in environmental assessment and reporting for the purpose of advertising sales promoting, or endorsement of any client interests, including raising investment capital, recommending investment decisions, or other publicity purposes. The client acknowledges that this report is for the exclusive use of the client.

3 SITE HISTORY

3.1 Preliminary Site Investigation (Arcadis 10019954RP01 27 April 2018)

Based on the scope of work conducted for the Preliminary Site Investigation (PSI) at Kent Road Public School within the proposed development area located at 126 Kent Road, Marsfield NSW 2122, the following conclusions and recommendations were provided:

- The site and immediate surrounding area have no history of industrial or commercial use and therefore does not have a high potential risk for extensive contamination.
- The site has historically been used for residential or educational purposes since 1960s.
- Prior to the 1960s, historical agricultural use of the site (potentially including market gardens and orchards) may have involved use of OCPs, OPPs and herbicides.
- Within the proposed development area of interest, potential indicators of contamination observed at the site included the presence of fill material and building materials containing asbestos and/or lead paint.

Based on the observations made during the site walkover and following analysis of site history, Arcadis is of the opinion that there is a low risk of gross contamination present onsite within the proposed development area.

Whilst there is a low risk of gross contamination, given that several potential sources of contamination have been identified (i.e. former market gardens, fill, asbestos materials and lead paint) and minor disturbance works are proposed during development, Arcadis recommended conducting a targeted assessment of the site soils to confirm that there is no risk to human health or the environmental within the proposed development.

3.2 Due Diligence Soil Contamination Assessment (10023978LR01, 30 July 2018)

Arcadis conducted a Due Diligence Soil Contamination Assessment (DDSCA) on the site in July 2018, where eight (8) soil bores were excavated by hand auger to 0.3 m bgl. This work was commissioned to provide an indicative soil quality report and in-situ indicative waste classification of soils within the proposed development footprint, and the likelihood of potential risk to human health (both workers and occupants/students) and ecological receptors. The locations were selected to provide general coverage of the site, although were targeted to include the indicative area for proposed buildings.

The targeted soil assessment included the collection of surface soils and natural soils to a maximum depth of 0.3 m below ground level. The reported TRH F2 (>C10-C16 minus naphthalene) Tier 1 NEPC (2013) NEPM HSL A&B exceedances in soil samples SB03-0.2 and SB07-0.2 indicated that there could be a potential risk to human health via the vapour intrusion pathway if buildings were located over these locations. No ACM was reported from the 2018 sampling.

Arcadis recommended that a supplementary soil contamination assessment was required to close out the data gaps identified during the Due Diligence Soil Assessment, and to characterise the nature and depth of the fill in the proposed development area to determine whether the soils meet the required land use criteria of Low Density Residential based on the use as a primary school in accordance with NEPM.

The Due Diligence Soil Contamination Assessment has been included in **Appendix G**.

4 ENVIRONMENTAL SETTING

4.1 Current Site Use

At the time of the supplementary soil contamination assessment, the site was under redevelopment with a number of the school buildings having been demolished and the debris removed from site. These buildings were still present during the PSI and Due Diligence work. The basketball court has been partially removed and all demountable classrooms have been relocated to the RMS paper road/easement north of the site. The surface appeared clean graded over the majority of the new building footprints and some new service trenches had been excavated. Most of the raised garden beds were still present in the north of the site along with the old trees. Vegetation did not appear to be stressed or dying.

Refer to **Figure 2, Appendix A** for a copy of the proposed building footprints.

4.2 Topography

The site slopes slightly south/south east toward Shrimptons Creek and has an elevation of approximately 60 m Australian Height Datum (AHD). Refer to the Elevation Contour Map on page 50 of the Lotsearch Report in **Appendix B** for additional information.

4.3 Geology

Arcadis PSI (2017) reported the site geology as follows:

The 1:100,000 Geological Survey of NSW map of Sydney indicates that the site is underlain by the following geological unit;

- Triassic aged Ashfield Shale from the Wianamatta Group described as black to dark grey shale and laminate.

The 1:100,000 Geological Survey of NSW map of Sydney indicates that directly south east of the site, the following geological unit underlays the site;

- Triassic aged medium to coarse grained quartz sandstone, very minor shale and laminate lenses.

The Soil Conservation Service of NSW Sydney 1:100,000 Soil Landscapes Series Sheet 9310 (2nd Edition) indicates that the landscape of the region of the site comprises of Glenorie Soil Landscapes.

Refer to page 57 to 61 of the Lotsearch report in **Appendix B** for the site geology.

4.4 Hydrogeology

A review of NSW Department of Primary Industries Office of Water records for groundwater bores within a 2000 m radius of the site indicated the presence of twenty-six (26) water monitoring bores. A list of registered groundwater bores within 1500 m from the site are provided in Table 2 below. For the full list of registered groundwater bores within the 2000 m dataset buffer, refer to page 53 of the Lotsearch report in **Appendix B**.

Table 2 - Registered Groundwater Bore Details within a 1500 m Buffer Zone

Bore ID	Use	SWL	Distance from Site (m)	Direction
GW108110	Recreation	7.30	849	North West
GW112640	Monitoring	-	867	North
GW112641	Monitoring	-	883	North

Bore ID	Use	SWL	Distance from Site (m)	Direction
GW112642	Monitoring	-	891	North
GW011296	Irrigation	-	934	North
GW016863	Irrigation	-	935	North
GW109694	Monitoring	-	1357	North East
GW109696	Monitoring	-	1367	North East
GW109695	Monitoring	-	1382	North East

Refer to page 55 of the Lotsearch report in ***Appendix B*** for the hydrogeology data associated with these bores.

Based on the above, the inferred groundwater flow direction is towards the west / southwest following the natural topography.

4.5 Hydrology

The nearest surface water receptor is an unnamed water course that branches off Shrimptons creek and is located approximately 73 m south east of the site.

4.6 Acid Sulfate Soil Risk

Review of the 'Standard Local Environmental Plan Acid Sulfate Soils' indicated that there is no known occurrence of acid sulfate soils (ASS) at the site.

Review of the 'Atlas of Australian Acid Sulfate Soils' indicated that the site was in a Class B category with a low probability of occurrence (6 – 70 % chance of occurrence). ASS is not known or expected to occur in these environments, and land management activities are not likely to be affected by acid sulfate materials.

4.7 Areas of Environmental Concern

Based on the information available for the site as summarised in the preliminary conceptual site model (CSM) prepared in the PSI. The CSM identifies complete and potential pathways between the known or potential source(s) and the receptor(s).

Potential sources of contamination at the site (specifically within the proposed development area) are the associated contaminants of potential concern (CoPC) listed in Table 3 below.

Table 3 - Potential Contaminant Sources

Source	Associated Chemicals	CoPC
Potential Onsite Sources		
Fill materials of unknown origin	Asbestos, ash, slag, foundry waste	Asbestos, PAH, heavy metals, TRH, OCPs/OPPs, PCBs
Building materials containing ACM	Asbestos	Asbestos

Source	Associated Chemicals	CoPC
Lead Paint	Lead	Lead
Market Garden/Orchards	Pesticides & Herbicides	Organochlorine Pesticides (OCPs) and Organophosphate Pesticides (OPPs). Phenoxy Acid Herbicides, H Triazine Herbicides and Triazine pesticides (Atrazine)

5 SAMPLING AND ANALYSIS PLAN AND INVESTIGATION METHODOLOGY

This section outlines the methodology adopted by Arcadis during the intrusive works for the supplementary assessment. Field methods listed within this report were conducted in accordance with relative guidelines endorsed by NSW EPA, and the National Environment Protection Council (NEPC) 'National Environment Protection (Assessment of Site Contamination) Measure 1999,' as amended in 2013 (ASC NEPM).

This section provides details on sampling and analysis, including the rationale for sampling locations, description of field equipment used, decontamination procedures, field and laboratory quality assurance and control, laboratory analytical methods and sample preservation.

5.1 Data Quality Objectives (DQO)

The DQO process is a systematic planning tool based on the scientific method for establishing criteria for data quality and for developing data collection designs. The DQO defines the experimental process required to test a hypothesis. The DQO process has been developed to ensure that efforts relating to data collection are cost effective, by eliminating unnecessary, duplicative or overly precise data whilst at the same time, ensuring the data collected is of sufficient quality and quantity to support defensible decision making.

It is recognised that the most efficient way to accomplish these goals is to establish criteria for defensible decision making before data collection begins and develop a data collection design based on these criteria.

The DQO process consists of seven steps, which are designed to clarify the study objectives, define the appropriate type of data and specify tolerable levels of potential decision errors. The seven-step DQO process adopted for this validation report can be summarised as:

- **Step 1:** State the Problem – concisely describe the problem to be studied. Review prior studies and existing information to gain a sufficient understanding to define the problem.
- **Step 2:** Identify the Decision – identify what questions the study will attempt to resolve, and what actions may result.
- **Step 3:** Identify the Inputs to the Decision – identify the information that needs to be obtained and the measurements that need to be taken to resolve the decision statement.
- **Step 4:** Define the Study Boundaries – specify the time periods and spatial area to which decisions will apply. Determine when and where data should be collected.
- **Step 5:** Develop a Decision Rule – define the statistical parameter of interest, specify the action level, and integrate the previous DQO outputs into a single statement that describes the logical basis for choosing among alternative actions.
- **Step 6:** Specify Tolerable Limits on Decision Errors – define the decision maker's tolerable decision error rates based on a consideration of the consequences of making an incorrect decision.
- **Step 7:** Optimise the Design – evaluate information from the previous steps and generate alternative data collection designs. Choose the most resource-effective design that meets all DQOs.

The DQOs are provided in Table 4 below, and were derived in accordance with Australian Standard (AS) *4482.1-2005 Guide to the sampling and investigation of potentially contaminated soil - Non-volatile and semi-volatile compounds.*

Table 4 - Data Quality Objectives

Step	Detail
State the Problem	To assess whether elevated concentrations of contaminants of potential concern (CoPC) exceeding proposed land use criteria are likely to be present in fill material, near surface soils, and natural soils. The assessment is targeted to locations accessible on 10 August 2019 and between 30 September and 2 October 2019.
Identify the Decision	If elevated concentrations of CoPC are identified at the site: • What is the extent of the impact? • Do any CoPC at the site occur at concentrations that pose or may pose an unacceptable liability or risk to the environment and/or human health to persons who will utilise the future development? • If so, what is the order of priority to minimise the risk and what additional measures are required to mitigate or manage the risk?
Identify the Inputs to the Decision	Key data required to resolve the project problem included the reported concentrations of CoPC in the soil within the areas assessed. Also, the structure and depth of the underlying site geology. The CoPC selected were determined through onsite observations and the conclusions of the PSI (April 2018) and Due Diligence Assessment (July 2018). The guidelines adopted by Arcadis to assess the soil results to achieve the objective of this report are as follows. Soil: • Health-based Investigation Levels (HILs) - Residential A (access to soil) trigger levels; • Health Screening Levels (HSLs) Residential A – (access to soil) trigger levels; Further explanation for the selection of these criteria is provided below.
Define the Study Boundaries	The works performed for this report were restricted to the physical site boundaries, as shown in **Appendix A, Figure 2**. The vertical extent of the study boundaries was limited to a maximum depth of the investigation (1.1m bgl). The temporal boundaries of the study were limited to the date(s) that the investigations were completed as listed in Section 5.2
Develop a Decision Rule	If concentrations of CoPC in soil are reported to be below the relevant adopted guidelines, then the soil will be deemed suitable for the proposed land use at the site

Step	Detail
	If, however, the concentration of one or more COPCs are greater than the guidelines, further investigation could be recommended to laterally and vertically delineate the extent of the impact and recommendations made for the management to make the site suitable for the proposed use.
Specify Tolerable Limits on Decision Errors	The acceptable limits for samples are as follows: % RPD for laboratory duplicates for TRH and BTEX analysis is less than 60%; and • Recovery of matrix spikes and surrogate spikes is as per the laboratory's Quality Assurance targets accepted under their National Association of Testing Authorities (NATA) accreditation. Precision is measured using the standard deviation 'SD' or Relative Percent Difference '%RPD'. Replicate data for field duplicates of organics is expected to be as follows: • RPD criteria of 50% or less, for concentrations > or = 10 times PQL; • RPD criteria of 75% or less, for concentrations between 5 and 10 times the EQL; and • RPD criteria of 100% or less, for concentrations < 5 times PQL. Replicate data for field duplicates for inorganics, including metals is expected to be as follows: • RPD criteria of 30% or less, for concentrations > or = 10 times PQL; • RPD criteria of 75% or less, for concentrations between 5 and 10 times the EQL; and • RPD criteria of 100% or less, for concentrations < 5 times PQL. Where acceptable limits for field duplicates were not met, a discussion on low biased error will be provided.
Optimise the Design	Soil sampling locations were selected for efficient and representative sampling, based on where potential soil and groundwater impact was likely to be present. Soil samples were collected at relevant intervals, changes in geology or in zones of gross contamination.

5.2 Schedule of Works

The schedule of works completed by Arcadis is outlined in Table 5 below.

Table 5 - Schedule of Works

Date	Works performed by	Event
16 April 2018	• Lee Douglass (Principal Hydrogeologist)	• Site Walkover previously reported in the Preliminary Site Investigation (10019954LR01, 27 April 2018).

Date	Works performed by	Event
13t July 2018	• Jack O'Shaughnessy (Environmental Scientist)	• Eight (8) soil bores (SB01-SB08) previously reported in the Due Diligence Soil Contamination Assessment (10023978LR01, 30 July 2018).
30 July 2019	• Colin Biggs (Environmental Scientist)	• Service location. • Test Pit 1 (TP1) excavated to natural material and suspended due to the discovery of PACM fragments within the fill material.
10 August 2019	• Colin Biggs (Environmental Scientist)	• Remobilisation and completion of test pit excavation and sampling. TP5 could not be completed safely as service location markings were no longer present.
30 September to 2 October 2019	• Colin Biggs (Environmental Scientist)	• Completion of an additional test pit excavations and sampling.

5.3 Sampling and Analysis Plan

Soil samples were collected at relevant intervals, changes in geology or in zones of gross contamination (if observed). The locations were selected based on previous information from the PSI and Due Diligence reports, and the proposed building footprints for the new classrooms and office block to provide a combination of targeted sampling and general site coverage. Refer to **Figure 2, Appendix A**, for test pit locations.

5.4 Sampling Methodologies

5.4.1 Nomenclature for Sample Identification

Soil sample identification was as follows:

- TP: Test Pit locations.
- TP#A: ACM identification sample.
- GB: Garden Bed sample

5.4.2 Completion of Test Pits

A Dial Before You Dig search and the engagement of a service locator (SureSearch Pty Ltd) to clear the proposed sampling locations for underground services, prior to intrusive works was conducted on 30 July 2019 (Refer to **Appendix C** for a copy of the Location Report). All locations were cleared, services identified and marked with line marking paint. Test pitting was also conducted on this date; however, works were ceased after PACM (bonded) was identified within Test Pit 1.

Arcadis and a Ken Coles representative subcontractor returned to site on the 10 August 2019 to complete a total of eight (8) soil test pits including a re-excavation of one pit wall at TP1 using a three (3) ton excavator. During works it was noticed that the line markings for services in proximity to TP5 were not visible due to site cleaning activities, therefore it was determined that it was not safe to proceed with this location.

A second Dial Before You Dig search was obtained due to the time lapse between the sampling events and the locations were cleared by SmartScan prior to intrusive works was conducted on 30 September 2019 (Refer to **Appendix C** for a copy of the Location Report). All locations were cleared, services identified and marked with line marking paint.

5.4.3 Soil Logging and Sampling

Sampling was conducted in general accordance with Australian Standard 4482.1-2005 Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil – Non-Volatile and Semi-Volatile Compounds and Arcadis 'Standard Operating Procedures' for soil sampling.

Soil sampling was conducted during test pit excavation with the soil type/s described in general accordance with the Unified Soil Classification System (USCS). A detailed log was completed at each location and is presented in **Appendix D.** The following details were recorded during excavation:

- fill thickness and materials, including the presence or absence of indicators of contamination, such as presence of chemical odours, unusual staining, anthropogenic materials, including asbestos-containing materials
- natural soils according to the USCS classification
- presence or absence of moisture
- staining
- anthropogenic materials.

Soil samples were collected using nitrile gloves which were replaced between each sample to prevent cross contamination. Part of each soil sample was placed into snap lock plastic bags for screening with a Photo-Ionisation Detector (PID) and the other part of the sample was placed directly into a laboratory prepared 250 millilitre (ml) glass jar.

Once each sample had been collected, the following details were recorded on the jar:

- the date the sample was collected
- sample depth
- unique sampling identification name
- unique project number
- details of the sampler.

Sample preservation was performed in accordance with ASC NEPM (2013) with samples immediately placed and stored in an ice chilled Esky to keep them cool prior to being couriered to the laboratory under a signed chain of custody (COC) form.

Soil samples were collected from each soil profile horizon and placed directly into laboratory provided soil sampling jars with Teflon lined lids. All samples were then held on ice in a secured container prior to submission to the primary laboratory for analysis. Soil sampling intervals were typically:

1. At least one (1) sample was collected in the fill/surface material.
2. At least one (1) sample was collected in the natural material.
3. Additional sample/s collected based on field observations, evidence of staining or olfactory indicators (if any).
4. Additional sample/s collected at changes in the strata, particularly targeting the interface between fill and natural material.

5.4.4 Asbestos Delineation

The following works were carried out during the soil investigation works:

1. At a selection of test pit locations during the August 2019 sampling, a 10 L representative sample was collected from the excavated spoil material upon completion of test pitting. During the

sampling between 30 and 2 October 2019, an error in the field resulted in representative samples being weighed to 10 kg rather than a 10 L volume of soil being collected from the fill layer.

2. The 10 L and 10 kg samples collected were assessed in the field for PACM by manually sieving through a 7 mm x 7 mm sieve, and visually inspecting any material left on the sieve for PACM, in accordance with the NEPC (2013).
3. Any PACM or FA identified was collected, bagged and weighed using a calibrated scale to an accuracy of 0.01 g and sent to the laboratory analysis to determine ACM or non-ACM origin.
4. Fill material (unsieved) was collected and placed into a 500 mL zip lock bag for laboratory analysis to determine the presence of FA and AF asbestos in soil.

Arcadis note that collection of samples during the most recent sampling event was not in accordance with the sample collection methods as per the WA (DOH) guideline (2009) as 10 kg of soil was collected rather than 10 L.

6 SOIL ASSESSMENT CRITERIA

Arcadis have adopted the following Soil Acceptance Criteria (SAC) for the purposes of this supplementary soil contamination assessment.

Detected soil concentrations will be assessed against NEPC (2013) NEPM HIL-A, HSL-A and EIL/ESL/ML urban residential guidelines (adopted as a screening level for primary schools and workers in a trench), CRC Care (2011) direct contact HSL-A and the NSW EPA (2014) Waste Classification Guidelines as well as the NSW EPA (2016) Waste Classification Addendum to Part 1 as the proposed future use of the site will include school buildings with minimal access to soil.

Asbestos concentrations will be assessed against the NEPC (2013) NEPM Schedule B (1) Guideline on the Investigation Levels for Soil and Groundwater, Health Screening Levels (HSLs) for Asbestos Contamination in Soil. A detection of asbestos does not necessarily imply the site is contaminated or unsuitable for the intended use. A detection of asbestos, depending upon the nature of the material, would indicate that further investigation may be required.

Soil analytical results are tabulated in **Appendix E** and guideline criteria are presented in Table 6.

Table 6 - Soil Classification Criteria

Contaminant	Assessment Criteria (mg/kg)	Source
	Metals	
Arsenic	100	NEPM HIL A
Cadmium	20	NEPM HIL A
Chromium (as Cr VI)	100	NEPM HIL A
Copper	6000	NEPM HIL A
Nickel	400	NEPM HIL A
Lead	300	NEPM HIL A
Mercury	40	NEPM HIL A
Zinc	7,400	NEPM HIL A
	PAH	
Benzo(a)pyrene (B(a)P) TEQ	3	NEPM HIL A
Total PAHs	300	NEPM HIL A
	Phenols	
Picloram	4,500	NEPM HIL A
	PCBs	
Total Polychlorinated Biphenyl	1	NEPM HIL A
	OCP/OPP	
DDT+DDD+DDE	240	NEPM HIL A
Aldrin + Dieldrin	6	NEPM HIL A
Chlordane	50	NEPM HIL A
Chlorpyrifos	160	NEPM HIL A
Endosulfan	270	NEPM HIL A
Endrin	10	NEPM HIL A
Heptachlor	6	NEPM HIL A
Methoxychlor	300	NEPM HIL A
	Halogenated Benzenes	
Hexachlorobenzene	10000	NEPM HIL A
	Herbicides	

2,4,5-Trichlorophenoxy Acetic Acid		600			NEPM HIL A
2,4-D		900			NEPM HIL A
Atrazine		320			NEPM HIL A
2-Methyl-4-chlorophenoxyacetic acid		600			NEPM HIL A
2-Methyl-4-Chlorophenoxy Butanoic Acid		600			NEPM HIL A
Mecoprop		600			NEPM HIL A
	SOIL HEALTH SCREENING LEVELS FOR VAPOUR INTRUSION HSL-A (SILT) TRH and BTEXN				
		0 to <1 m bgl	1 m to <2 m bgl	2 m to <4 m bgl	4 m+ bgl
C6-C10 less BTEX (F1)	40	40	65	100	190
F2 Naphalene	230	230	NL	NL	NL
Benzene	0.6	0.6	0.7	NL	NL
Toluene	390	390	NL	NL	NL
Ethylbenzene	NL	NL	NL	NL	NL
Xylene (Total)	95	95	210	NL	NL
Naphthalene	4	4	NL	NL	NL
C6-C10		800			Management Limits Residential/Parkland
C10-C16		1000			Management Limits Residential/Parkland
C16-C34		1300			NEPM ESLs Urban Residential
C34-C40		5,600			NEPM ESLs Urban Residential
	ASBESTOS				
Bonded ACM	0.01% w/w				
FA and AF (friable asbestos)	0.001% w/w				
All forms of asbestos	No visible in surface soil (0.0 – 0.1 m) and no asbestos fibres in soil				

6.1 Asbestos Assessment

Asbestos concentrations will be assessed against the following guidelines:

- NEPC (2013) NEPM Schedule B (1) Guideline on the Investigation Levels for Soil and Groundwater, Health Screening Levels (HSLs) for Asbestos Contamination in Soil.

Table 7 - Asbestos Definition

Type of Asbestos	Description
ASBESTOS CONTAINING MATERIALS (ACM)	Products or materials that contain asbestos in an inert bound matrix such as cement or resin. these are taken to be sound material, even as fragments and not fitting through a 7 x 7 mm sieve.
Asbestos Fines (AF)	Includes asbestos free fibres, small fibre bundles and ACM fragments that pass through a 7 x 7 mm sieve.
Fibrous Asbestos (FA)	Friable asbestos material, such as severely weathered ACM, and asbestos in the form of loose fibrous material such as insulation products.

The following formula detailed in the NEPC (2013) guideline was used to estimate the concentration of asbestos in soil attributable to ACM:

$$w/w\ Asbestos\ in\ Soil\ = \frac{\%\ Asbestos\ Content\ \times ACM\ (kg)}{Soil\ Volume\ (L) \times Soil\ Density\ (kg/L)}$$

The following assumptions were adopted for the above calculation:

- Asbestos Content (within asbestos cement materials) = 15%.
- As the weight of soil was determined in the field the soil density to volume does not need to be calculated, however an assumed bulk soil density of 1.80 kg/L has been used for silty clay soils.
- Soil contamination by FA and AF was determined according to the presence or absence of respirable fibres (trace analysis), in accordance with Australian Standard Method for the Qualitative Identification of asbestos in bulk samples (AS4964-2004). Health Screening Levels (HSLs) for Asbestos Contamination in Soil (HSL-A) ACM guidelines has been adopted.

The investigation criteria used to assess ACM and AF/FA are outlined in Table 8.

Table 8 - ACM, AF and FA Assessment Criteria

Health Screening Levels for Low Density Residential Land Use[3]	
Bonded ACM	0.01%
FA and AF[1] (Friable Asbestos)	0.001%
All Forms of Asbestos	No Visible asbestos 0.0 - 0.1 m of the ground surface [2]

[1]The screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) only applies where the FA and AF are to be quantified by gravimetric procedures. This Screening level is not applicable to free fibres.
[2] (2013) and WA DOH (2009) guidelines state that there should be no visible asbestos within 0.1m of the surface.
[3]Low Density Residential Land Use (Residential A) includes standard residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake, (no poultry), includes children's day care centres, preschools and primary schools.

7 RESULTS

7.1 Field Observations

Soil sampling was undertaken by Arcadis Environmental Scientist, Colin Biggs during excavation works on the 10 August 2019 and between 30 September and 2 October 2019. Colin has over 14 years of experience in a variety of scientific fields. During his time, he has developed a high level of capacity in monitoring of hazardous materials such as asbestos. Colin also holds a Certificate IV in Occupational Health and Safety.

The fill across the site was observed to vary slightly in thickness, ranging from approximately 0.1 m (TP3, TP09, TP11, TP13 and TP21) to 0.9 m bgl (GB2, GB3, TP23). Buried concrete (possibly an old footing) was observed at 0.3 m below surface at sampling location TP4. TP7, located near a matrix of buried services was observed to contain reworked natural clays (backfill) to a depth of 1.1 m bgl. No fill was observed at TP3, TP09, TP11, TP13 and TP21. One piece of PACM was identified on the surface (within the grass) at TP3 and within the top 0.0-0.1 m bgl soil profile at TP12. (Refer to **Appendix D** for copies of the Test Pit logs.)

There are several raised garden beds (which may be within the proposed development area) that appear to contain poor quality imported fill material with PACM visible on the surface at many locations. During the excavation works on 2 October 2019, two test pits were excavated (GB2 and GB3) and one (1) piece of PACM was identified in the fill profile between 0.0-0.1m bgl. The garden bed locations were not marked in the field. Fragments of PACM were observed to be scattered across some of the surface of the site within the garden bed area. Ten fragments were collected and given their similarity in appearance, three representative fragments were analysed for asbestos. Laboratory analysis confirmed the material to be ACM and therefore the NEPM criteria of no visible asbestos in surface soil has been exceeded. The garden bed area is located within the red marked area on **Figure 5, Appendix A.**

The majority of the uncontrolled fill is located within the western and southern sections of the site. The fill may have been placed as land forming to level to site for its intended use. PACM was generally observed at shallow depths including within the side wall at TP1 (to 0.7 m bgl), TP4 (to 0.5 m bgl), TP12 (to 0.1 m bgl), TP16 (to 0.1 m bgl), TP26 (to 0.15 m bgl) and GB2 (to 0.1 m bgl). No PACM was observed at deeper depths within the fill profile at these locations. Note that TP16 and TP26 were negative for asbestos following analysis.

Natural material underlying fill material generally comprised of Silty Clay/Sandy Silt/Fresh Shale, Red/Orange Brown, slightly moist, stiff non-plastic clays with some gravel and fresh shale inclusions.

PID measurements ranged between 0.0 and 3.2 ppm (TP13 at 0.15 m bgl) within natural material indicating that, if volatile hydrocarbons are present within the soils, these will be a low concentrations.

There were no olfactory indicators of possible contamination noted during test pit excavations.

Calibration certificate for the Photo-Ionisation Detector is available in **Appendix D**.

7.2 Test Pit and Soil Sampling Field Observations

Table 9 - Soil Descriptions from Test Pit Sampling

Test Pit ID	Depth	PACM in soil	Foreign material other than PACM	Description	PID (ppm)	Field Sieve Results from 10 L sample = >7mm PACM
TP1	0.0-0.2	Y	Y	**Topsoil**; Silts with some clay; Dark brown; organics; PACM (bonded) and glass pieces; No odours	0.0	70g (0.07 kg) of bonded PACM found both on the surface profile between

Test Pit ID	Depth	PACM in soil	Foreign material other than PACM	Description	PID (ppm)	Field Sieve Results from 10 L sample = >7mm PACM
	0.2-0.7	N	Y	**Fill**: Silty Clay; Light Brown; Slightly moist; Non-plastic; inclusions (tile/terracotta/concrete/Bonded PACM); No odour	0.1	0.0 - 0.2 m and within the fill to 0.2 - 0.7 m bgl
	0.7-0.9	N	N	**Natural**: Silty clay; Red brown; Stiff; Non-plastic; Slightly moist; No dour; No visual PACM or inclusions	0.0	
TP2	0.0-0.1	N	N	**Fill**: Woodchips and Silts; Brown; Medium to fine Silts some clays; No visual PACM; Organic odours	0.0	No sieve sample collected no subsample for AF/FA was collected due to novisual identification of PACM
	0.1-0.4	N	N	**Fill**: Silty Clay; Brown red; Stiff; non-plastic; No visual PACM; No odour	0.0	
	0.4-0.6	N	N	**Natural**: Silty Clay; Red brown; Non-plastic; Slightly moist; No odour or visual PACM	0.0	
TP3	0.0-0.3	N	N	**Natural**: Clayey silts; Dark Grey; Soft; Medium to fine silts; Slightly moist; No visual PACM or Odours	1.3	9 g (0.009 kg) of bonded PACM found on the grassed surface
	0.3-0.5	N	N	**Natural**: Silty clay; Red brown; Slightly moist; Slightly plastic; No visual PACM; No odour	0.1	
TP4	0.0-0.5	Y	Y	**Fill**: Silts with some clay; Dark brown; Inclusions (tile/brick/concrete/PACM); Slightly moist; No odour	0.0	25g (0.025 kg) of bonded PACM found within the fill profile to 0.5 m bgl
	0.5-0.7	N	N	**Natural**: Silty clay; Orange brown; Stiff, Slightly moist; Non-plastic; No odour; No visual PACM	0.0	
TP5	0.0-0.6	N	Y	**Fill:** Sand silts (loam); brown, highly organic; roots (mat) to 2mm (plastic/woodchips); find sands and silts	0.0	No PACM in sieve or material sieved.
	0.6-0.9	N	N	**Silty Clay:** Light brown, slightly moist, non-plastic, small 2mm rounded fresh shale gravels (occasional)		
TP6	0.0-0.35	N	Y	**Fill**: Silty clay; Non-plastic; Inclusions	0.0	No PACM in sieve

Test Pit ID	Depth	PACM in soil	Foreign material other than PACM	Description	PID (ppm)	Field Sieve Results from 10 L sample = >7mm PACM
				(Brick/Tile/Steel/Wood); No visual PACM; No Odour		
	0.35-0.5	N	N	**Natural**: Silty clay; Stiff; Slightly moist; Non-plastic; Organic odour	0.0	
TP7	0.0-0.02	-	-	Bitumen		No subsample for AF/FA was collected due to no PACM identified during sieving
	0.02-0.4	N	Y (roadbase)	**Fill**: Road base; Blue Metal Gravel with some silts and compacted clays; No visual ACM; No odour	0.1	
	0.4-0.7	N	N	**Fill**; Reworked natural Silty clays; compacted in layers; Mottled red orange grey; Slightly Moist; Slightly plastic; No odour; No visual PACM		
	0.7-1.1	N	N	**Fill**: Reworked natural Silty clays; Orange brown with some grey mottles; Stiff; Non-plastic; Slightly Moist; No odour; No visual PACM	0.0	
TP8	0.0-0.1	N	Y	**Fill**; Clayey silty sand, Brown, Inclusions (Bricks/Tile), Slightly moist, Medium grained sands, No visual PACM, No odour	0.0	No PACM in sieve
	0.1-0.3	N	N	**Fill**; Silty clay, Light brown, Slightly moist, Non-plastic, large tree roots, No odour, No visual PACM or inclusions	0.0	
	0.3-0.8	N	N	**Natural**; Silty clay, Orange brown, Non-plastic Slightly moist, No visual PACM or inclusions, No odour	0.1	
TP09	0.0-0.4	N	N	**Natural:** Sandy silts, light grey brown, occasional poorly sorted gravel to 10mm.	0.1	No PACM in sieve.
	0.4-0.7	N	N	**Natural:** Silty clay, red/brown, non-plastic, slightly moist, stiff, fresh shale to 50mm (angular).	0.0	
TP10	0.0-0.1	N	Y (roadbase)	**Fill:** Road base aggregate, fine sands and silts, aggregate angular to 50mm, some occasional concrete inclusions.	1.6	No PACM in sieve sample. Concrete inclusions in sieve.

Test Pit ID	Depth	PACM in soil	Foreign material other than PACM	Description	PID (ppm)	Field Sieve Results from 10 L sample = >7mm PACM
	0.1-0.25	N	N	**Fill:** Silty clay compaction layer.	0.8	
	0.25-0.35	N	N	**Natural:** Silty Clay, red/brown, stiff, non-plastic, slightly moist.	1.6	
TP11	0.0-0.3	N	N	**Natural:** Sandy clayey silts (loam), fine grained sands and silts, some clay, non-plastic	0.5	No PACM in sieve
	0.3-0.8	N	N	**Natural:** Silty clay, red/brown, stiff, slightly moist, slightly plastic	1.2	
TP12	0.0-0.1	Y	Y	**Fill:** Sandy clay silts, brown, non-plastic clays in clumps, poorly sorted gravels to 15mm, pieces of concrete and brick (PACM)	0.0	One piece of PACM found in sieve from top 0.0-0.1 m.
	0.1-0.6	N	N	**Natural:** Silty clay, red brown, slightly moist, slightly plastic.	0.0	
TP13	0.0-0.15	N	N	**Natural:** Sandy clayey silts (loam) compacted, fine to medium grained yellow sands, clumpy clay, non-plastic fine silts, slightly moist.	3.2	No PACM in sieve.
	0.15-0.6	N	N	**Natural:** Silty clay, red/brown, some grey mottling, fresh shale to 50mm.	0.0	
TP14	0.0-0.1	N	Y (roadbase)	**Fill:** Road base aggregate, fine silts, course to medium grained sand, occasional brick/tile piece to 20mm, aggregates to 35mm.	0.2	No PACM in the sieve.
	0.1-0.3	N	N	**Fill:** Silty clay compaction layer.	0.4	
	0.3-0.8	N	N	**Natural:** Silty clay, red/brown, slightly moist, slightly plastic, stiff.	0.3	
TP15	0.0-0.1	N	Y (roadbase)	**Fill:** Road base gravels, stiff, non-plastic clays, gravel to 35mm, angular	0.0	No visual PACM or man-made inclusions.
	0.1-0.65	N	N	**Natural:** Silty clay, slightly moist, highly plastic, sub angular gravel (fresh shale) to 5mm.	0.0	
TP16	0.0-0.3	Y	Y (roadbase)	**Fill:** Road base gravel, some brick piece inclusions to 25mm.	0.0	PACM found in sieve, however was reported

Test Pit ID	Depth	PACM in soil	Foreign material other than PACM	Description	PID (ppm)	Field Sieve Results from 10 L sample = >7mm PACM
	0.3-0.4	N	N	**Fill:** Silty clay, compacted angular gravels to 15mm (angular) (org plastic sheet).	0.0	by the lab as negative for ACM.
	0.4-0.65	N	N	**Natural:** Silty clay, red/brown, slightly plastic		
TP17	0.0-0.2	N	Y (roadbase)	**Fill:** Road base aggregate, angular gravel to 35mm, sand coarse grained.	0.0	No PACM in sieve.
	0.2-0.3	N	N	**Fill:** Silty clay compaction player. No inclusions.		
	0.3-0.6	N	N	**Natural:** Silty clay, red/brown, slightly moist, non-plastic.		
TP18	0.0-0.35	N	Y	**Fill:** Silty clay, red/brown, non-plastic, slightly moist, stiff roots and rootlets to 3mm, brick and tile inclusions.	0.0	No PACM in sieve.
	0.35-0.6	N	N	**Natural:** Silty clay, light/brown to brown, slightly moist, non-plastic, stiff	0.0	
TP19	0.0-0.2	N	Y (roadbase)	**Fill:** Road base aggregate, some silts and clays, compacted.	0.0	No PACM or man-made inclusions.
	0.2-0.3	N	N	**Fill:** Compacted silty clay, poorly sorted gravels to 5mm.	0.0	
	0.3-0.5	N	N	**Natural:** Silty clay, red/brown, stiff, slightly moist, slightly plastic	0.0	
TP20	0.0-0.1	N	Y (roadbase)	**Fill:** Road base gravels and sands, aggerate to 35mm (angular), light grey, medium to coarse grained sands.	0.2	No PACM in sieve.
	0.1-0.2	N	N	**Fill:** Silty clay, very stiff/compacted	0.0	
	0.2-0.5	N	N	**Natural:** Silty clay, red/brown, slightly moist, slightly plastic, stiff, fresh shale gravel to 15mm, angular.	0.0	
TP21	0.0-0.35	N	N	**Natural:** Clayey sand silt (loam), dark brown, soft, roots to 10mm, flat pieces of shale to 15mm, weak sandstone to 30mm, angular.	2.0	No PACM or man-made material in sieve.

Test Pit ID	Depth	PACM in soil	Foreign material other than PACM	Description	PID (ppm)	Field Sieve Results from 10 L sample = >7mm PACM
	0.35-0.35	N	N	**Natural:** Silty clay, light brown, plastic, stiff/slightly moist, some minor angular shale to 5mm.		
TP22	0.0-0.20	N	Y (roadbase)	**Fill:** Road base gravel, angular to 35mm.	0.15	No PACM or man-made inclusions.
	0.2-0.65	N	N	**Natural:** Silty clay, stiff to very stiff, red/brown, some light brown/yellow mottling, plastic.	0.0	
TP23	0.0-0.35	N	Y	**Fill:** Silty clay, soft, mixed brown/red, brown beyond plastic in sections, brick/tile/terracotta/wood inclusions.	0.0	No visual PACM, sieved top 0.0-0.1 m.
	0.35-0.9	N	Y	**Fill:** Reworked natural clays, concrete and large 50mm gravels, slightly moist, highly plastic, concrete block.	-	
	0.9-1.2	N	N	**Natural:** Fresh shale, hard, light brown.	-	
TP24	0.0-0.2	N	N	**Fill:** Silty clay, brown, slightly moist, slightly plastic, occasional angular gravels to 35mm, organic odour.	0.0	No PACM or man-made inclusions in sieve. TP24 was terminated in reworked natural material and not undisturbed natural material
	0.2-0.5	N	N	**Natural:** Silty clay, red/brown, some occasional fresh shale gravels to 2mm, slightly moist, plastic.	0.0	
TP25	0.0-0.30	N	N	**Fill:** Topsoil (loamy), dark, slight organic odour.	0.0	10.4kg sample sieved, no PACM on sieve.
	0.3-0.65	N	N	**Natural:** Silty clay, red/brown, non-plastic, stiff, slightly moist, round gravel, fresh shale to 5mm, pieces of angular shale/slate, 4-5mm to 15mm, 2mm thick.	0.0	
TP26	0.0-0.6	Y	Y	**Fill:** Silty sand, brown, loose, large concrete and tile inclusions to 100mm and plumbing pipe, medium to fine grained sands, slightly moist.	0.0	Visual PACM in sieve, however was reported by the lab as negative for ACM.. Tile/brick/screws/plastic identified on sieve.
	0.6-0.9	N	N	**Natural:** Silty clay, red/brown, slightly moist, slightly plastic, fresh shale gravels to sub angular to 35mm.	0.0	

Test Pit ID	Depth	PACM in soil	Foreign material other than PACM	Description	PID (ppm)	Field Sieve Results from 10 L sample = >7mm PACM
TP27	0.0-0.25	N	N	**Fill:** Sand silts, dark brown, loose, organic odour with wood chip and angular gravel to 35mm, slightly moist, organic odour.	0.0	No visual PACM or man-made inclusions.
	0.25-0.35	N	N	**Fill:** Becoming compacted	0.0	
	0.35-0.65	N	N	**Natural:** Silty clay, red/brown, non-plastic, weak sandstone inclusions (60mm), sub-angular gravels to 2-4mm, fresh shale.	0.0	
TP28	0.0-0.2	N	N	**Fill:** Sand silt (loam), light brown, soft, fine sands and silts, poorly sorted gravels to 15mm, slightly moist, rootlets.	-	No PACM in sieve.
	0.2-0.5	N	N	**Natural:** Silty clay, orange/brown, slightly plastic, slightly moist, roots to 5mm.	-	
TP29	0.0-0.1	N	N	**Fill:** Mixed gravel and building debris to 50mm.	0.0	No PACM visual in sieve .
	0.1-0.5	N	Y	**Fill:** Silty clayey sand, light brown, mixed red/brown, slightly moist, slightly plastic clays, poorly sorted gravel (angular) to 35mm, plastic/tile/glass inclusions.	-	
	0.5-0.75	N	N	**Natural:** Silty clay, brown, slightly moist, non-plastic, stiff. Becoming light brown, plastic, slightly moist, stiff.	-	
TP30	0.0-0.1	N	Y (roadbase)	**Fill:** Road base aggregate, angle gravels to 35mm, sands (coarse grained).	0.3	No PACM or man-made inclusions visually or sieved.
	0.1-0.2	N	N	**Fill:** Silty clay compaction layer (no inclusions).	0.3	
	0.2-0.5	N	N	**Natural:** Silty clay, red/brown, slightly moist, slightly plastic.	0.0	
GB2	0.0-0.9	Y	Y	**Fill:** Silty clay with brick/tile/pipe (ceramic)	0.0	One piece of PACM at 0.0-0.1.
	0.9-1.2	N	N	**Natural:** Silty clay, red/brown, stiff, slightly moist, slightly plastic.	-	No PACM in sieve sample.

Test Pit ID	Depth	PACM in soil	Foreign material other than PACM	Description	PID (ppm)	Field Sieve Results from 10 L sample = >7mm PACM
GB3	0.0-0.4	N	Y	**Fill:** Silty clay with woodchip inclusions (1 piece of bitumen and concrete), roots to 20mm.	0.0	No visual PACM.
	0.4-0.9	N	Y	**Fill:** Silty clay, red/brown, large concrete inclusions.	-	

Note: Following laboratory analysis, PACM observed at TP16 and TP26 was confirmed to not be ACM.

7.3 Analytical Results

During the DSI assessment both ALS Environmental Sydney, which is NATA accredited (No. 825) to ISO 17025 as well as s Envirolab Sydney, which is NATA accredited (No. 2901) to ISO 17025, were used as primary and secondary laboratories. Refer to Table 10 for more details.

Laboratory reports for the DDSCA are presented along with the full report in **Appendix G**, however both the results from the DDSCA and the SSCA have been included in the results summary Table 1, **Appendix E** The laboratory report numbers related to the DDSCA and the SSCA are summarised in Table 10.

Table 10 - Laboratory Report Numbers for Sub Task 1

Laboratory	Report Number	Arcadis Report	Sample Type
Envirolab Services	196252	DDSCA	Primary/Intra Samples
ALS	ES1820957	DDSCA	Inter-lab QA
ALS	ES1925652	SSCA	Primary Samples
ALS	ES1926663	SSCA	TCLP-Waste Class
Envirolab Services	223884	SSCA	Inter-lab QA
ALS	ES1932358	SSCA	Primary Samples

The following section summarises the reported soil sampling analytical results for SSCA testing.

7.3.1 Soil Analytical Results

7.3.1.1 Heavy Metals

Concentrations of heavy metals in all soil samples submitted for analysis were reported to be below the adopted SAC. Summary analytical data is provided in Table 1, **Appendix E** and Laboratory Results can be found in **Appendix F**.

7.3.1.2 BTEXN

Concentrations of BTEXN were reported to be below the laboratory limit of reporting (LOR) in all soil samples submitted for analysis, Summary analytical data is provided in Table 1, **Appendix E** and Laboratory Results can be found in **Appendix F**.

7.3.1.3 TRH/TPH

Concentrations of TRH/TPH in all soil samples submitted for analysis were reported below the adopted SAC for the Supplementary Soil Assessments. Summary analytical data is provided in Table 1, **Appendix E** and Laboratory Results can be found in **Appendix F**.

Soils results from the DDSCA reported high concentrations of TRH Concentrations of TRH F2 (>C_{10}-C_{16} minus naphthalene) exceeding the tier 1 NEPC (2013) NEPM HSL A&B criteria of 230 mg/kg in the soil samples SB03-0.2 (410 mg/kg) and SB07-0.2 (270 mg/kg) however, the 95% UCL on the combined 2018 and 2019 analytical results is 131.4 mg/kg, and therefore below the criteria.

Concentrations of TRH F3 (>C_{16}-C_{34}) were reported in exceedance of the tier 1 NEPC (2013) NEPM ESL criteria in the soil sample SB03-0.2 (3,000 mg/kg) however, the 95% UCL on the combined 2018 and 2019 analytical results is 694.5 mg/kg, and therefore below the criteria of 1300 mg/kg (ESL).

A total of 18 soil samples were analysed for TRH/TPH during the DSI assessment. All samples reported TRH/TPH below the LOR.

Refer to Table 7, 8, and 9, **Appendix E** for UCL calculation results.

7.3.1.4 PAHs

Concentrations of PAHs in soil samples reported PAHs to be below the LOR. Summary analytical data is provided in **Table 1, Appendix E** and Laboratory Results can be found in **Appendix F**.

7.3.1.5 OCPs, OPPs, and PCBs

Concentrations of OCPs, OPPs, and PCBs in all soil samples were reported to be below the LOR. Summary analytical data is provided in **Table 1, Appendix E** and Laboratory Results can be found in **Appendix F**.

7.3.1.6 Herbicides

Concentrations of herbicides in all soil samples were reported to be below the adopted SAC and below LOR for the Supplementary Soil Assessments. Summary analytical data is provided in **Table 1, Appendix E** and Laboratory Results can be found in **Appendix F**.

7.3.1.7 Fluoride

Concentrations of fluoride in selected soil samples ranged from 80 mg/kg (TP26@0.15-0.3) and 220 mg/kg (TP22@0.0-0.15). In absence of Australian soil screening levels for total Fluoride, Arcadis refers to the US EPA RSL for Resident Soil - April 2019. The non-cancer Screening Level (HI=1) for a child is 3,100 mg/kg. The concentrations observed at the site are well below the US EPA RSL. Summary analytical data is provided in **Table 1, Appendix E** and Laboratory Results can be found in **Appendix F**.

7.3.1.8 Asbestos

Potential ACM fragments were analysed for asbestos identification. Eight samples tested positive for asbestos as detailed in Table 11.

Table 11 - ACM Identification

Sample ID	Type of asbestos identified to be present
TP1A	Chrysotile asbestos detected, and crocidolite asbestos detected
TP3A	Chrysotile asbestos detected
TP4A	Chrysotile asbestos detected, crocidolite asbestos detected, and amosite asbestos detected

Sample ID	Type of asbestos identified to be present
Sample 1 (surface fragment)	Chrysotile asbestos detected, crocidolite asbestos detected, and amosite asbestos detected
Sample 4 (surface fragment)	Chrysotile asbestos detected
Sample 8 (surface fragment)	Chrysotile asbestos and amosite asbestos detected
TP12@0.0-0.1 (surface fragment worked into subsurface)	Chrysotile asbestos detected
GB2@0.0-0.3	Chrysotile asbestos and amosite asbestos detected

Refer to Table 2, Appendix E and the Laboratory report in Appendix F.

No asbestos fibres were detected within the 500 ml bag samples, however PACM was observed to be visually present at test pit locations TP1, TP3, TP4, GB2 and TP12. The source of the asbestos is likely due to the poor quality of fill material imported to the site and surface fragments may be related to the former building materials at site. Analytical data is provided in **Table 2, Appendix E** the Laboratory Results can be found in **Appendix F**.

Test Pit locations are shown on **Figure 2, Appendix A** and soil bore logs can be found in **Appendix D**.

Table 12 outlines the findings of the asbestos sieve analyses as outlined in Section 5.3.1. Note that PACM pieces observed on the surface are not included in the w/w calculations as these PACM were not within the fill material.

Table 12 - Asbestos Sieve Analysis

Test Pit ID	Volume and Weight of Sieved Material	Weight of Bonded Asbestos (g)	Concentration of asbestos in soil present as ACM (NEPC 2013)
NEPM (2013) Assessment Criteria	-		0.01%
TP1	10 L (18kg)	66.5[1] (0.0665 kg)	0.054
TP4	10 L (18kg)	23.3[1] (0.0233 kg)	0.019
GB2	5.5 L (10kg)	5.11 (0.00511 kg)	0.008

1 Fragment weights reported by the laboratory in report ES1925652 were used as these were considered more accurate than the field-based uncalibrated scales. Refer to Table 2, Appendix E and the Laboratory report in Appendix F.

Test Pit 1 (0.054%) and TP4 (0.019%) samples were reported above the NEPM (2013) criteria for Residential A which includes primary schools.

From Table 9 and Table 12 the following can be concluded:

- A total of approximately 340 kg or fill soils have been sieved by Arcadis.
- A total of 110 g PACM was detected on the sieve.

- The average w/w ACM concentration from material > 7 mm that remained on the sieve is therefore 0.0049 w/w% which is below the HIL-A criteria.

7.3.1.9 Preliminary In-situ Waste Classification

(2014) Waste Classification Guidelines Part 1: Classifying Waste are shown in **Table 4, Appendix E**. The laboratory certificates are provided in **Appendix F**. All samples reported concentrations of TPH, BTEX, PAHs, OCPs, OPPs, PCBs and eight priority heavy metals with the exception of Lead (TP4 @ 0.2 m) and Nickel (TP7 @ 0-0.2 m) below the CT1 General Solid Waste criteria.

Based on 95% upper confidence limit (UCL) calculations on the analytical results, Arcadis considers that the results for:

- Lead (43.92 mg/kg) for the entire dataset was <SCC1 (CT1=100 mg/kg).
- Nickel (23.41 mg/kg) for the entire dataset was <SCC1(CT1=40 mg/kg).

Refer to **Table 10 and 11, Appendix E** for UCL calculation results.

Arcadis have assessed the available data in detail and note that the indicative waste classifications for the fill material are discussed as follows:

- the asbestos fragments reported in the fill material are primarily located in the west of the site and localised to the raised garden beds. Arcadis have taken a conservative buffer around the asbestos impacted test pits and consider these materials to be pre-classified as **Special Waste** with a General Solid Waste (GSW) matrix. This area is outlined in red in ***Appendix A, Figure 4***, and the estimated volume requiring disposal as Special Waste with GSW is 1,050 m^3.
- anthropogenic materials (with no apparent ACM) were observed in the fill material in the southern portion of the site. This area is outlined in blue in ***Appendix A, Figure 4***. The chemical analysis for the fill material from test pits in this section returned concentrations below the **GSW CT1 (Recyclable)** criteria for MET Recycling in Silverwater, EPL 20948. Arcadis suggest a preliminary waste classification for this material as **GSW-R** assuming no ACM and minimal building rubble (to be guided by an experienced contaminated land consultant or hygienist during the excavation work).
- the remaining material observed on site, to the centre, east and north of the site can be preliminary classified as a combination of **GSW-R** and virgin excavated natural material (**VENM**), with the exception of the total recoverable hydrocarbons (TRH) hotspot outlined in green in ***Appendix A, Figure 4*** which would need to be disposed of as **GSW** (or included with the general solid waste with asbestos fragments***.***
- Arcadis estimate the volume of GSW-R and VENM to be approximately 1,400 m^3 and the hotspot volume to be approximately 50 m^3.

The natural material can be pre-classified as VENM and most of the natural material should be able to be re-used within the upgrade works.

Arcadis notes that ACM may be more widespread than observed through test pitting, therefore all excavation work needs to be under the supervision of an environmental consultant or hygienist to advise on stockpiling and segregation of materials on site in accordance with the AMP. If any differences are observed in the material during excavation, they will be stockpiled separately and a detailed assessment of the stockpiles conducted prior to the material being taken off-site for disposal or earmarked for onsite re-use.

7.3.1.10 TCLP (Leachability)

Arcadis conducted Toxicity characteristic leaching procedure (TCLP) testing on two select soil samples that reported elevated concentrations of nickel and lead. TCLP's were adopted to conservatively determine if concentrations would leach into the underlying soils. Refer to Table 13 below for a summary of the TCLP results. Analytical data is provided in **Table 4, Appendix E** and Laboratory Results can be found in **Appendix F**.

Table 13 - TCLP Results Summary

Sample ID	Lead (µg/L)	NSW 2014 GSW TCLP1 (Leached) for Lead (µg/L)	Nickel (µg/L)	NSW 2014 GSW TCLP1 (Leached) for Nickel (µg/L)
TP4 @ 0.2m	100	5,000	Not tested	-
TP7 @ 0-0.2m	Not tested	-	<100	2,000

The results indicate that lead and nickel do not pose a risk of leaching from the underlying soils at the site.

7.3.1.11 Extent of Uncertainties in the Results

The sampling methodology used by Arcadis during this investigation has been designed to limit uncertainty in the results. Arcadis notes that the results of this investigation are appropriate to provide confidence regarding potential risks associated with soil and/or groundwater contamination however notes that the investigation program was of a limited nature. In all subsurface investigations, the potential remains for variability between sampling points and for conditions to be different on site from the conditions reported herein.

8 DATA QUALITY ASSESSMENT

The following section outlines the data quality results and comparison to the DQOs presented in Section 5.

8.1 Field Quality Assurance

The following section details Quality Analyses/ Quality Control measures undertaken within the field at time of sampling.

8.1.1 Statement of Duplicate Frequency

Refer to During the supplementary soil contamination assessment, Arcadis collected the following intra- and inter-laboratory duplicate samples.

Table 14 - Intra and Inter-Laboratory Duplicate Samples

Primary Sample	Matrix	Intra-Laboratory Duplicate	Inter-Laboratory Duplicate
TP6@0.2 (0.2m)	Soil	QA1	QA2

Soil intra- and inter-laboratory duplicates were collected and analysed at rate of 1:19. The Arcadis analysis frequency is within the recommended 1:20. Arcadis note that duplicate samples were not collected during the excavation works between 30 September and 2 October 2019 due to asbestos being the primary contaminant of concern.

8.1.2 Duplicate Splitting Techniques

Soil samples were split by collecting representative samples of the soil at the same depth interval. Due to the potential loss of volatiles, samples were not mixed, but replicate samples were collected.

8.1.3 Relative Percentage Difference

All relative precent differences between primary sample SB01/DUP (0.2 m bgl) and inter-laboratory duplicate were within acceptable ranges.

All relative precent differences between primary sample SB01/TRIP (0.2 m bgl) and intra-laboratory duplicate were within acceptable ranges except Benzo(a)pyrene TEQ (LOR) (82%).

All relative precent differences between primary sample TP6@0.2/QA1 (0.2 m bgl) and inter-laboratory duplicate were within acceptable ranges.

All relative precent differences between primary sample TP6@0.2/QA1 (0.2 m bgl) and intra-laboratory duplicate were within acceptable ranges except for Zinc (88%) and Benzo(a)pyrene TEQ (LOR) (82%).

The exceedances of RPD within soil is most likely due to different reporting limits and PAH – TEQs were below detection limits for primary and secondary samples l. Arcadis is confident that the exceeding RPD for soil will not affect the integrity of the analytical data.

RPD table for soil can be found in **Table 5** and **Table 6, Appendix E**.

8.1.4 Field Procedures

The following field procedures were implemented to improve the quality of data collected in the field:

- Arcadis Standard Operating Procedures were implemented.

- All media (soil) sampling was completed using new nitrile gloves which were replaced between sampling locations and/or intervals.
- Soil samples were collected directly from the excavation wall face or from the centre of the excavator bucket.
- All samples were collected within laboratory supplied sample jars/bottles/tubes. Samples were stored and transported within an ice chilled Esky to prevent the loss of volatile compounds.

Arcadis note that collection of samples during the most recent sampling event (30 September to 2 October 2019) was not in accordance with the WA (DOH) guideline (2009) as 10 kg of soil was collected rather than 10 L. Consequently, the volume of sieved material has been reduced however Arcadis are of the opinion that the results from the field sieving can be relied on for purposes of this assessment. Arcadis consider the data reliable for the following reasons:

- The calculation for asbestos is based on a weight for weight percentage therefore we have sufficient data to calculate this effectively as we know the exact weight of material sift rather than using estimated densities.

8.1.5 Chain of Custody Details

All soil samples were transported to the laboratory under a chain of custody (CoC). Information on the CoC included details of the sampler; unique sample identification names; sample matrix; collection date; analyses to be performed; sample release date; and sample received date.

Copies of the CoCs are provided in **Appendix F** along with the laboratory reports.

8.1.6 Rinsate Sample Results

No Rinsate samples were collected during this investigation**.** New dedicated sampling equipment was as each test pit location, with fresh clean disposable gloves used at each soil sample collection, soils where either collected directly from the excavation wall face or from the centre of the excavator bucket. No reusable hand tools were used.

8.2 Laboratory QA/QC

8.2.1 Holding Times

Holding times were reported as being within specified ranges for samples.

8.2.2 Percentage Difference - Laboratory

There were no RPD exceedances for soil samples.

8.2.3 Matrix Spikes

No matrix spike outliers were reported with the exception of samples EB1926160-033 and ES1932358-001 for herbicides. Recovery was not determined due to background level greater than or equal to 4x spike level in sample EB1926160-033. Recovery was less than low data quality objective in sample ES1932358-001.

8.3 Evaluation of the QA/QC Information Compared to the DQOs

8.3.1 DQOs

- Documentation completeness:
  - Field forms and chain-of-custody forms were completed and appropriate. Minor errors were made on the soil sample CoC; however, Arcadis believes that this has not materially impacted the conclusions drawn from the data set.
- Data completeness:
  - All samples were received by the laboratories and analytical results have been reported (including laboratory QA/QC).
- Data comparability:
  - Arcadis SOPs, Australian Standards and industry best practice were followed during sampling.
  - Consistent field conditions and staff were utilised during sampling.
  - Standard analytical methods were used by the laboratories for all analyses.
  - The limits of reporting are appropriate and consistent from each laboratory.
  - All soil samples were collected using discrete sampling techniques to minimise the loss of volatile contaminants.
- Data representativeness:
  - Arcadis consider the data to be representative of site conditions.
- Precision:
  - Field duplicates were analysed at a rate of 1:19 for soil samples. These rates are within the Australian Standard (AS1482.1 2005) and Arcadis QA frequency ranges.

9 CONCLUSIONS

Based on the field observations and review of analytical data collected during the DDSCA and SSCA of the development area at the property located at 126 Kent Road, Marsfield NSW 2122, the following conclusions have been reached:

9.1 Summary of Investigation Findings

The following summary is derived from works conducted during the investigation phase:

- Gross contamination in soils at the site was not identified during both investigations, with the exception of bonded ACM observed on the surface and top 100 mm at two test pit locations (TP3 and TP12), scattered surface locations near the garden beds and also other locations observed by Arcadis, and within the uncontrolled fill at three (3) test pit locations (TP1, TP4, and GB2).
- The presence of bonded ACM at the surface and in the top 10 cm of soil profile (TP3 and TP12) exceeds the land use criteria of 'no visible asbestos' within the top 10 cm and therefore needs to be removed and validated. Arcadis believe that that asbestos fragment reported at TP12 is likely to have been worked into the surface soil as a result of vehicle movements on site as the natural was observed at 0.1 m bgl and the fill material was primarily road base gravels with no suspicious anthropogenic materials.
- ACM was identified and confirmed by laboratory analysis within the fill profile below 10 cm at three (3) of the thirty two (32) locations (TP1, TP4, and GB2) , and exceeded the land use criteria of 0.01% (Residential with access to soils) with the results showing TP1 (0.054%) and TP4 (0.019%). ACM concentration in GB2 is 0.008 w/w%.
- Arcadis understands that approximately 2,500 m^3 of materials require offsite disposal to reach required building levels. Based on the test pit descriptions, Arcadis estimated the total volume of fill (in-situ without allowing for a bulking factor) across the site to be approximately 2,275 m^3 +/- 10% (7,600 m^2 x 0.30 m).
- Arcadis have assessed the available data in detail and note that:
  - the asbestos fragments reported in the fill material are primarily located in the west of the site and localised to the raised garden beds. Arcadis have taken a conservative buffer around the asbestos impacted test pits and consider these materials to be preliminary-classified as **Special Waste** with a General Solid Waste (GSW) matrix. This area is outlined in red in ***Appendix A, Figure 5***, and the estimated volume requiring disposal as Special Waste with GSW is 1,050 m^3.
  - anthropogenic materials (with no apparent ACM) were observed in the fill material in the southern portion of the site. This area is outlined in blue in ***Appendix A, Figure 5***. The chemical analysis for the fill material from test pits in this section returned concentrations below the **GSW CT1 (Recyclable)** criteria for MET Recycling in Silverwater, EPL 20948. Arcadis suggest a preliminary waste classification for this material as **GSW-R** assuming no ACM and minimal building rubble (to be guided by an experienced contaminated land consultant or hygienist during the excavation work).
  - the remaining fill material observed on site, to the centre, east and north of the site can be preliminary classified as a combination of **GSW-R** and virgin excavated natural material (**VENM**), with the exception of the total recoverable hydrocarbons (TRH) hotspot outlined in yellow in ***Appendix A, Figure 5*** which would need to be disposed of as **GSW** (or included with the general solid waste with asbestos fragments)***.***
  - Arcadis estimate the volume of GSW-R and VENM to be approximately 1,400 m^3 and the hotspot volume to be approximately 50 m^3.

9.2 Recommendations

Arcadis makes the following recommendations:

- An Asbestos Management Plan needs to be prepared for the site.
- The ACM impacted fill material could be capped on site or disposed offsite as part of the required bulk excavation works. A Remediation Action Plan will need to be prepared if onsite management of the asbestos contaminated fill is a viable option. An Environmental Management Plan (EMP), which will go on title, will have to be prepared. If disposal of asbestos contaminated materials will be the preferred option, the following items should then be included in the AMP negating the requirement for a RAP:
  - guide the removal of ACM impacted material (Emu bob) from the top 10 cm across the site and document the subsequent clearance certificate.
  - appropriately manage the excavation of ACM impacted fill materials in the western portion of the site (outlined in red on ***Appendix A, Figure 5***) which will be excavated and appropriately disposed during construction of the new buildings. By removing this material, all test pits where ACM has been observed above HIL-A will be removed negating the need for a separate Remediation Action Plan. A suitably qualified consultant needs to be engaged to confirm (by visual assessment) that all fill material has been successfully removed from within this area.
  - appropriately manage the excavation of the fill material containing anthropogenic material (outlined in blue on ***Appendix A, Figure 5)***, to ensure that a suitably qualified consultant is present during the works to observe the material being stockpiled and provide expert opinion, and possibly additional sampling to confirm the preliminary classification of the material. If ACM will be observed within this material, the waste classification should be re-classified to Special Waste – GSW.
  - Air monitoring is advised during the removal of all fill material as a conservative measure, and to ensure that if further ACM is identified, the appropriate management and monitoring controls are in place.
  - After excavation works, a short letter report will have to be prepared and provided to the Auditor. The letter report should include observations (and photographic evidence) made by the suitably qualified consultant. Waste disposal dockets should also be included. A clearance certificates should be provided by a licenced asbestos hygienist after all excavation works are completed.
- An unexpected find protocol (UFP) should be included in the Construction Environmental Management Plan (CEMP) to address any additional contamination not identified during assessment (the UFP and AMP could form an Appendix to the CEMP).

9.3 Extent of Uncertainties in the Results

The sampling methodologies used by Arcadis during this investigative works have been designed to limit uncertainty in the results. Arcadis is confident that the results of this investigation give an accurate representation of the status of the site but note that in all subsurface investigations the potential remains for variability between sampling points and for conditions to be different on site from the conditions documented in this report.

10 REFERENCES

Arcadis Australia Pacific Pty Ltd (Arcadis, April 2018) Preliminary Site Investigation (PSI) Report No.10019954RP01

Arcadis Australia Pacific Pty Ltd (Arcadis, July 2018) Due Diligence Soil Contamination Assessment (DDSCA) and Indicative Waste Classification for the Proposed Development

AS4482.1 – 2005 Guide to the Sampling and Investigation of Potentially Contaminated Soil Part 1

AS4482.2 – 1999 Guide to the Sampling and Investigation of Potentially. Contaminated Soil Part 2: Volatile Substances

NSW Environment Protection Authority (2015) Guidelines on the Duty to Report Contamination Under the Contaminated Land Management Act 1997

NSW Environment Protection Authority (1995) Sampling Design Guidelines

National Environment Protection Council (NEPC, 10th December 1999) as amended 11th April 2013, *National Environment Protection (Assessment of Site Contamination) Measure* [NEPM]

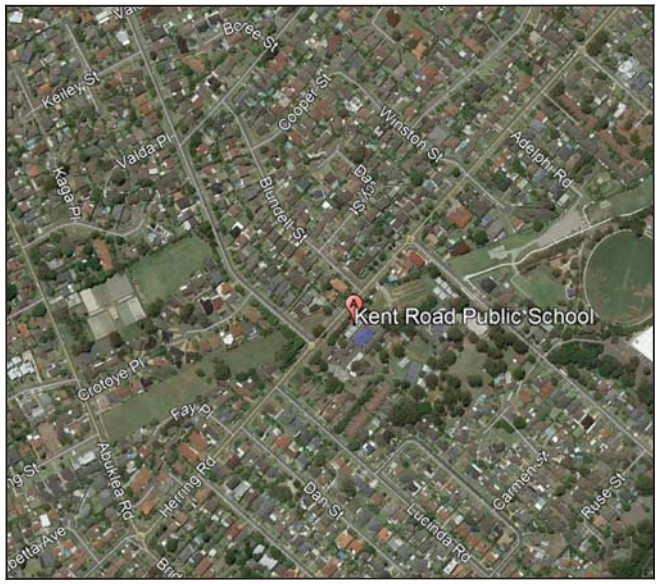
NSW Office of Environment & Heritage (NSW OEH, August 2011) *Guidelines for Consultants Reporting on Contaminated Sites*

NSW EPA (2014) Waste Classification Guidelines – Part 1: Classification of Waste

APPENDIX A FIGURES

COUNTRY

REGION



SITE LOCATION

LEGEND:

Site Boundary

N

KENT ROAD PUBLIC SCHOOL- 126 KENT ROAD
MARSFIELD, NSW, AUSTRALIA

SITE LOCATION PLAN

ARCADIS

FIGURE
1

CITY:EMERYVILLE, CA DIV/GROUP:ENV/CAD DB:A.REYES
E:\OneDrive - ARCADIS\BIM 360 Docs\AUSTRALIA\10034229 Kent Rd, Marsfield\2019\10034229\01-DWG\10034229-Fig1-SLM.dwg LAYOUT: 1 SAVED: 8/30/2019 11:14 AM ACADVER: 23.0S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 8/30/2019 11:14 AM BY: NADIGERA, CHIDAMBARA
XREFS:

LEGEND:

- Site Boundary
- Test Pit Location (2019)
- Borehole Location (2018)
- Study Area Due Diligence Assessment

N

NOTE:

HISTORICAL FEATURE LOCATIONS ARE APPROXIMATE.

0 20 40

SCALE IN METRES

KENT ROAD PUBLIC SCHOOL- 126 KENT ROAD
MARSFIELD, NSW, AUSTRALIA

LOCATION OF SOIL BORES FROM DUE DILIGENCE ASSESSMENT IN 2018

ARCADIS

FIGURE 4

CITY:EMERYVILLE, CA DIV/GROUP:ENV/CAD DB:A.REYES
E:\OneDrive - ARCADIS\BIM 360 Docs\AUSTRALIA\10034229 Kent Rd, Marsfield\2019\10034229\01-DWG\10034229-Fig 4 LOSB .dwg LAYOUT: 4 SAVED: 8/30/2019 10:39 AM ACADVER: 23.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 8/30/2019 10:40 AM BY:
NADIGERA, CHIDAMBARA

LEGEND:

- Site Boundary
- Test Pit Location
- 14 m Grid

N

0 20 40

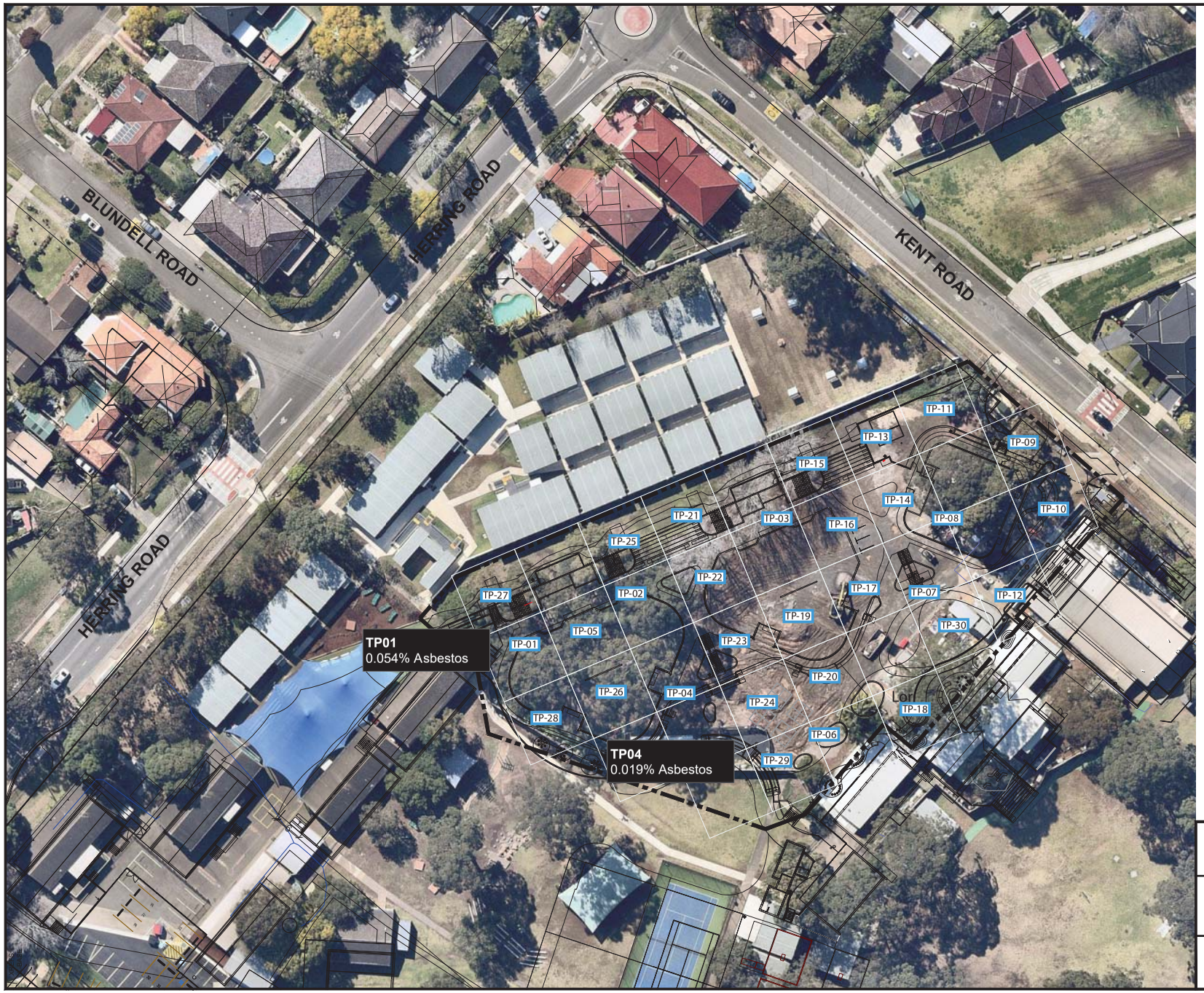
SCALE IN METRES

KENT ROAD PUBLIC SCHOOL- 126 KENT ROAD
MARSFIELD, NSW, AUSTRALIA

TEST PIT SAMPLING LOCATIONS

ARCADIS

FIGURE
3



LEGEND:

- Site Boundary
- Test Pit Location
- 14 m Grid

N

0 20 40

SCALE IN METRES

KENT ROAD PUBLIC SCHOOL- 126 KENT ROAD
MARSFIELD, NSW, AUSTRALIA

TEST PIT SAMPLING FILL MATERIAL EXCEEDANCES

ARCADIS

FIGURE
4

LEGEND:

- Site Boundary
- Test Pit Location
- 14 m Grid
- GSW CT1 Recyclable
- GSW due to TRH exceedance
- GSW CT1 Recyclable. Providing no ACM is observed when excavating anthropogenic material observed in fill
- Special Waste with GSW matrix

N

0 20 40

SCALE IN METRES

KENT ROAD PUBLIC SCHOOL- 126 KENT ROAD
MARSFIELD, NSW, AUSTRALIA

INDICATIVE WASTE CLASSIFICATION

ARCADIS

FIGURE
5

APPENDIX B LOTSEARCH REPORT

LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 10 Apr 2018 14:44:09

Reference: LS003146

Address: 126 Kent Road, Marsfield, NSW 2122

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.

Table of Contents

Location Confidences 2
Dataset Listings 3
Site Location Aerial 6
Contaminated Land & Waste Management Facilities 7
EPA PFAS Investigation Program 9
EPA Other Sites with Contamination Issues 10
EPA Current Licensed Activities 11
EPA Delicensed & Former Licensed Activities 12
UPSS Sensitive Zones 14
Historical Business Activities 15
Historical Aerial Imagery & Maps 31
Topographic Features 45
Elevation Contours 50
Hydrogeology & Groundwater 51
Geology 57
Naturally Occurring Asbestos Potential 59
Soils 60
Acid Sulfate Soils 64
Dryland Salinity 67
Mining Subsidence Districts 68
State Environmental Planning 69
Local Environmental Planning 71
Heritage 76
Natural Hazards 78
Ecological Constraints 79
Terms & Conditions 91

Location Confidences

Where Lotsearch has had to georeference features from supplied addresses, a location confidence has been assigned to the data record. This indicates a confidence to the positional accuracy of the feature. Where applicable, a code is given under the field heading “LC” or “LocConf”. These codes lookup to the following location confidences:

LC Code	Location Confidence
1	Georeferenced to the site location / premise or part of site
2	Georeferenced with the confidence of the general/approximate area
3	Georeferenced to the road or rail
4	Georeferenced to the road intersection
5	Feature is a buffered point
6	Land adjacent to Georeferenced Site
7	Georeferenced to a network of features

Dataset Listing

Datasets contained within this report, detailing their source and data currency:

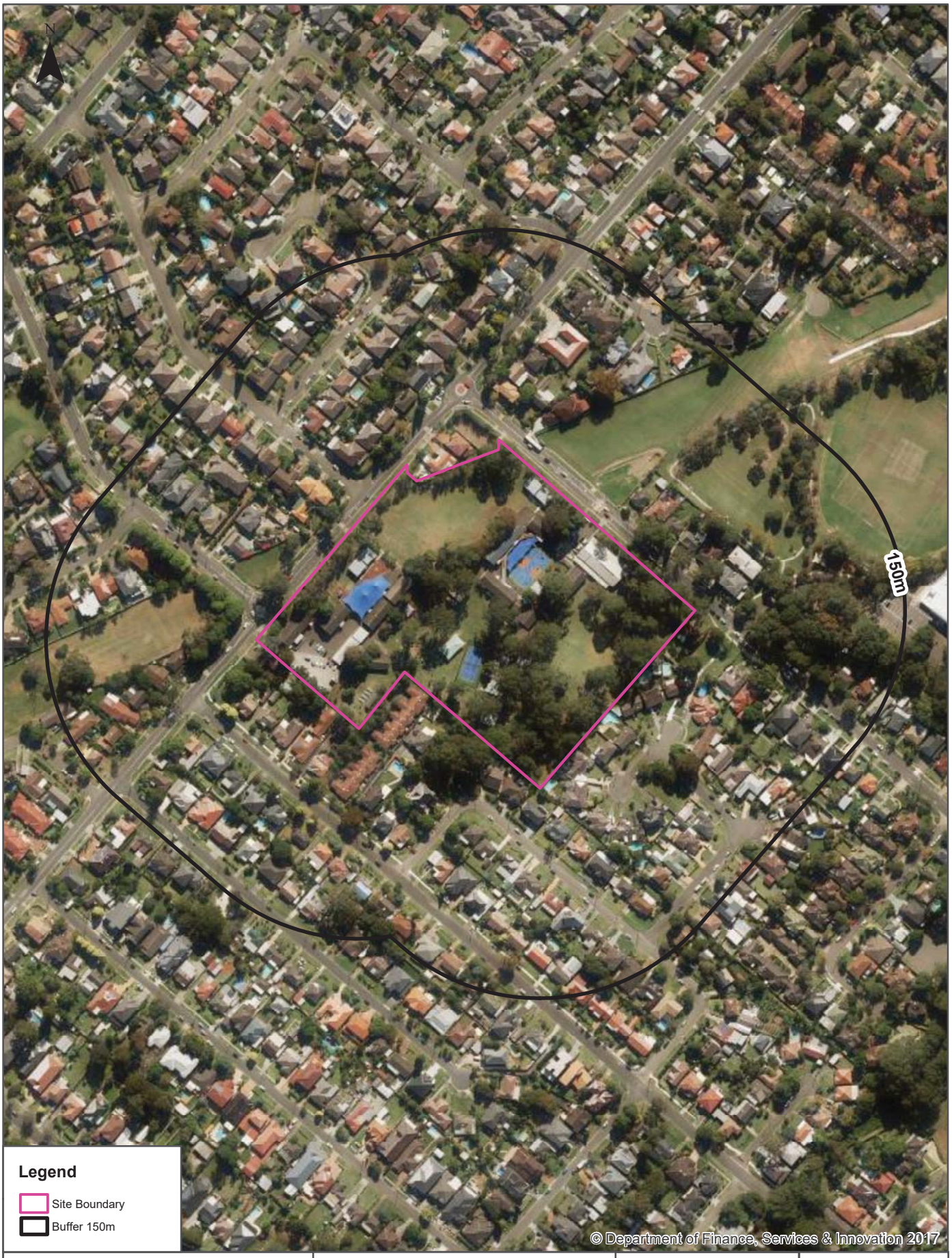
Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	Dept. Finance, Services & Innovation	10/04/2018	10/04/2018	Daily	-	-	-	-
Topographic Data	Dept. Finance, Services & Innovation	11/01/2018	11/01/2018	As required	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	10/04/2018	09/02/2018	Monthly	1000	0	0	0
Contaminated Land: Records of Notice	Environment Protection Authority	10/04/2018	10/04/2018	Monthly	1000	0	0	0
Former Gasworks	Environment Protection Authority	05/03/2018	12/09/2017	Monthly	1000	0	0	0
National Waste Management Site Database	Geoscience Australia	02/02/2018	07/03/2017	Quarterly	1000	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	07/03/2018	07/03/2018	Monthly	2000	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	11/01/2018	11/01/2018	Quarterly	1000	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	10/04/2018	10/04/2018	Monthly	1000	0	0	0
Delicensed POEO Activities still Regulated by the EPA	Environment Protection Authority	10/04/2018	10/04/2018	Monthly	1000	0	0	1
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	10/04/2018	10/04/2018	Monthly	1000	0	4	4
UPSS Environmentally Sensitive Zones	Environment Protection Authority	14/04/2015	12/01/2010	As required	1000	0	0	0
UBD Business to Business Directory 1991 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business to Business Directory 1991 (Road & Area Matches)	Hardie Grant			Not required	150	-	1	1
UBD Business to Business Directory 1986 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business to Business Directory 1986 (Road & Area Matches)	Hardie Grant			Not required	150	-	1	1
UBD Business Directory 1982 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1982 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1978 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1978 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1975 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1975 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1970 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1970 (Road & Area Matches)	Hardie Grant			Not required	150	-	2	2
UBD Business Directory 1965 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	1	1
UBD Business Directory 1965 (Road & Area Matches)	Hardie Grant			Not required	150	-	3	3
UBD Business Directory 1961 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1961 (Road & Area Matches)	Hardie Grant			Not required	150	-	7	7
UBD Business Directory 1950 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1950 (Road & Area Matches)	Hardie Grant			Not required	150	-	13	13

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	1000	0	0	0
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	1000	-	4	19
Points of Interest	Dept. Finance, Services & Innovation	11/01/2018	11/01/2018	Annually	1000	1	4	54
Tanks (Areas)	Dept. Finance, Services & Innovation	11/01/2018	11/01/2018	Annually	1000	0	0	0
Tanks (Points)	Dept. Finance, Services & Innovation	11/01/2018	11/01/2018	Annually	1000	0	0	1
Major Easements	Dept. Finance, Services & Innovation	08/01/2018	08/01/2018	As required	1000	0	0	4
State Forest	Dept. Finance, Services & Innovation	18/01/2018	18/01/2018	As required	1000	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	18/01/2018	30/09/2017	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 Primary Industries	15/03/2018	01/10/2005	As required	1000	0	0	0
Groundwater Boreholes	NSW Dept. of Primary Industries - Office of Water / Water Administration Ministerial Corporation; Commonwealth of Australia (Bureau of Meteorology)	21/03/2016	01/12/2015	Annually	2000	0	0	26
Geological Units 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	1	-	2
Geological Structures 1:100,000	NSW Dept. of Industry, Resources & Energy	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
Soil Landscapes	NSW Office of Environment & Heritage	12/08/2014		None planned	1000	1	-	3
Atlas of Australian Soils	CSIRO	19/05/2017	17/02/2011	As required	1000	1	1	2
Standard Local Environmental Plan Acid Sulfate Soils	NSW Planning and Environment	07/10/2016	07/10/2016	As required	500	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000	1	1	2
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 Office of Environment & Heritage	12/05/2017	01/01/2002	None planned	1000	-	-	-
Mining Subsidence Districts	Dept. Finance, Services & Innovation	13/07/2017	01/07/2017	As required	1000	0	0	0
SEPP 14 - Coastal Wetlands	NSW Planning and Environment	17/12/2015	24/10/2008	Annually	1000	0	0	0
SEPP 26 - Littoral Rainforest	NSW Planning and Environment	17/12/2015	05/02/1988	Annually	1000	0	0	0
SEPP 71 - Coastal Protection	NSW Planning and Environment	17/12/2015	01/08/2003	Annually	1000	0	0	0
SEPP Major Developments 2005	NSW Planning and Environment	09/03/2013	25/05/2005	Under Review	1000	0	0	1
SEPP Strategic Land Use Areas	NSW Planning and Environment	01/08/2017	28/01/2014	Annually	1000	0	0	0
LEP - Land Zoning	NSW Planning and Environment	29/01/2018	19/01/2018	Quarterly	1000	2	10	69
LEP - Minimum Subdivision Lot Size	NSW Planning and Environment	04/04/2018	23/03/2018	Quarterly	0	0	-	-
LEP - Height of Building	NSW Planning and Environment	04/04/2018	23/03/2018	Quarterly	0	0	-	-
LEP - Floor Space Ratio	NSW Planning and Environment	04/04/2018	23/03/2018	Quarterly	0	1	-	-
LEP - Land Application	NSW Planning and Environment	04/04/2018	23/03/2018	Quarterly	0	1	-	-
LEP - Land Reservation Acquisition	NSW Planning and Environment	04/04/2018	09/03/2018	Quarterly	0	1	-	-

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
State Heritage Items	NSW Office of Environment & Heritage	04/04/2018	30/09/2016	Quarterly	1000	0	0	0
Local Heritage Items	NSW Planning and Environment	04/04/2018	23/03/2018	Quarterly	1000	0	0	6
Bush Fire Prone Land	NSW Rural Fire Service	05/02/2018	23/01/2018	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	2	2	5
RAMSAR Wetlands	Commonwealth of Australia Department of 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	2
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	09/04/2018	09/04/2018	Daily	10000	-	-	-

Aerial Imagery 2016

126 Kent Road, Marsfield, NSW 2122



Scale:	Data Sources: Aerial Imagery © Department Finance, Services & Innovation	Coordinate System: GDA 1994 MGA Zone 56	Date: 10 April 2018

0 50 100 200
Meters

Contaminated Land & Waste Management Facilities

126 Kent Road, Marsfield, NSW 2122

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
N/A	No records in buffer								

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.
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 & Waste Management Facilities

126 Kent Road, Marsfield, NSW 2122

Contaminated Land: Records of Notice

Record of Notices within the dataset buffer:

Map Id	Name	Address	Suburb	Notices	Area No	Location Confidence	Distance	Direction
N/A	No records in buffer							

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

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
N/A	No records in buffer											

Waste Management Facilities Data Source: Geoscience Australia
Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

EPA PFAS Investigation Program

126 Kent Road, Marsfield, NSW 2122

EPA PFAS Investigation Program

Sites that are part of the EPA PFAS investigation program, within the dataset buffer:

Id	Site	Address	Location Confidence	Distance	Direction
N/A	No records in buffer				

EPA PFAS Investigation Program: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

EPA Other Sites with Contamination Issues

126 Kent Road, Marsfield, NSW 2122

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

Sites within the dataset buffer:

Site Id	Site Name	Site Address	Dataset	Comments	Location Confidence	Distance	Direction
N/A	No records in buffer						

EPA Other Sites with Contamination Issues: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

EPA Activities

126 Kent Road, Marsfield, NSW 2122

Licensed Activities under the POEO Act 1997

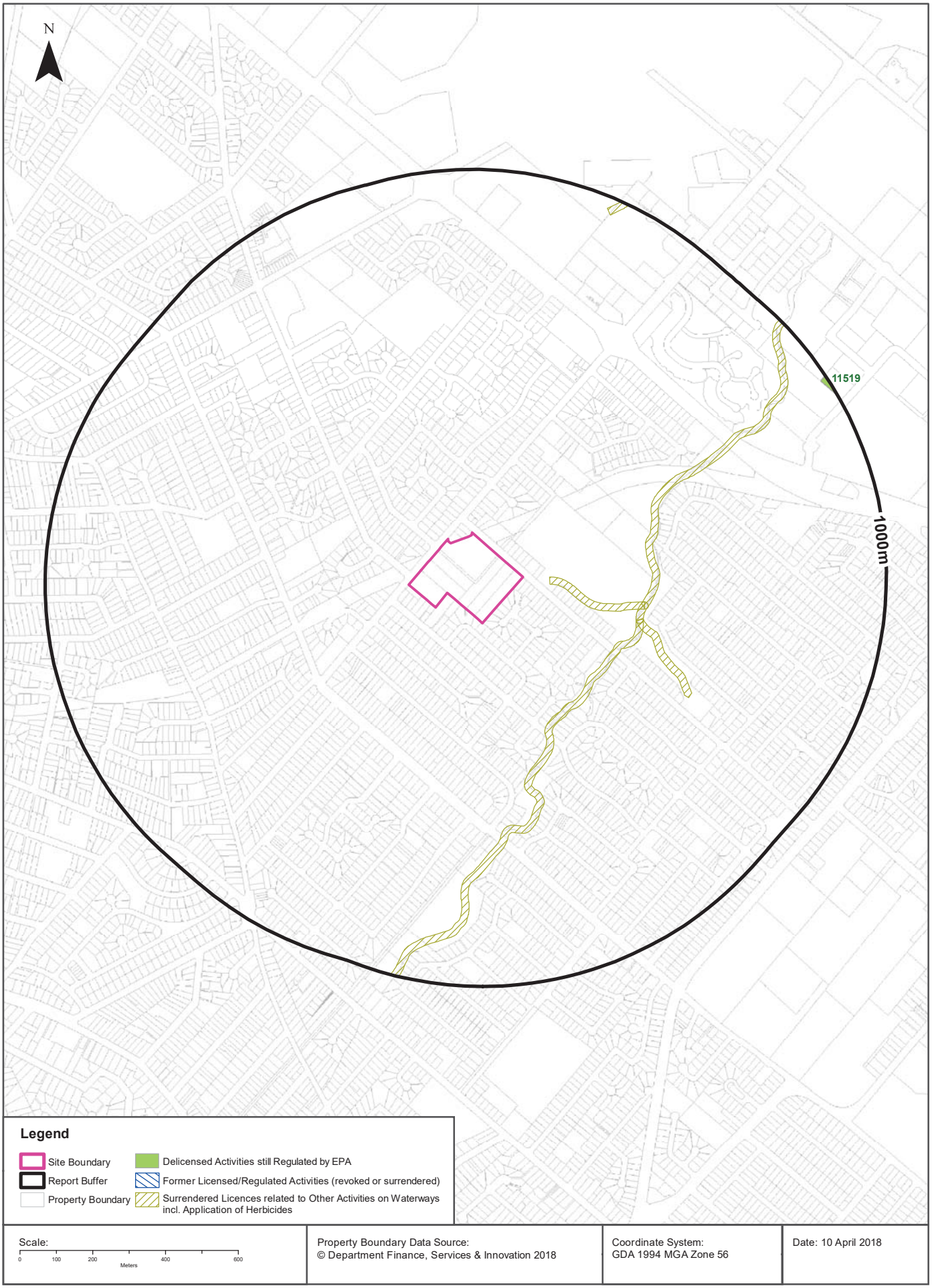
Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
N/A	No records in buffer							

POEO Licence Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Delicensed & Former Licensed EPA Activities

126 Kent Road, Marsfield, NSW 2122



EPA Activities

126 Kent Road, Marsfield, NSW 2122

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
11519	SPECIALIST DIAGNOSTIC SERVICES PTY LIMITED	SDS Pathology	10 Lyon Park Road	NORTH RYDE	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	979m	North 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

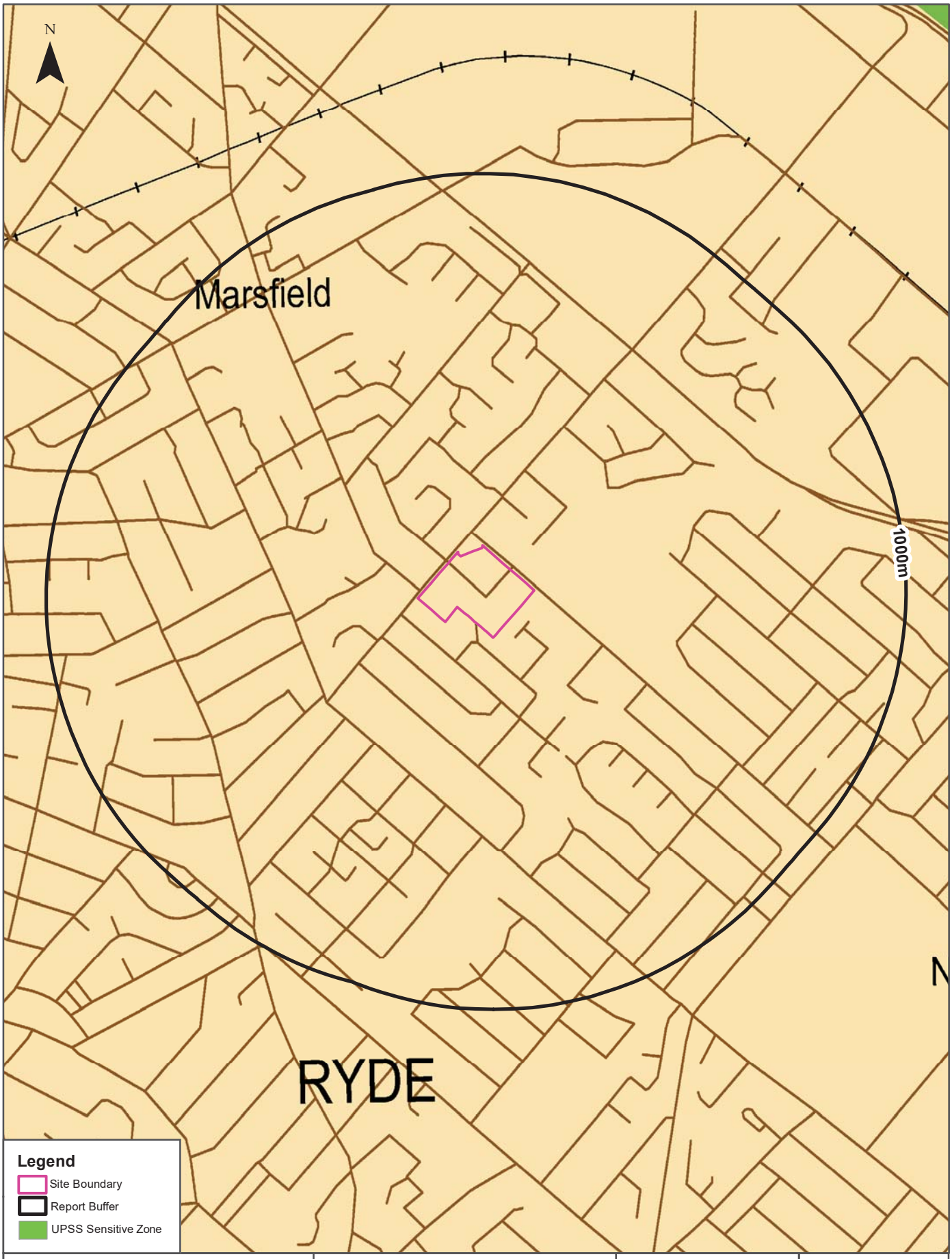
Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the dataset buffer:

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	73m	-
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	73m	-
5030	CITY OF RYDE	AREAS REQUIRING MOSQUITO TREATMENT WITHIN THE LGA OF RYDE CITY COUNCIL - RYDE NSW 2112	Surrendered		Miscellaneous licensed discharge to waters (at any time) - Pesticide application in areas requiring mosquito treatment	Network of Features	73m	-
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	73m	-

Former Licensed Activities Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

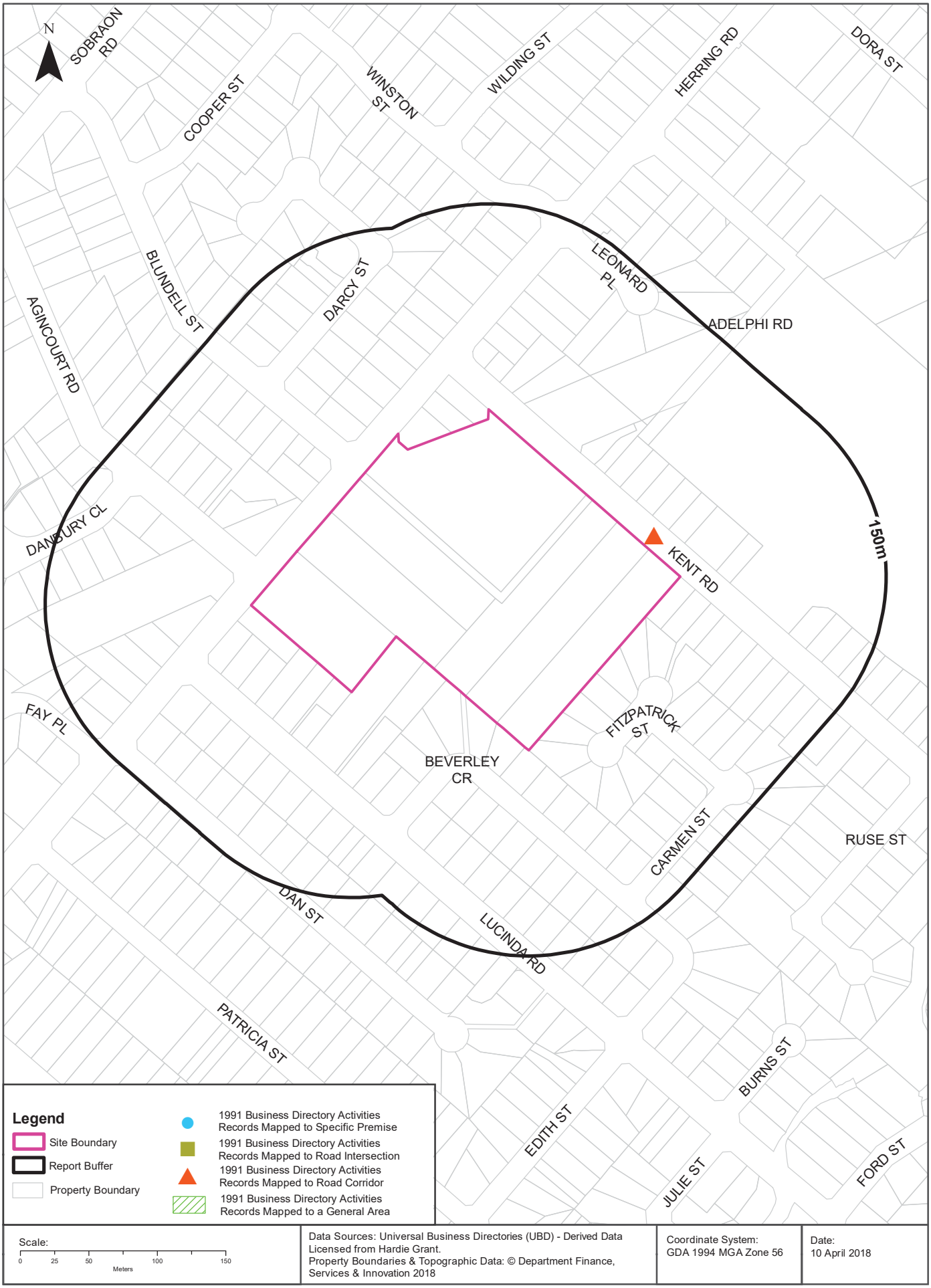
UPSS Sensitive Zones

126 Kent Road, Marsfield, NSW 2122



1991 Historical Business Directory Records

126 Kent Road, Marsfield, NSW 2122



Historical Business Directories

126 Kent Road, Marsfield, NSW 2122

1991 Business to Business Directory Records Premise or Road Intersection Matches

Records from the 1991 UBD Business to Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1991 Business to Business Directory Records Road or Area Matches

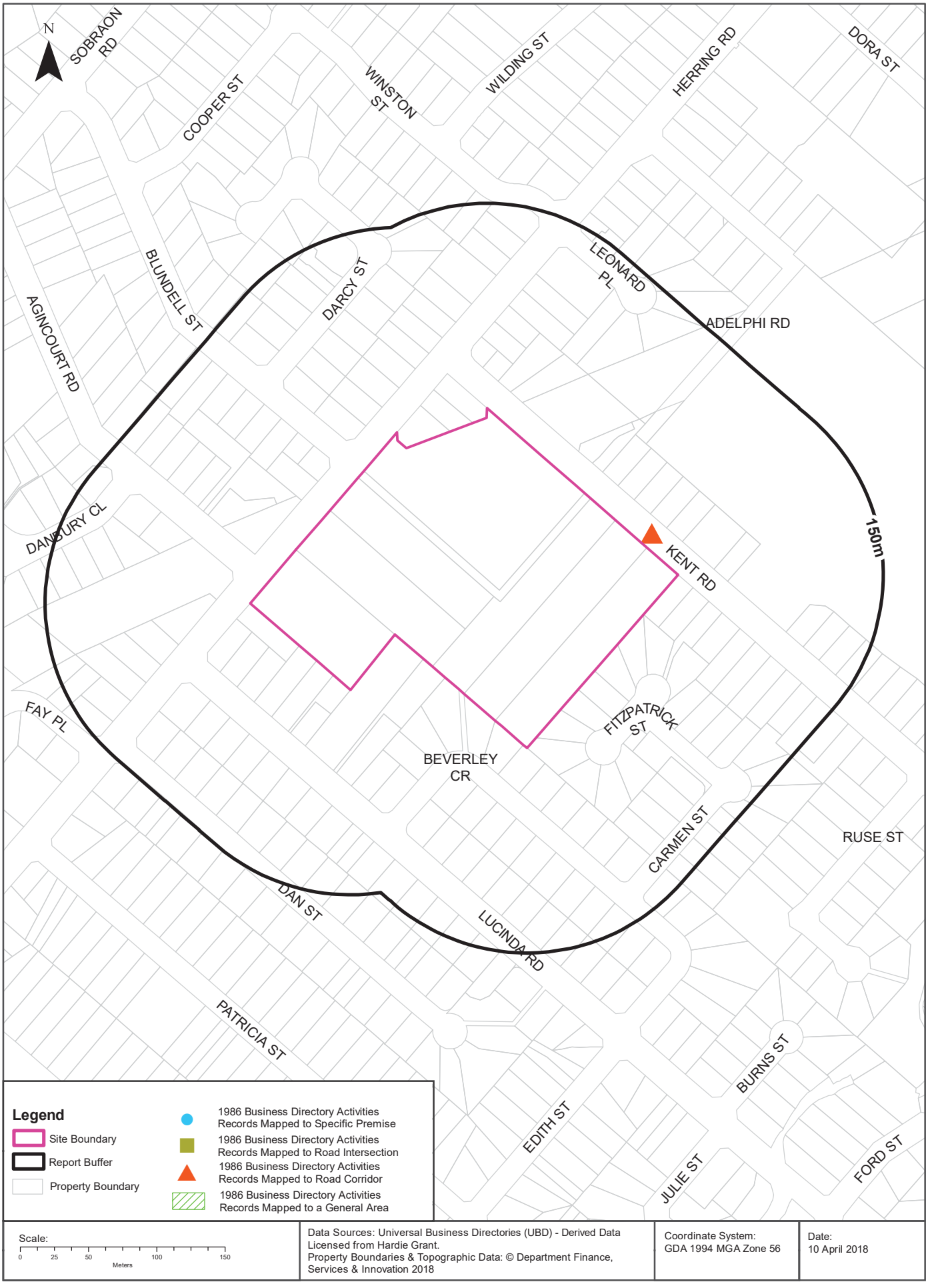
Records from the 1991 UBD Business to Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
Motor Garages & Service Stations	BP Kent Service Station., Kent Rd., North Ryde. 2113.	53560	Road Match	0m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1986 Historical Business Directory Records

126 Kent Road, Marsfield, NSW 2122



Historical Business Directories

126 Kent Road, Marsfield, NSW 2122

1986 Business to Business Directory Records Premise or Road Intersection Matches

Records from the 1986 UBD Business to Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1986 Business to Business Directory Records Road or Area Matches

Records from the 1986 UBD Business to Business Directory, 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:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
MOTOR GARAGES & SERVICE STATIONS.	BP Kent Service Station, Kent Rd., North Ryde.	64157	Road Match	0m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

126 Kent Road, Marsfield, NSW 2122

1982 Business Directory Records
Premise or Road Intersection Matches

Records from the 1982 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1982 Business Directory Records
Road or Area Matches

Records from the 1982 UBD Business Directory, 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:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
N/A	No records in buffer			

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

126 Kent Road, Marsfield, NSW 2122

1978 Business Directory Records
Premise or Road Intersection Matches

Records from the 1978 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1978 Business Directory Records
Road or Area Matches

Records from the 1978 UBD Business Directory, 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:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
N/A	No records in buffer			

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

126 Kent Road, Marsfield, NSW 2122

1975 Business Directory Records
Premise or Road Intersection Matches

Records from the 1975 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1975 Business Directory Records
Road or Area Matches

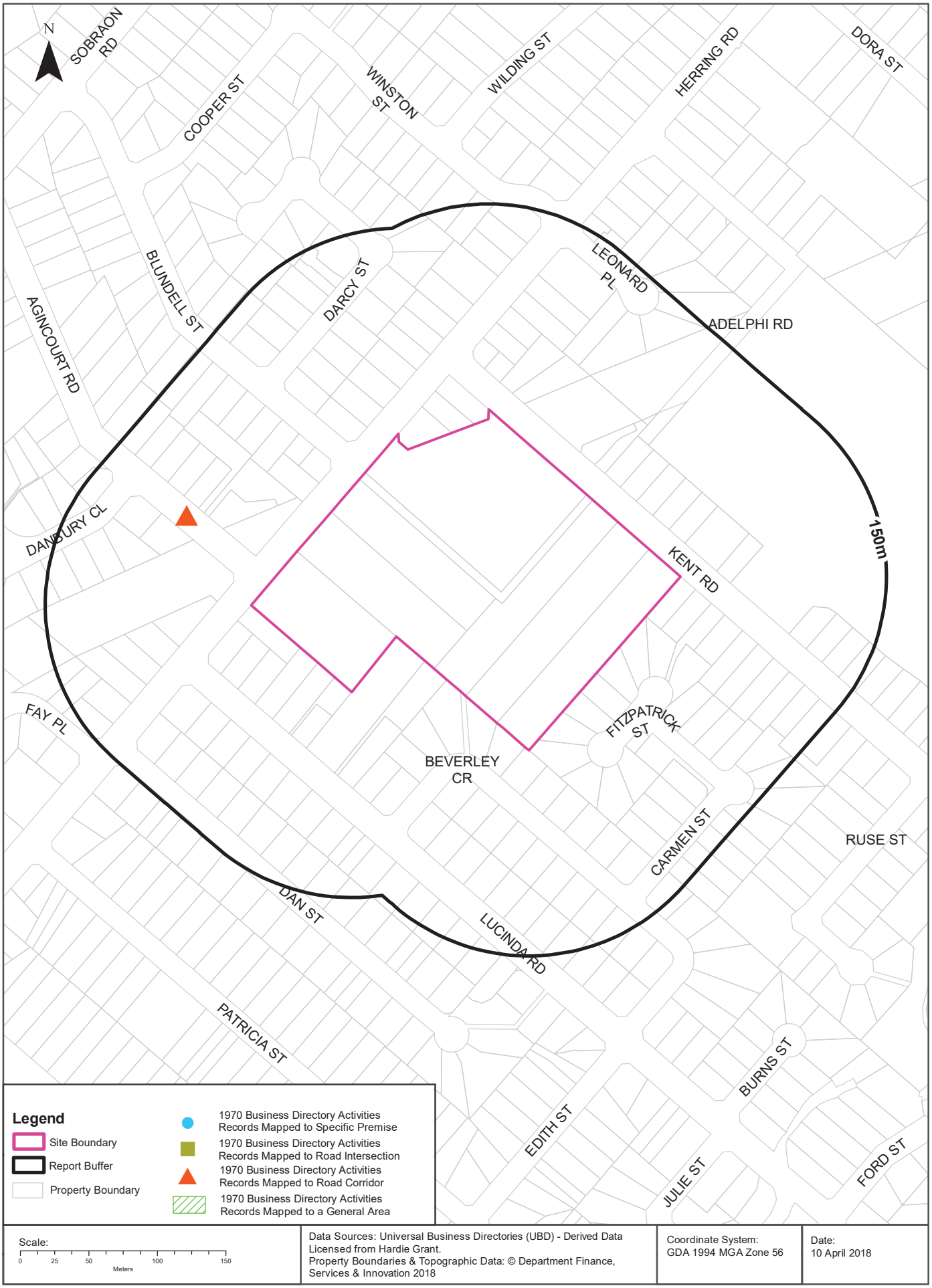
Records from the 1975 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
N/A	No records in buffer			

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1970 Historical Business Directory Records

126 Kent Road, Marsfield, NSW 2122



Historical Business Directories

126 Kent Road, Marsfield, NSW 2122

1970 Business Directory Records
Premise or Road Intersection Matches

Records from the 1970 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1970 Business Directory Records
Road or Area Matches

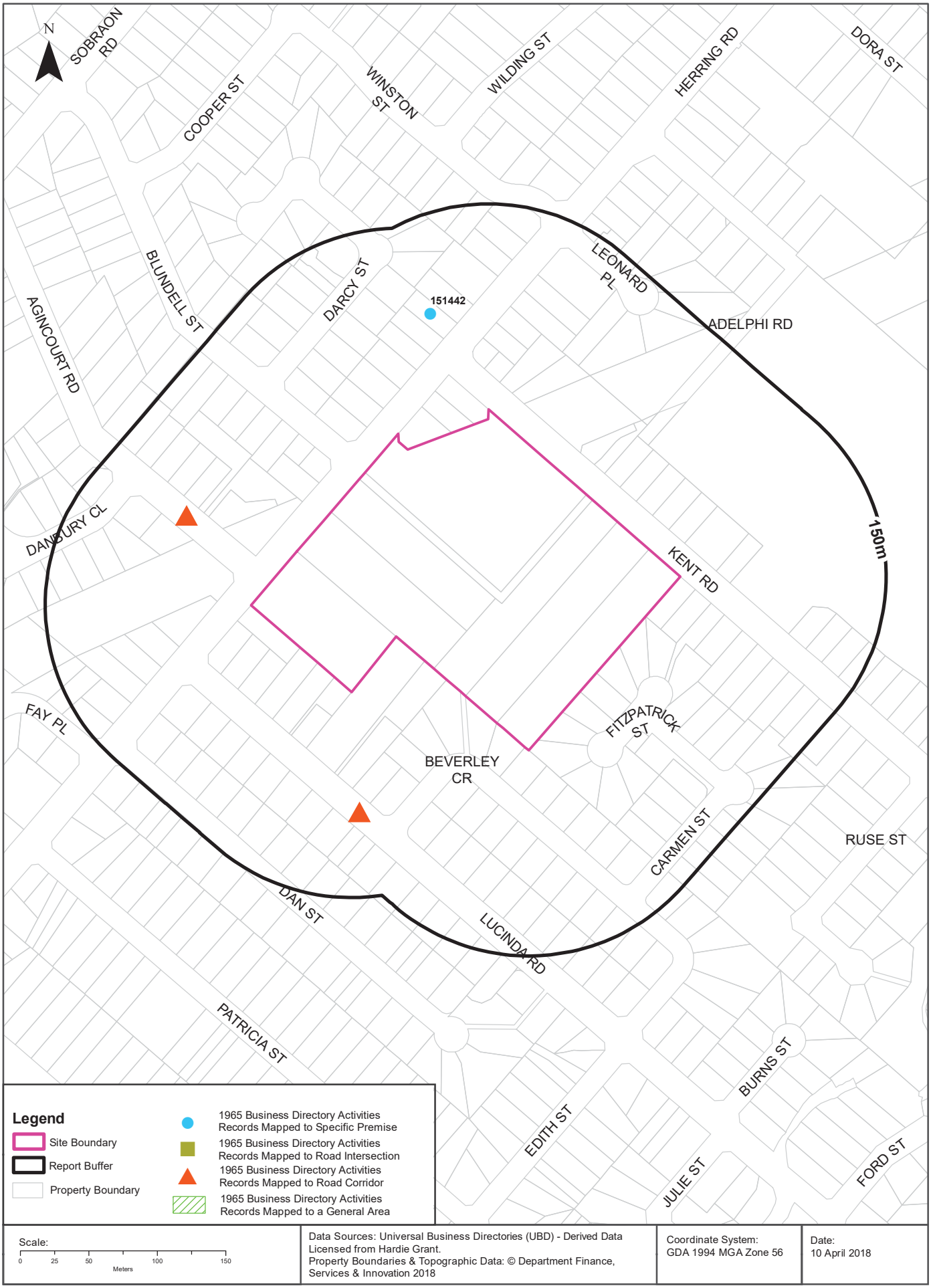
Records from the 1970 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
GROCERS-RETAIL (G655)	Phillips,F. A. and E.,Agincourt Rd.,Eastwood	312886	Road Match	21m
DELICATESSENS (D080)	Ramsay, Miss M. I., Agincourt Rd., Eastwood	287862	Road Match	21m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1965 Historical Business Directory Records

126 Kent Road, Marsfield, NSW 2122



Historical Business Directories

126 Kent Road, Marsfield, NSW 2122

1965 Business Directory Records
Premise or Road Intersection Matches

Records from the 1965 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
Tile Fixers - Floor/Wall - Eastwood	Pharo, A. F. , 48 Herring St.	151442	Premise Match	82m	North

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1965 Business Directory Records
Road or Area Matches

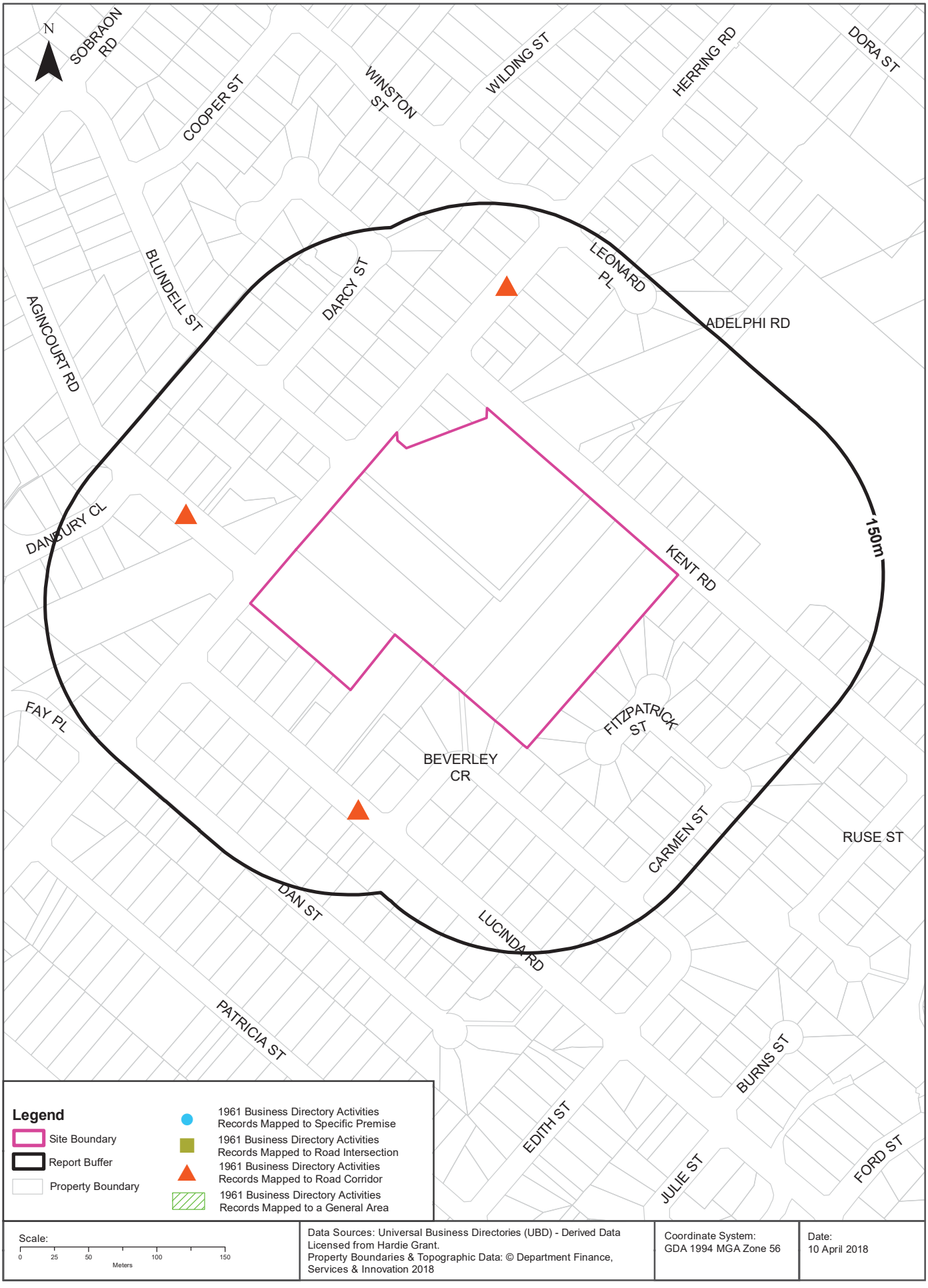
Records from the 1965 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
Grocers - Retail	Phillips, F. A. and E. , Agincourt Rd., Eastwood	96995	Road Match	21m
DELICATESSENS	Ramsay, Miss M. I., Agincourt Rd., Eastwood	72632	Road Match	21m
Milk Vendors	Irvine, A. D., Lucinda Rd., Eastwood	115863	Road Match	53m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1961 Historical Business Directory Records

126 Kent Road, Marsfield, NSW 2122



Historical Business Directories

126 Kent Road, Marsfield, NSW 2122

1961 Business Directory Records
Premise or Road Intersection Matches

Records from the 1961 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1961 Business Directory Records
Road or Area Matches

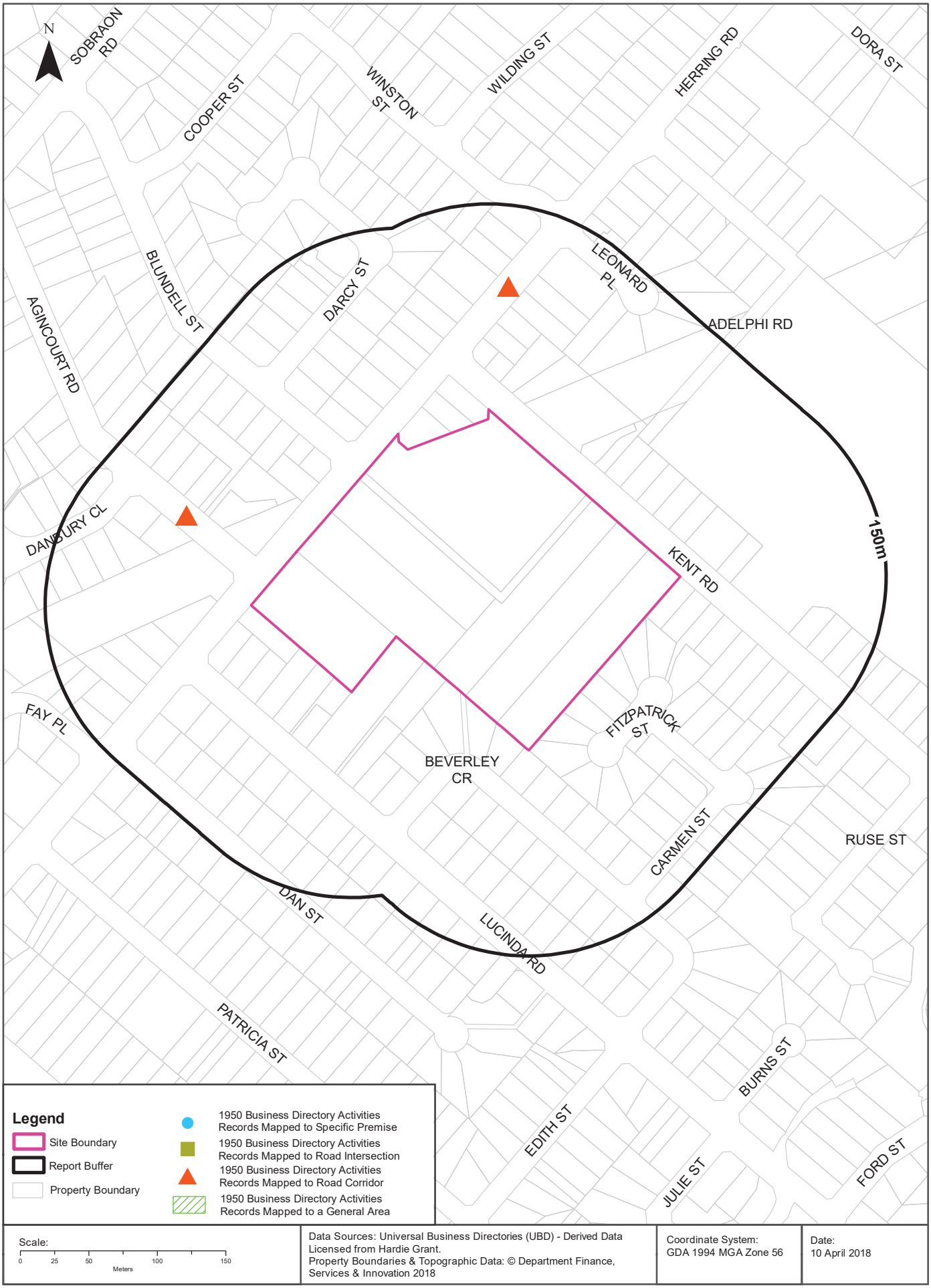
Records from the 1961 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
HATCHERIES	Nail, L. L., Herring Rd., Eastwood	323891	Road Match	0m
TILE FIXERS-FLOOR/WALL	Pharo, A. F., Herring St. EASTWOOD	256913	Road Match	0m
MOTOR GARAGES & ENGINEERS	Jeffery, A., Agincourt Rd. EASTWOOD	347450	Road Match	21m
GROCERS-RETAIL	Phillips, F. A. and E., Agincourt Rd., Eastwood	321066	Road Match	21m
DELICATESSENS	Ramsay, Miss M. I., Agincourt Rd., Eastwood	295193	Road Match	21m
MILK VENDORS	Irvine, A. D., Lucinda Rd., Eastwood	338662	Road Match	53m
ACCOUNTANTS & AUDITORS	Williams, C. H., Lucinda Rd., Eastwood	265925	Road Match	53m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1950 Historical Business Directory Records

126 Kent Road, Marsfield, NSW 2122



Historical Business Directories

126 Kent Road, Marsfield, NSW 2122

1950 Business Directory Records
Premise or Road Intersection Matches

Records from the 1950 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1950 Business Directory Records
Road or Area Matches

Records from the 1950 UBD Business Directory, 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:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
POULTRY FARMERS	Berghouse, J. W., Herring Rd., Eastwood	93868	Road Match	0m
ORCHARDISTS	Dayman, A. W., Herring Rd., Eastwood	90336	Road Match	0m
POULTRY FARMERS	Dayman, A. W., Herring Rd., Eastwood	93974	Road Match	0m
POULTRY FARMERS	Eastwood Hatchery, Herring Rd., .Eastwood	93991	Road Match	0m
MILK VENDORS	Irvine, A., Herring Rd., Eastwood	77791	Road Match	0m
POULTRY FARMERS	Nail, L. L., Herring Rd., Eastwood	94195	Road Match	0m
POULTRY FARMERS	Russell, L. G., Herring Rd., Eastwood	94260	Road Match	0m
MOTOR GARAGES &/OR ENGINEERS	Jeffery, A., Agincourt Rd., Eastwood	83922	Road Match	21m
MOTOR PAINTERS	Jeffery, A., Agincourt Rd., Eastwood	84870	Road Match	21m
WELDERS-ELECTRIC &/OR OXY	Jeffery, A., Agincourt Rd., Eastwood	112865	Road Match	21m
MOTOR PANEL BEATERS	Jeffery, A., Agincourt Rd., Eastwood	85328	Road Match	21m
GROCERS-RETAIL	Phillips, F. A. and E., Agincourt Rd., Eastwood	58731	Road Match	21m
DELICATESSENS & SMALLGOODS DEALERS	Ramsay, Miss M. I., Agincourt Rd., Eastwood	31078	Road Match	21m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

126 Kent Road, Marsfield, NSW 2122

Dry Cleaners, Motor Garages & Service Stations 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:

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer					

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Dry Cleaners, Motor Garages & Service Stations Road or Area Matches

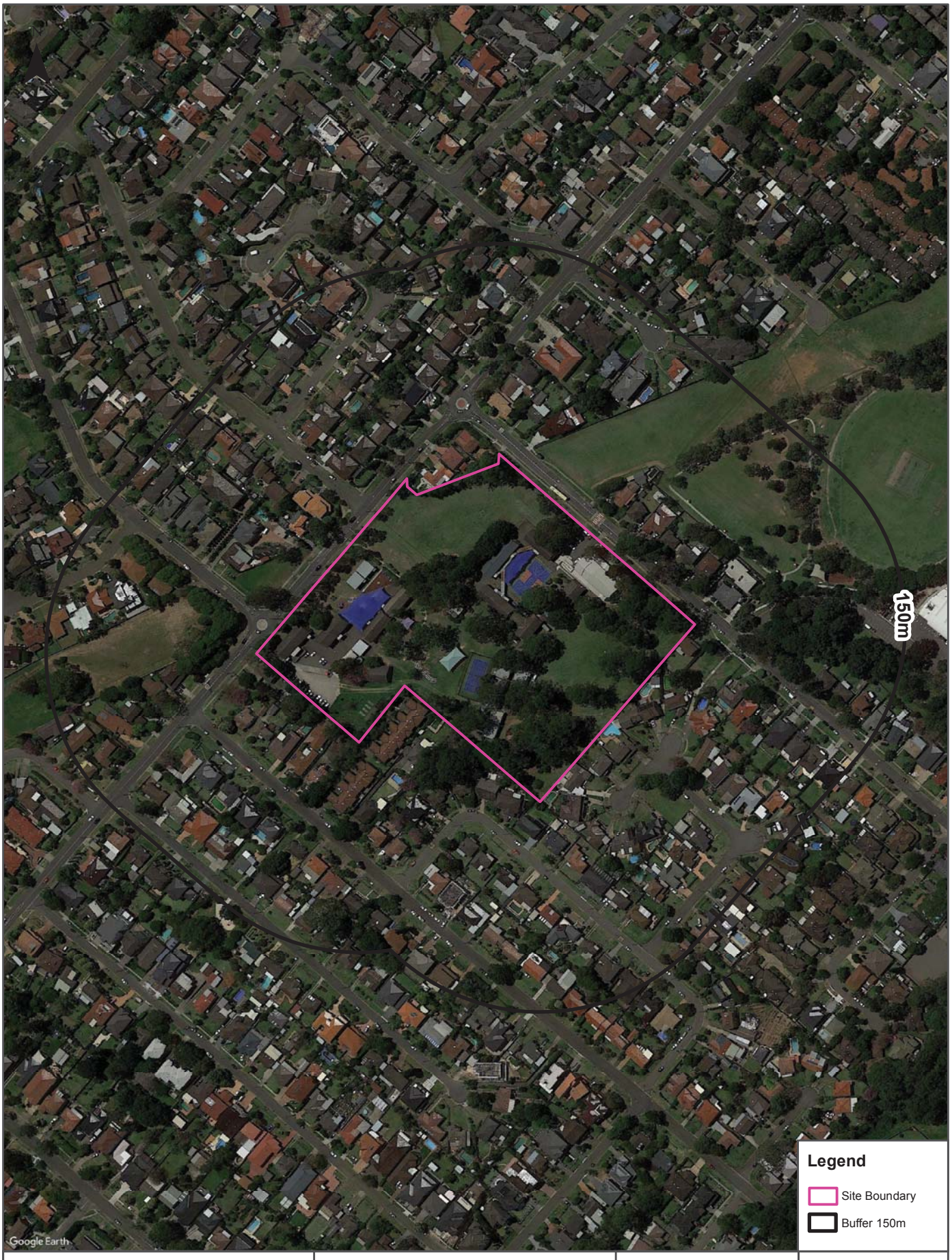
Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
Motor Garages & Service Stations	BP Kent Service Station., Kent Rd., North Ryde. 2113.	53560	1991	Road Match	0m
MOTOR GARAGES & SERVICE STATIONS.	BP Kent Service Station, Kent Rd., North Ryde.	64157	1986	Road Match	0m
MOTOR GARAGES & ENGINEERS	Jeffery, A., Agincourt Rd. EASTWOOD	347450	1961	Road Match	21m
MOTOR GARAGES &/OR ENGINEERS	Jeffery, A., Agincourt Rd., Eastwood	83922	1950	Road Match	21m
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Bobble's Service Station,Epplng Rd.NORTH RYDE	340851	1970	Road Match	639m
Motor Service Stations - Petrol, Oil, Etc. - North Ryde	Dobbie's Service Station, Epping Rd.	125972	1965	Road Match	639m
MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Dobble's Service Station, Epping Rd.	350533	1961	Road Match	639m
MOTOR GARAGES & ENGINEERS	Morris, S. Grime & Co. Pty. Ltd., 179 Epping Rd. EASTWOOD	347744	1961	Road Match	639m
MOTOR GARAGES & ENGINEERS	Pearson, J. & B., Epping Rd. EASTWOOD	347883	1961	Road Match	639m
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Pollard,H. Service Station,179 Epping Rd.EASTWOOD	341401	1970	Road Match	639m
MOTOR GARAGES & ENGINEERS	Robin Hood Service Station, Epping Rd. NORTH SYDNEY	348041	1961	Road Match	639m
Motor Service Stations - Petrol, Oil, Etc. - North Ryde	Robinhood Service Station, Epping Rd.	125974	1965	Road Match	639m
MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Robinhood Service Station, Epping Rd. NORTH SYDNEY	351033	1961	Road Match	639m
MOTOR GARAGES & ENGINEERS	Rotary Hoe Garage, Epping Rd. EASTWOOD	348066	1961	Road Match	639m
Motor Garages & Service Stations	Balaclava Garage Balaclava Rd, Eastwood 2122	53533	1991	Road Match	944m
MOTOR GARAGES & SERVICE STATIONS.	Balaclava Garage, Balaclava Rd, Eastwood.	64006	1986	Road Match	944m
MOTOR GARAGES & ENGINEERS	Fullagar, C. E., Balaclava Rd. EASTWOOD	347186	1961	Road Match	944m
MOTOR GARAGES &/OR ENGINEERS	Fullagar, C. E., Balaclava Rd., Eastwood	83779	1950	Road Match	944m
MOTOR SERVICE STATIONS-PETROL, Etc.	Fullagar, C. R., Balaclava Rd., Eastwood	85978	1950	Road Match	944m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Aerial Imagery 2015

126 Kent Road, Marsfield, NSW 2122



Scale:	Data Source Aerial Imagery: © 2018 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.	Coordinate System: GDA 1994 MGA Zone 56	Date: 10 April 2018

0 50 100 200
Meters

Aerial Imagery 2009

126 Kent Road, Marsfield, NSW 2122

Scale:
0 50 100 200
Meters

Data Source Aerial Imagery: © 2018 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 10 April 2018

Aerial Imagery 2002

126 Kent Road, Marsfield, NSW 2122

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0 50 100 200
Meters

Aerial Imagery 1991

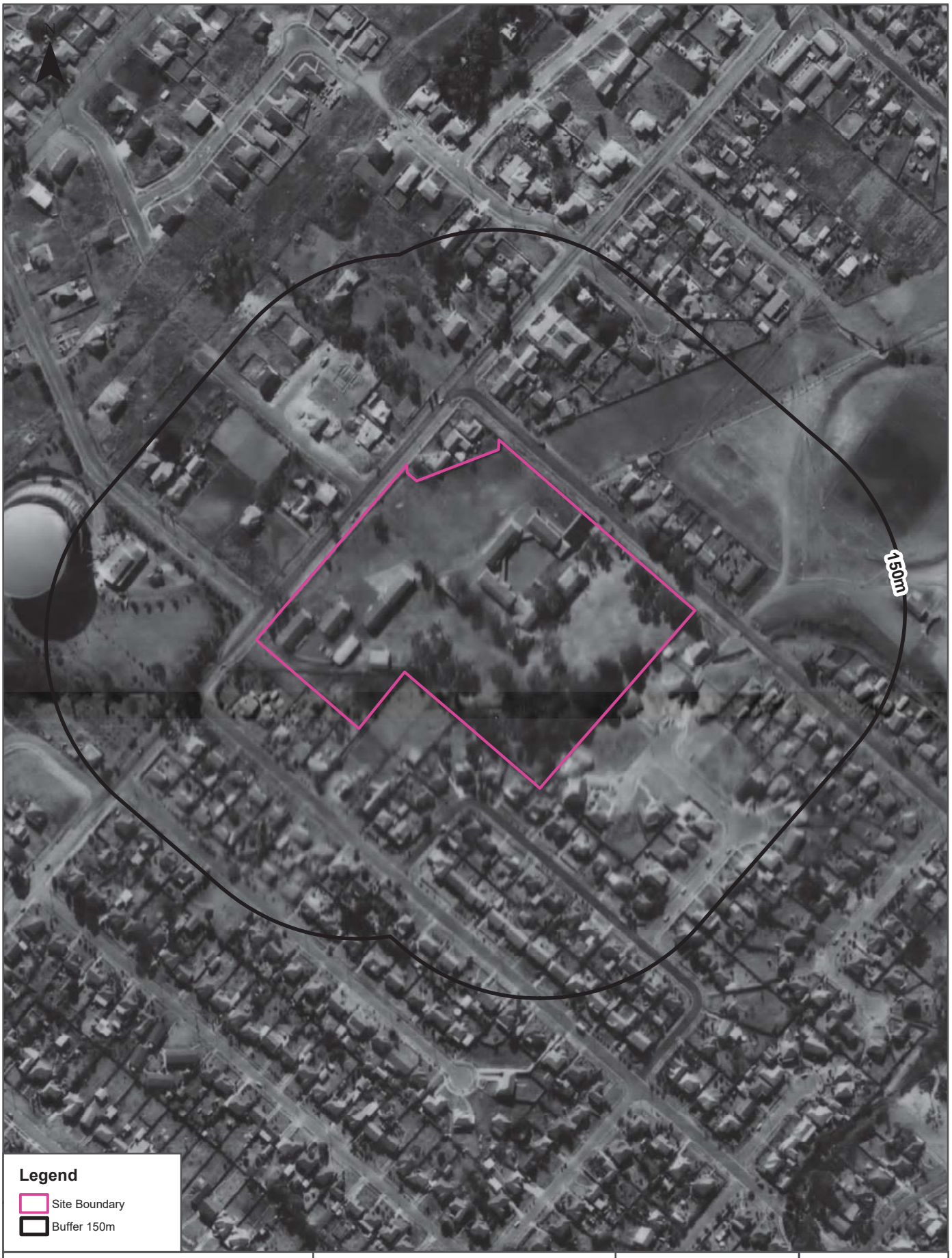
126 Kent Road, Marsfield, NSW 2122

Aerial Imagery 1982

126 Kent Road, Marsfield, NSW 2122

Aerial Imagery 1970

126 Kent Road, Marsfield, NSW 2122



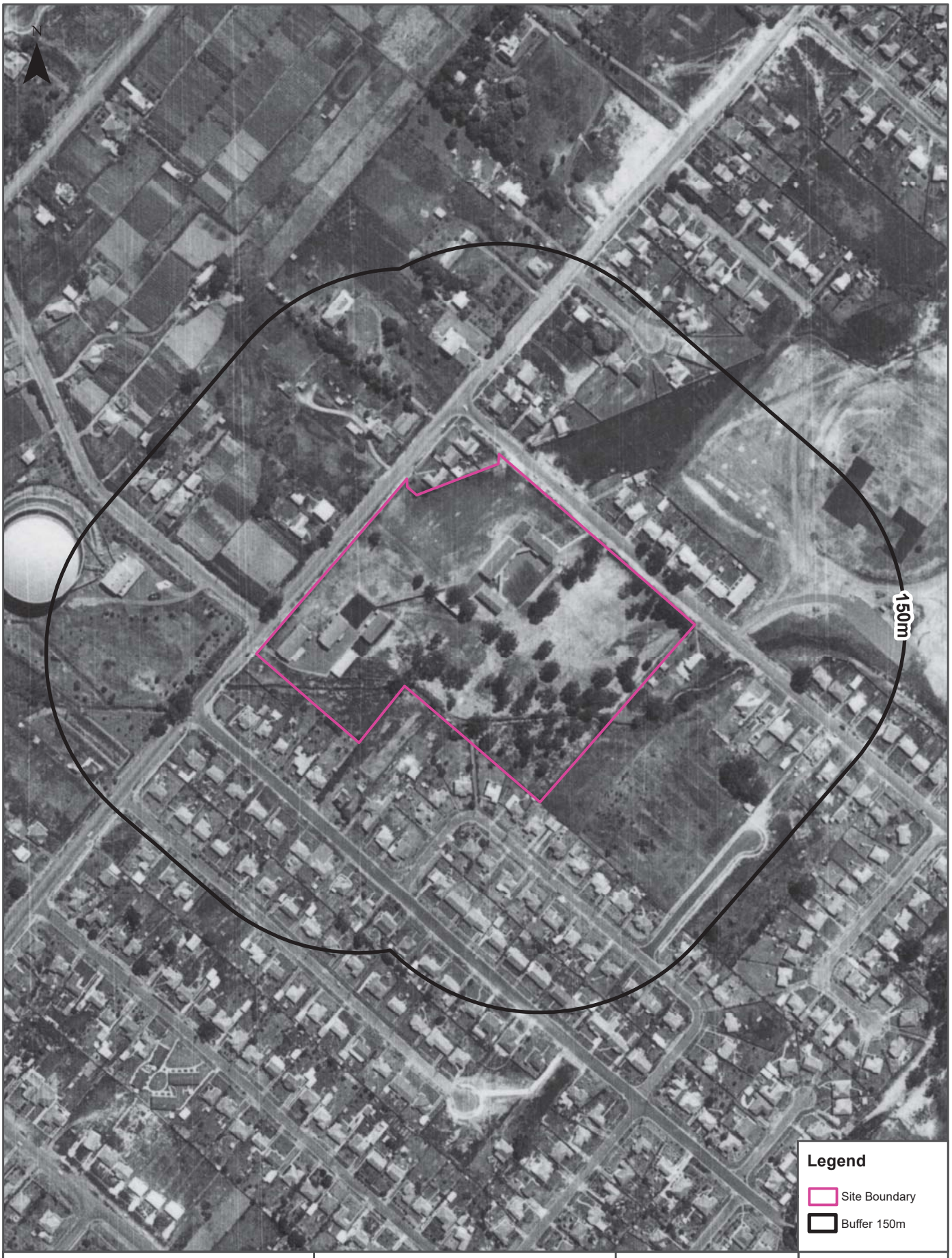
Data Sources: Aerial Imagery © Department Finance, Services & Innovation

Coordinate System: GDA 1994 MGA Zone 56

Date: 10 April 2018

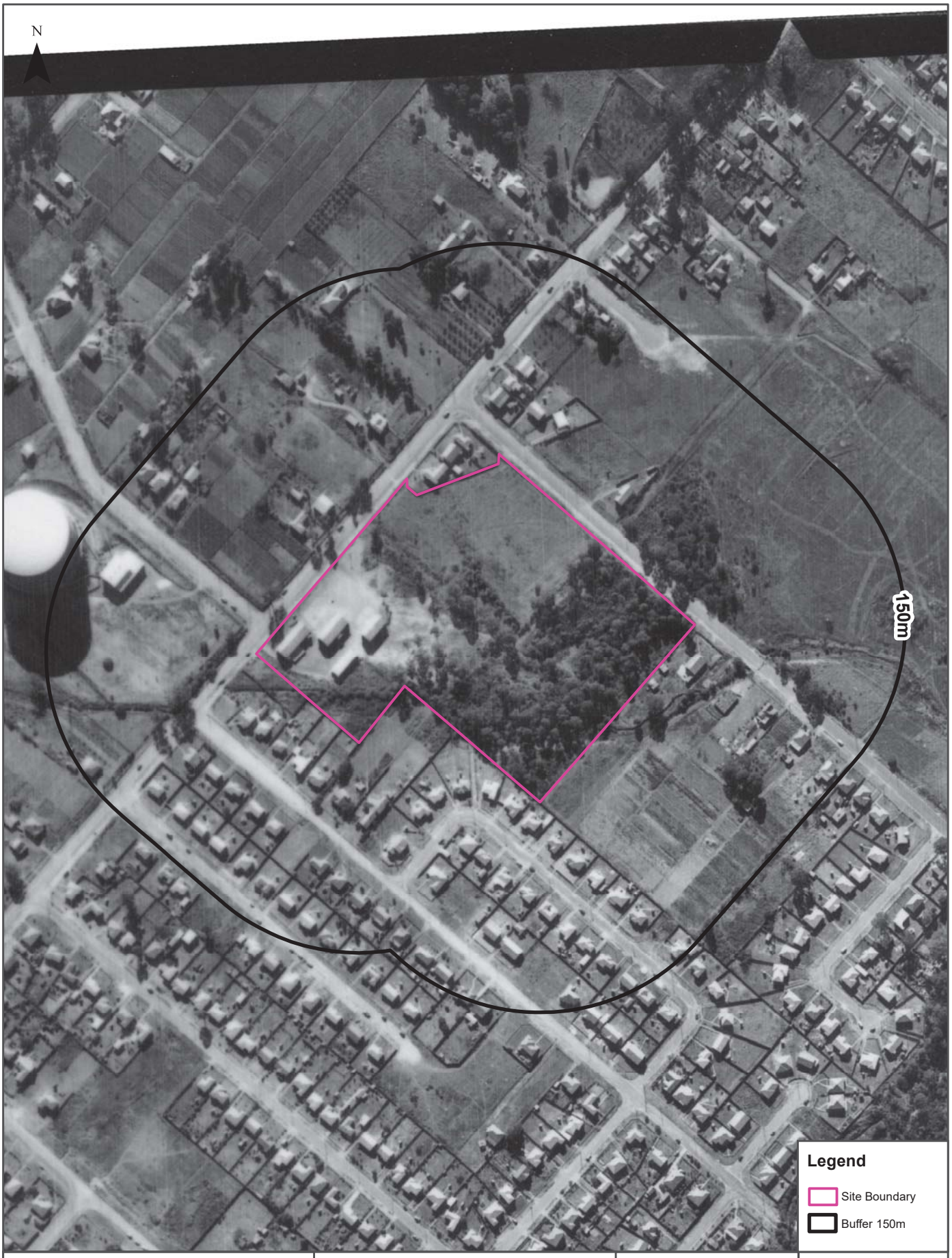
Aerial Imagery 1965

126 Kent Road, Marsfield, NSW 2122



Aerial Imagery 1961

126 Kent Road, Marsfield, NSW 2122



Aerial Imagery 1956

126 Kent Road, Marsfield, NSW 2122

Aerial Imagery 1943

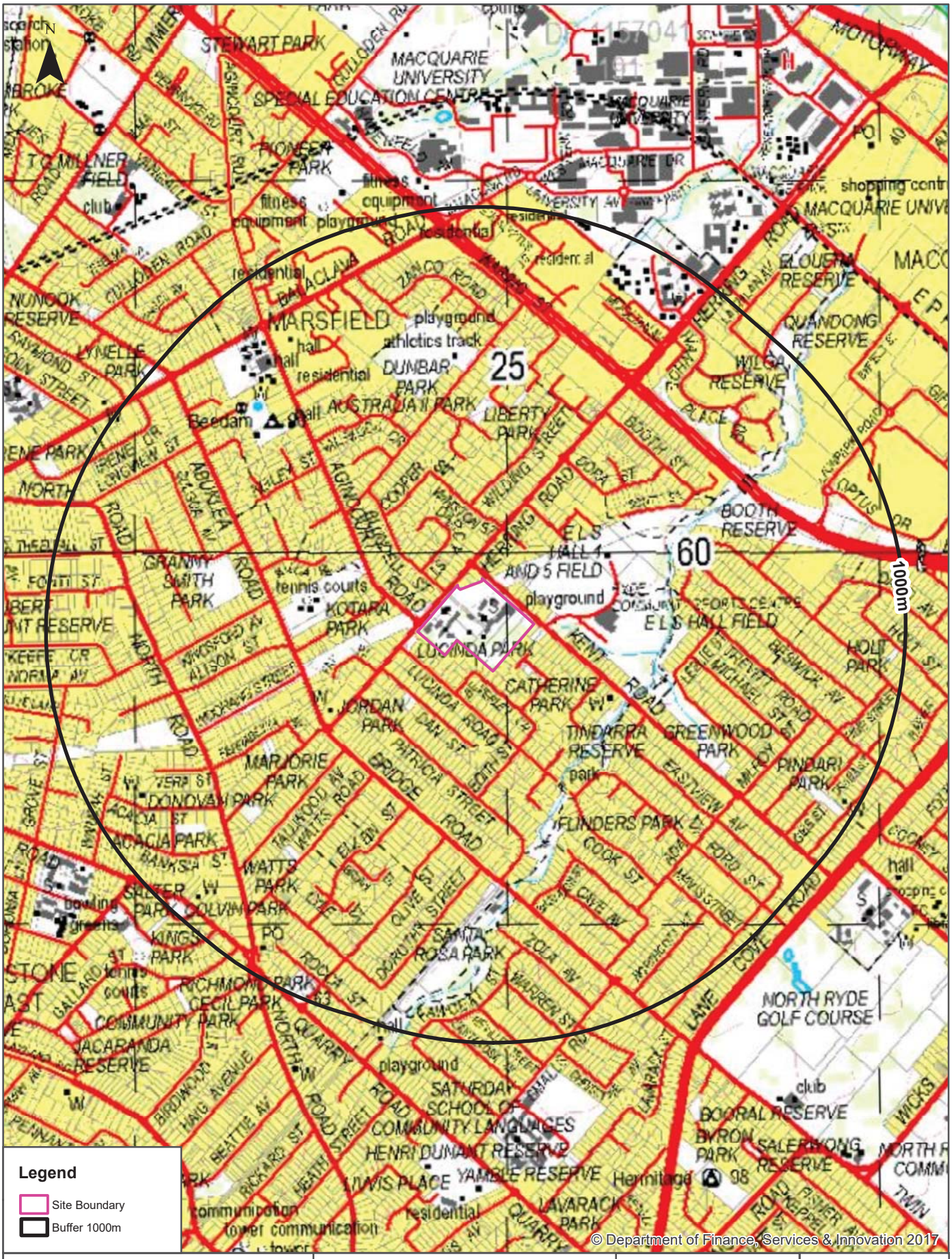
126 Kent Road, Marsfield, NSW 2122

Scale:	Data Sources: Aerial Imagery © Department Finance, Services & Innovation	Coordinate System: GDA 1994 MGA Zone 56	Date: 10 April 2018

0 25 50 100 150
Meters

Topographic Map 2015

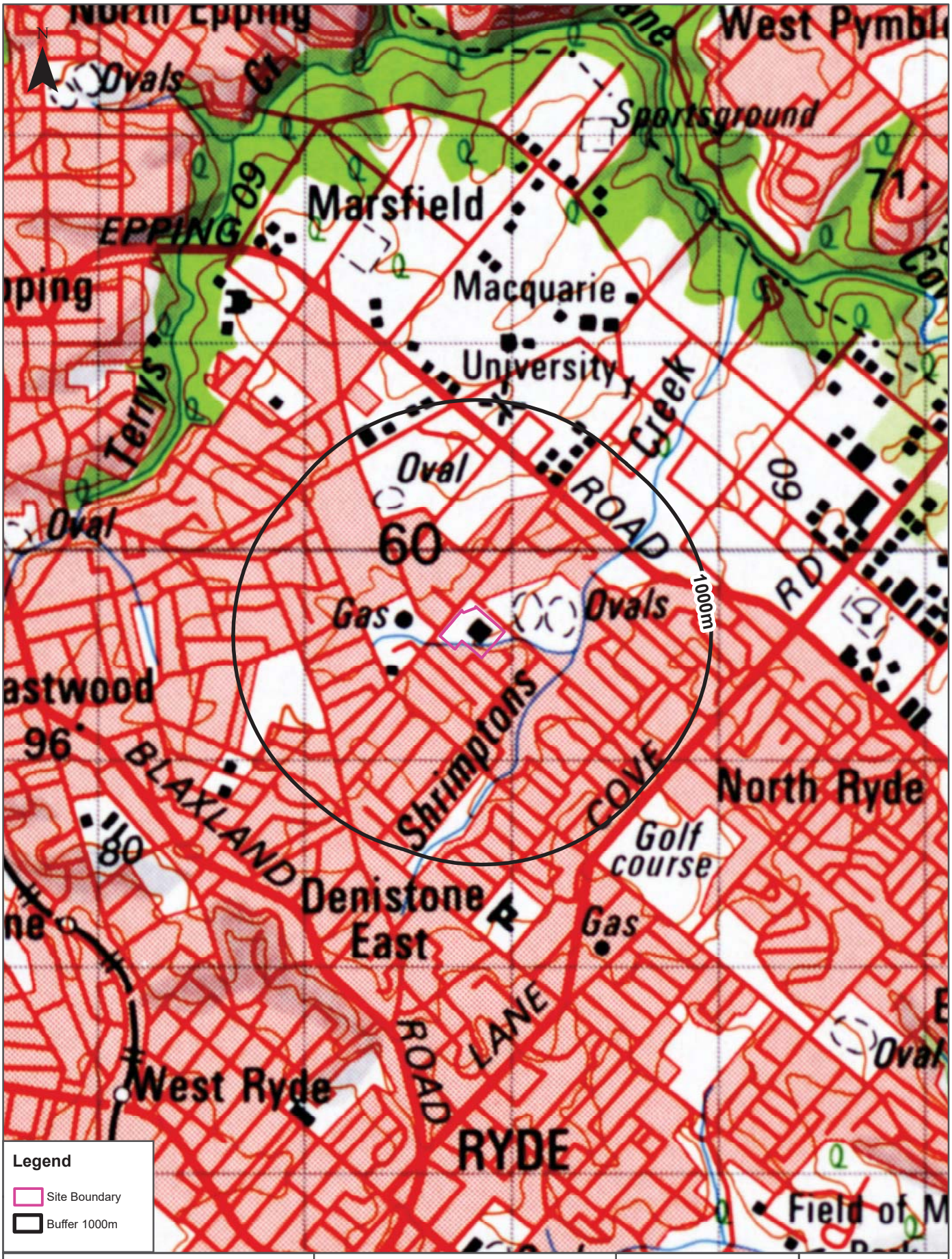
126 Kent Road, Marsfield, NSW 2122



Scale: 0 100 200 400 600 Meters	Data Sources: Topographic Map Data © NSW Land and Property Information	Coordinate System: GDA 1994 MGA Zone 56	Date: 10 April 2018

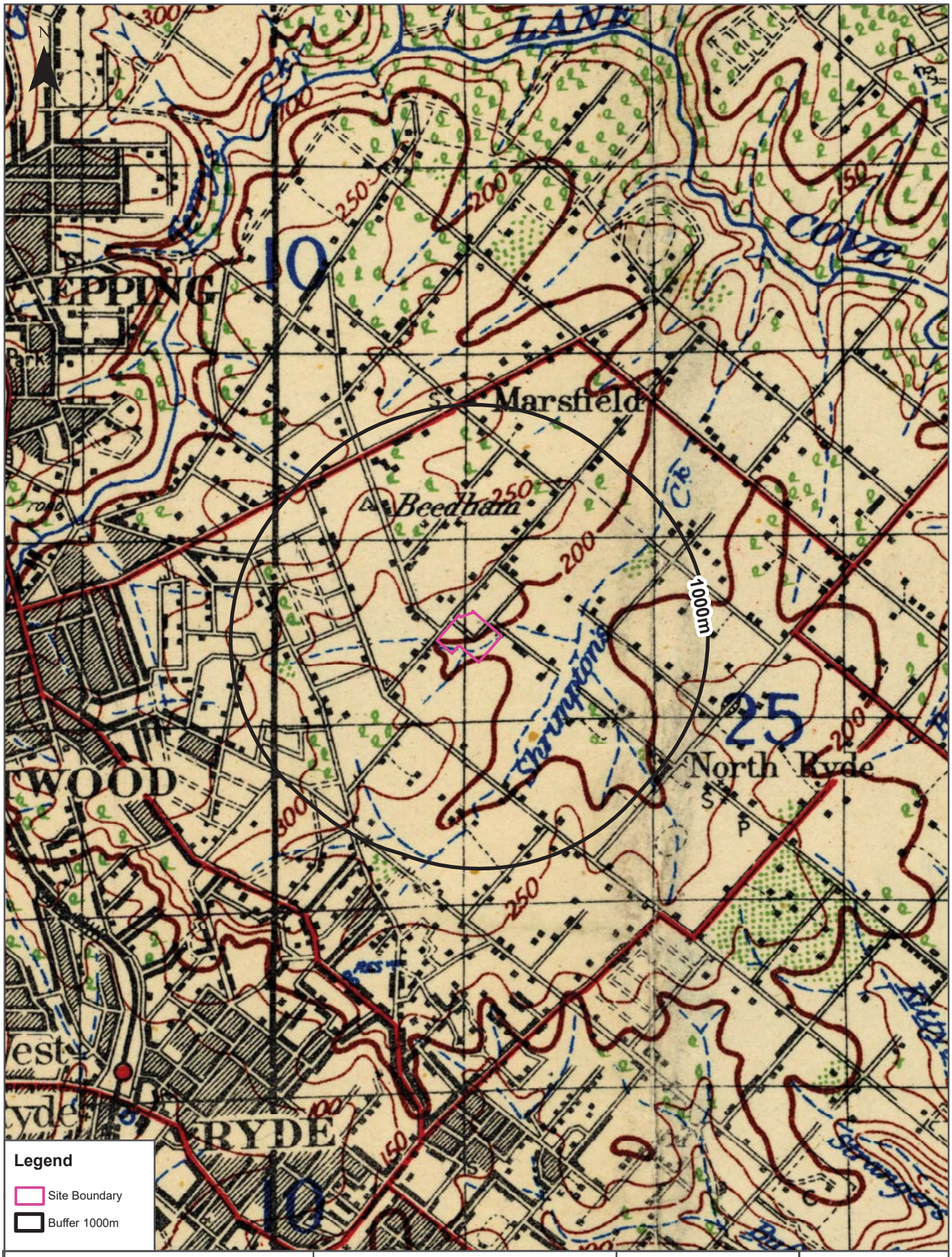
Historical Map 1975

126 Kent Road, Marsfield, NSW 2122



Historical Map ca.1949

126 Kent Road, Marsfield, NSW 2122



Scale: 0 200 400 800 1,200 Meters

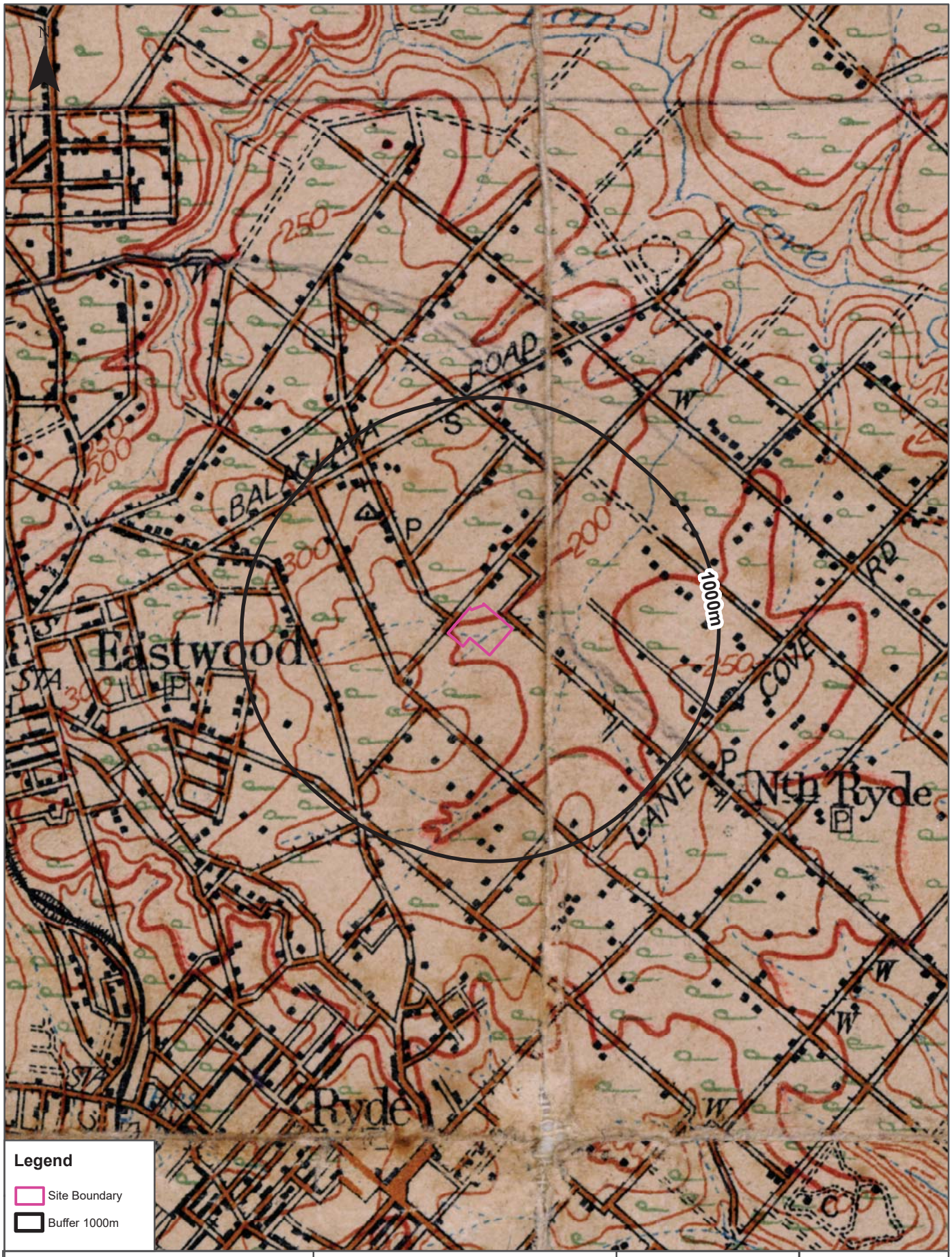
Data Sources: Australia 1:63360 Sheet 423
Sydney, New South Wales
Prepared by Commonwealth Section Imperial General Staff

Coordinate System:
GDA 1994 MGA Zone 56

Date: 10 April 2018

Historical Map ca.1917

126 Kent Road, Marsfield, NSW 2122



Legend

- Site Boundary
- Buffer 1000m

Scale: 0 200 400 800 1,200 Meters

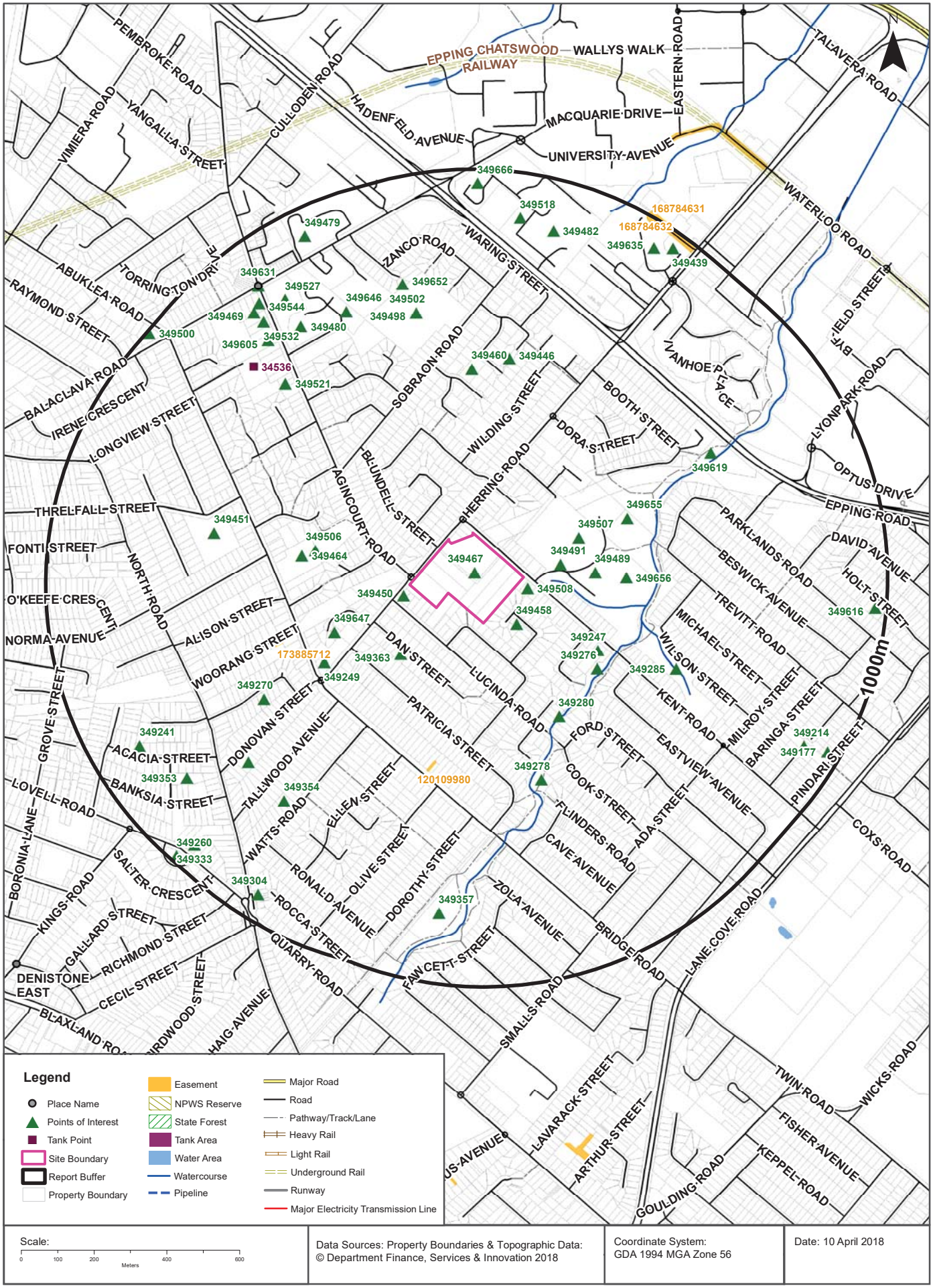
Data Sources: Australia 1:63360 Sheet 423
Sydney, New South Wales
Prepared by Commonwealth Section Imperial General Staff

Coordinate System:
GDA 1994 MGA Zone 56

Date: 10 April 2018

Topographic Features

126 Kent Road, Marsfield, NSW 2122



Topographic Features

126 Kent Road, Marsfield, NSW 2122

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
349467	Primary School	KENT ROAD PUBLIC SCHOOL	0m	Onsite
349508	Park	KENNETH PARK	28m	East
349450	Park	LUCINDA PARK	35m	West
349458	Park	CATHERINE PARK	69m	South East
349491	Park	PLAYGROUND	105m	East
349363	Park	JORDAN PARK	162m	South West
349507	Sports Field	E L S HALL 1 AND 5 FIELD	184m	East
349489	Sports Centre	RYDE COMMUNITY SPORTS CENTRE	195m	East
349647	Retirement Village	WOOLWAY	245m	West
349506	Park	KOTARA PARK	276m	West
349656	Sports Field	E L S HALL FIELD	280m	East
349247	Place Of Worship	CHURCH OF CHRIST	285m	South East
349464	Sports Court	TENNIS COURTS	307m	West
349276	Park	TINDARRA RESERVE	317m	South East
349249	Place Of Worship	PRESBYTERIAN CHURCH	318m	South West
349655	Sports Field	E L S HALL 3 FIELD	325m	East
349280	Park	Park	329m	South East
349460	Park	AUSTRALIA II PARK	450m	North
349278	Park	FLINDERS PARK	458m	South
349285	Park	GREENWOOD PARK	487m	South East
349446	Park	LIBERTY PARK	489m	North
349270	Park	MARJORIE PARK	510m	South West
349451	Park	GRANNY SMITH PARK	556m	West
349619	Park	BOOTH RESERVE	615m	North East
349521	Community Facility	MARSFIELD SCOUT HALL	621m	North West
349502	Sports Field	DUNBAR PARK	625m	North
349498	Athletics Track	Athletics Track	625m	North
349258	Park	DONOVAN PARK	660m	South West
349354	Park	WATTS PARK	676m	South West
349646	Retirement Village	SOUTHERN CROSS VILLAGE MARSFIELD	687m	North West

Map Id	Feature Type	Label	Distance	Direction
349652	Park	PLAYGROUND	710m	North
349480	Community Home	SOUTHERN CROSS APARTMENTS MARSFIELD	713m	North West
349605	Place Of Worship	COMMUNITY CHURCH	739m	North West
349532	Community Facility	ST ANTHONYS PARISH HALL	785m	North West
349527	Community Facility	CURZON HALL	798m	North West
349357	Park	SANTA ROSA PARK	806m	South
349353	Park	ACACIA PARK	811m	South West
349469	Primary School	ST ANTHONY'S CATHOLIC PRIMARY SCHOOL	822m	North West
349544	Place Of Worship	CATHOLIC CHURCH	833m	North West
349482	Retirement Village	WILLANDRA VILLAGE	858m	North
349241	Place Of Worship	UNITING CHURCH	864m	South West
349631	Suburb	MARSFIELD	872m	North West
349518	Nursing Home	BAPTISTCARE COOINDA COURT	875m	North
349214	Park	PINDARI PARK	897m	South East
349479	Community Home	ST CATHERINE'S AGED CARE SERVICES	923m	North West
349635	Education Facility	MORLING COLLEGE	926m	North East
349304	Post Office	DENISTONE EAST POST OFFICE	928m	South West
349333	Place Of Worship	MAQUARIE ANGLICAN CHURCH	928m	South West
349439	Place Of Worship	BAPTIST CHURCH	955m	North East
349177	Place Of Worship	NORTH RYDE CHRISTIAN CHURCH	960m	South East
349666	Nursing Home	BAPTISTCARE DOROTHY HENDERSON LODGE	961m	North
349616	Park	HOLT PARK	966m	East
349260	Park	COLVIN PARK	984m	South West
349500	Park	LYNELLE PARK	994m	North West

Topographic Data Source: © Land and Property Information (2015)
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Topographic Features

126 Kent Road, Marsfield, NSW 2122

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
34536	Water	Operational		13/06/2001	716m	North West

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
173885712	Primary	Right of way	5.19m	384m	West
120109980	Primary	Undefined		403m	South
168784632	Primary	Right of way	16.105m	977m	North East
168784631	Primary	Right of way	16.105m & Var	982m	North East

Easements Data Source: © Land and Property Information (2015)
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Topographic Features

126 Kent Road, Marsfield, NSW 2122

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: © Land and Property Information (2015)
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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: © Land and Property Information (2015)
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Elevation Contours (m AHD)

126 Kent Road, Marsfield, NSW 2122

Legend

- Elevation Contour (m AHD)
- Site Boundary
- Report Buffer
- Property Boundary

Accuracy & Currency: This contour data can be up to 0.4 of the contour interval out in height and must therefore not be used for any design or engineering works, but only as a general guide to topography. Gaps may occur along contour lines due to vertical topography, obscured topography in the source photography such as buildings, dense vegetation or dead ground, or the fact that original buildings have been replaced in the intervening thirty years since the original contour capture.

Scale:	Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2018	Coordinate System: GDA 1994 MGA Zone 56	Date: 10 April 2018

0 100 200 400 Meters

Hydrogeology & Groundwater

126 Kent Road, Marsfield, NSW 2122

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

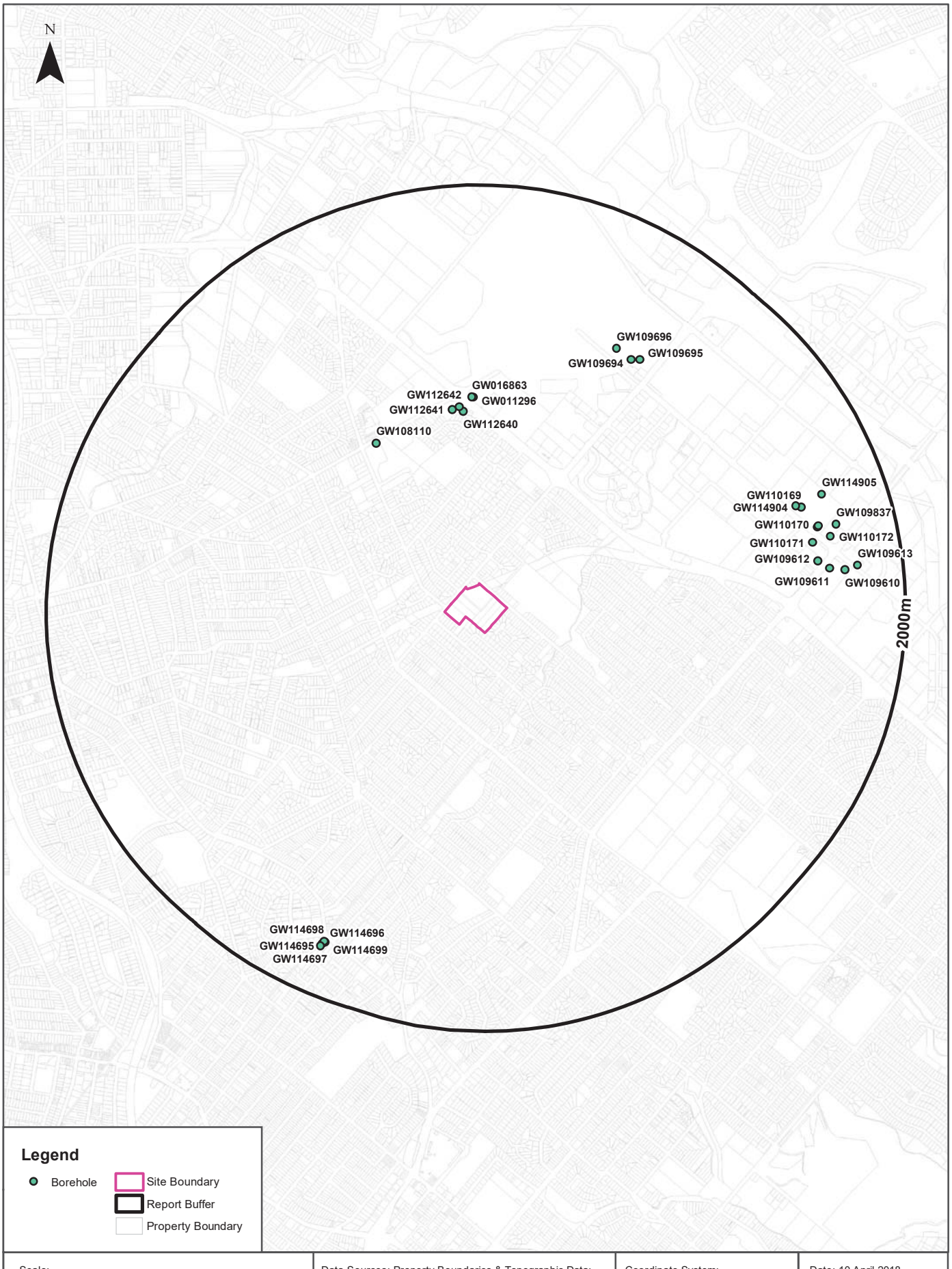
Groundwater management zones relating to the Botany Sand Beds aquifer within the dataset buffer:

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

126 Kent Road, Marsfield, NSW 2122



Hydrogeology & Groundwater

126 Kent Road, Marsfield, NSW 2122

Groundwater Boreholes

Boreholes within the dataset buffer:

GW No.	Licence No	Work Type	Owner Type	Purpose	Contractor	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW108110	10BL164626, 10BL602106, 10WA109513	Bore		Recreation	Groundtek Drilling	01/02/2005	81.00	81.00	2500	7.30	2.500		849m	North West
GW112640	10BL603208	Bore	Private	Monitoring	Numac Drilling Services	05/08/2009	8.00	8.00					867m	North
GW112641	10BL603208	Bore	Private	Monitoring	Numac Drilling Services	05/08/2009	8.00	8.00					883m	North
GW112642	10BL603208	Bore	Private	Monitoring	Numac Drilling Services	05/08/2009	8.00	8.00					891m	North
GW011296	10BL004479	Bore open thru rock	Private	Irrigation		01/09/1953	67.00	67.10	501-1000 ppm				934m	North
GW016863	10BL007238	Bore open thru rock	Private	Irrigation		01/01/1958	45.70	45.70	0-500 ppm				935m	North
GW109694	10BL161772	Bore	Other Govt	Monitoring	Coffey Geosciences Pty Ltd	12/12/2001	46.40						1357 m	North East
GW109696	10BL161772	Bore	Other Govt	Monitoring	Reynolds Drilling	27/01/2000	35.50						1367 m	North East
GW109695	10BL161772	Bore	Other Govt	Monitoring	Reynolds Drilling	18/01/2000	44.30						1382 m	North East
GW114904	10BL605704	Bore	Other Govt	Monitoring bore	Terratest	29/01/2015	9.00	9.00					1539 m	East
GW110169	10BL161366	Bore	Private	Monitoring	Drilltest Pty Ltd	09/09/2002	6.50	6.50					1562 m	East
GW110171	10BL161366	Bore	Private	Monitoring		08/02/2000	36.10	36.10					1570 m	East
GW109612	10BL161773	Bore	Other Govt	Monitoring	Coffee Partners (International) Pty Ltd	18/12/2001	1.15						1578 m	East
GW110170	10BL161366	Bore	Private	Monitoring	Intertec Drilling Services	31/01/2000	43.00	43.00					1611 m	East
GW114903	10BL605704	Bore	Other Govt	Monitoring bore	Terratest Pty Ltd	29/01/2015	9.00	9.00					1615 m	East
GW109611	10BL161773	Bore	Other Govt	Monitoring	Coffee Partners (International) Pty Ltd	18/12/2001	1.00						1633 m	East
GW110172	10BL161366	Bore	Private	Monitoring		09/03/2000	36.00	36.00					1663 m	East
GW114905	10BL605704	Bore	Other Govt	Monitoring bore	Terratest	29/01/2015	10.50	10.50					1679 m	East
GW109837	10BL161221	Bore	Private	Monitoring		21/12/2002	36.60			18.00			1707 m	East
GW109610	10BL161773	Bore	Other Govt	Monitoring	Coffee Partners (International) Pty Ltd	09/12/2001	32.00						1709 m	East
GW114698	10BL604455	Bore	Private	Monitoring bore		27/01/2011	10.50	10.50					1729 m	South West

GW No.	Licence No	Work Type	Owner Type	Purpose	Contractor	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW114699	10BL604455	Bore	Private	Monitoring bore		28/01/2011	9.00	9.00					1731 m	South West
GW114696	10BL604455	Bore	Private	Monitoring bore		25/01/2011	16.00	16.00					1733 m	South West
GW114695	10BL604455	Bore	Private	Monitoring bore		27/01/2011	12.00	12.00					1743 m	South West
GW114697	10BL604455	Bore	Private	Monitoring bore		28/01/2011	4.00	4.00					1757 m	South West
GW109613	10BL161773	Bore	Other Govt	Monitoring	Coffee Partners (International) Pty Ltd	09/03/2000	41.80						1773 m	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

126 Kent Road, Marsfield, NSW 2122

Driller's Logs

Drill log data relevant to the boreholes within the dataset buffer:

Groundwater No	Drillers Log	Distance	Direction
GW108110	0.00m-15.00m SHALE WEATHERED 15.00m-81.00m SANDSTONE GREY	849m	North West
GW112640	0.00m-2.00m FILL 2.00m-6.00m SAND 6.00m-8.00m SHALE	867m	North
GW112641	0.00m-2.00m FILL 2.00m-6.00m SAND 6.00m-8.00m SHALE	883m	North
GW112642	0.00m-2.00m FILL 2.00m-6.00m SAND 6.00m-8.00m SHALE	891m	North
GW011296	0.00m-58.21m Sandstone 58.21m-65.22m Shale Water Supply 65.22m-67.05m Sandstone	934m	North
GW016863	0.00m-2.43m Clay Hard Sandy 2.43m-3.96m Sandstone 3.96m-5.79m Sandstone Yellow 5.79m-7.31m Sandstone White 7.31m-15.24m Sandstone Yellow 15.24m-17.67m Shale Sandy Water Supply 17.67m-24.99m Sandstone Yellow 24.99m-26.51m Shale Sandy Water Supply 26.51m-45.72m Sandstone White Silty	935m	North
GW114904	0.00m-1.80m FILL, GRAVELLY CLAY,BROWN FIRM 1.80m-2.00m IRONSTONE 2.00m-2.80m CLAY,GREY RED AND WHITE FIRM 2.80m-3.00m IRONSTONE 3.00m-3.20m CLAY GREY RED AND WHITE, FIRM 3.20m-3.40m IRONSTONE 3.40m-9.00m CLAY AND SHLAE,RED AND ORANGE, HARD	1539m	East
GW110169	0.00m-0.10m GRASS 0.10m-1.80m TOPSOIL,SILT,SAND,FINE,MEDIUM GRAINED,BROWN,DRY,FIRM 1.80m-3.00m SILTY CLAY,LOW PLASTICITY,GREY WITH ORANGE/RED MOTTLE,SOME IRONSTONE GRAVEL 3.00m-6.50m WEATHERED SHALE,BROWN,DRY,HARD, NO IRONSTONE GRAVEL	1562m	East
GW110171	0.00m-1.00m FILL,SANDY CLAYEY GRAVEL,BROWN,FINE TO COARSE 1.00m-2.30m SILTY CLAY,LIGHT GREY AND BROWN,HIGH PLASTICITY. 2.30m-3.40m SHALE,GREY AND BROWN,FINE TO COARSE GRAINED IRONSTONE,GRAVEL BANDS 3.40m-4.65m SHALE,DARK GREY AND BROWN ,VERY LOW STRENGH 4.65m-5.75m SHALE DARK GREY AND BROWN 5.75m-6.20m CORE LOSS (5.75m-6.2m) 6.20m-8.50m SHALE DARK GREY 8.50m-9.20m CORE LOOS (8.5m-9.2m) 9.20m-10.90m SHALE DRK GREY 10.90m-12.50m CORE LOSS (10.9m-12.5m) 12.50m-13.00m SHALE DARK GREY 13.00m-15.30m SHALE DARK GREY WITH LIGHT GRAINED SANDSTONE 15.30m-18.00m SHALE AND SANDSTONE 18.00m-22.40m SANDSTONE L/GREY,FINE GRAINED 22.40m-35.70m SANDSTONE L/GREY,MEDIUM GRAINED 35.70m-36.10m SANDSTONE L/GREY,FINE GRAINED	1570m	East

Groundwater No	Drillers Log	Distance	Direction
GW110170	0.00m-0.10m ASPHALTIC CONCRETE,(30mm thick) 0.10m-0.25m FILL,SANDY GRAVEL,MEDIUM GRAINED 0.25m-5.25m SILTY CLAY,RED/BROWN AND GREY,MEDIUM-HIGH PLASTICITY,IRONSTONE 5.25m-6.50m SHALE,DARK GREY 6.50m-15.00m SHALE,DARK GREY 15.00m-21.20m SHALE AND SANDSTONE,SHALE DRK GREY,SANDSTONE L/GREY 21.20m-25.85m SANDSTONE L/GREY,FINE GRAINED,LAMINATED,SHALE 25.85m-39.50m SANDSTONE L/GREY,FINE TO MEDIUM GRAINED 39.50m-42.20m SANDSTONE,L/GREY,MEDIUM GRAINED 42.20m-43.00m SANDSTONE L/GREY,FINE TO MEDIUM GRAINED,MEDIUM BEDDED	1611m	East
GW114903	0.00m-0.30m FILL, SANDY GRAVEL, BLACK 0.30m-2.10m CLAY AND WEATHERED SHALE,RED,ORANGE,SOFT 2.10m-9.00m SHALE, RED AND GREY,SOFT	1615m	East
GW110172	0.00m-0.10m SILTY SAND, BROWN,FINE GRAINED WITH ROOT,FIBRE 0.10m-0.40m FILL,(GRAVELLY SAND)BROWN,FINE TO MEDIUM GRAINED 0.40m-0.80m FILL,GRAVELLY SILTY CLAY,BROWN/GREY,MEDIUM PLASTICITY 0.80m-1.40m SILTY CLAY RED BROWN,MEDIUM TO HIGH PLASTICITY,IRONSTONE 1.40m-2.75m SILTY CLAY.RED. BROWN GREY,TRACES OF IRONSTONE/GRAVEL 2.75m-3.20m CORE LOSS 0.45m 3.20m-3.75m SHALE,LIGHT GREY/RED-BROWN WITH BABNDS OF IRONSTAINED SHALE 3.75m-8.30m SHALE,DARK GREY/BROW, IRONSTAINED 8.30m-13.30m SHALE,DARK GREY 13.30m-16.75m SHALE,DARK GREY,WITH FINE GRAINED LIGHT-GREY SANDSTONE 16.75m-20.20m SANDSTONE LIGHT GREY,FINE GRAINED,SHALE LAMINATIONS 20.20m-22.40m SANDSTONE L/GREY,FINE GRAINED 22.40m-27.90m SANDSTONE L/GREY,MEDIUM GRAINED 27.90m-30.10m SANDSTONE,L/GREY,MEDIUM COARSE GRAINED,GRAINED SHALE GRAVELS 30.10m-36.00m SANDSTONE LIGHT GREY,FINE TO MEDIUM GRAINED	1663m	East
GW114905	0.00m-0.30m FILL, SANDY GRAVEL,BLACK 0.30m-2.20m CLAY AND SHALE ORANGE AND BROWN,SOFT 2.20m-10.50m SHALE GREY SOFT	1679m	East
GW109837	0.00m-3.60m FILL 3.60m-4.80m CLAY 4.80m-8.40m SHALE 8.40m-18.00m FINE SANDSTONE 18.00m-36.60m COARSE SANDSTONE	1707m	East
GW114698	0.00m-0.30m CONCRETE 0.30m-1.50m GRAVEL WITH MINOR SAND,SILT AND CLAY 1.50m-3.80m GRAVEL WITH MINOR SAND SILT AND CLAY GREY BROWN 3.80m-10.50m SILTY CLAY FIRM,DRY LOW PLASTICITY	1729m	South West
GW114699	0.00m-0.20m CONCRETE, SANDY GRAVEL 0.20m-1.10m GRAVEL,SILT AND SAND 1.10m-5.80m SILTY CLAY MINOR GRAVEL 5.80m-6.50m SILTY CLAY WITH MINOR GRAVEL,STIFF,DRY 6.50m-9.00m SILTY CLAY,SOFT,SATURATED,MOIST,LOW PLASTICITY	1731m	South West
GW114696	0.00m-0.01m CONCRETE 0.01m-0.02m GRAVEL FINE GRAINED MOIST 0.02m-0.03m CLAYEY SAND AND GRAVEL 0.03m-1.10m CLAYEY GRAVEL,FINE GRAINED 1.10m-3.00m CLAY WITH MINOR GRAVEL 3.00m-11.00m SILTY CLAY SOFT MOIST 11.00m-16.00m SHALE WEATHERED,GREY	1733m	South West
GW114695	0.00m-0.01m CONCRETE 0.01m-0.02m GRAVEL SAND AND CLAY 0.02m-0.03m GRAVEL CLAY VERY MOIST,LOW PLASTICITY 0.03m-0.10m GRAVEL FINE MED. GRAINED 0.10m-1.07m SANDY CLAY FINE GRAINED 1.07m-2.80m SHALE WEATHERED ,MOIST GREY 2.80m-3.20m SILTY CLAY FIRM MOIST LOW PLASTICITY 3.20m-9.00m SILTY CLAY,FIRM,DRY,L/PLASTICITY,BROWN 9.00m-12.00m SHALE WEATHERED, GREY	1743m	South West
GW114697	0.00m-0.03m CONCRETE 0.03m-0.60m GRAVEL WITH MINOR SAND 0.60m-4.00m GRAVEL WITH MINOR SILTY SAND	1757m	South West

Drill Log Data Source: NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corp
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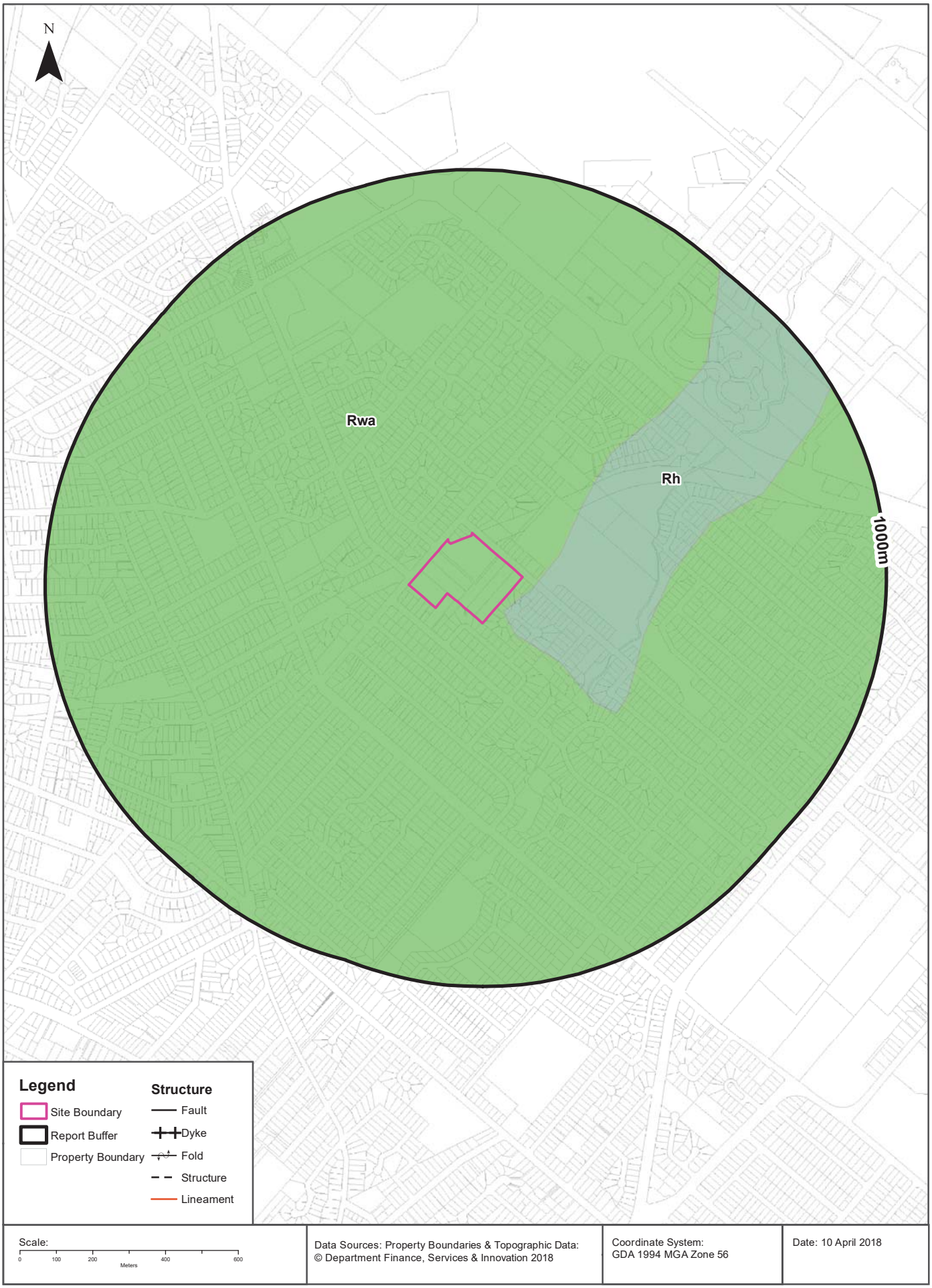
Geology 1:100,000

126 Kent Road, Marsfield, NSW 2122



Geology

126 Kent Road, Marsfield, NSW 2122

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
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

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

126 Kent Road, Marsfield, NSW 2122

Naturally Occurring Asbestos Potential

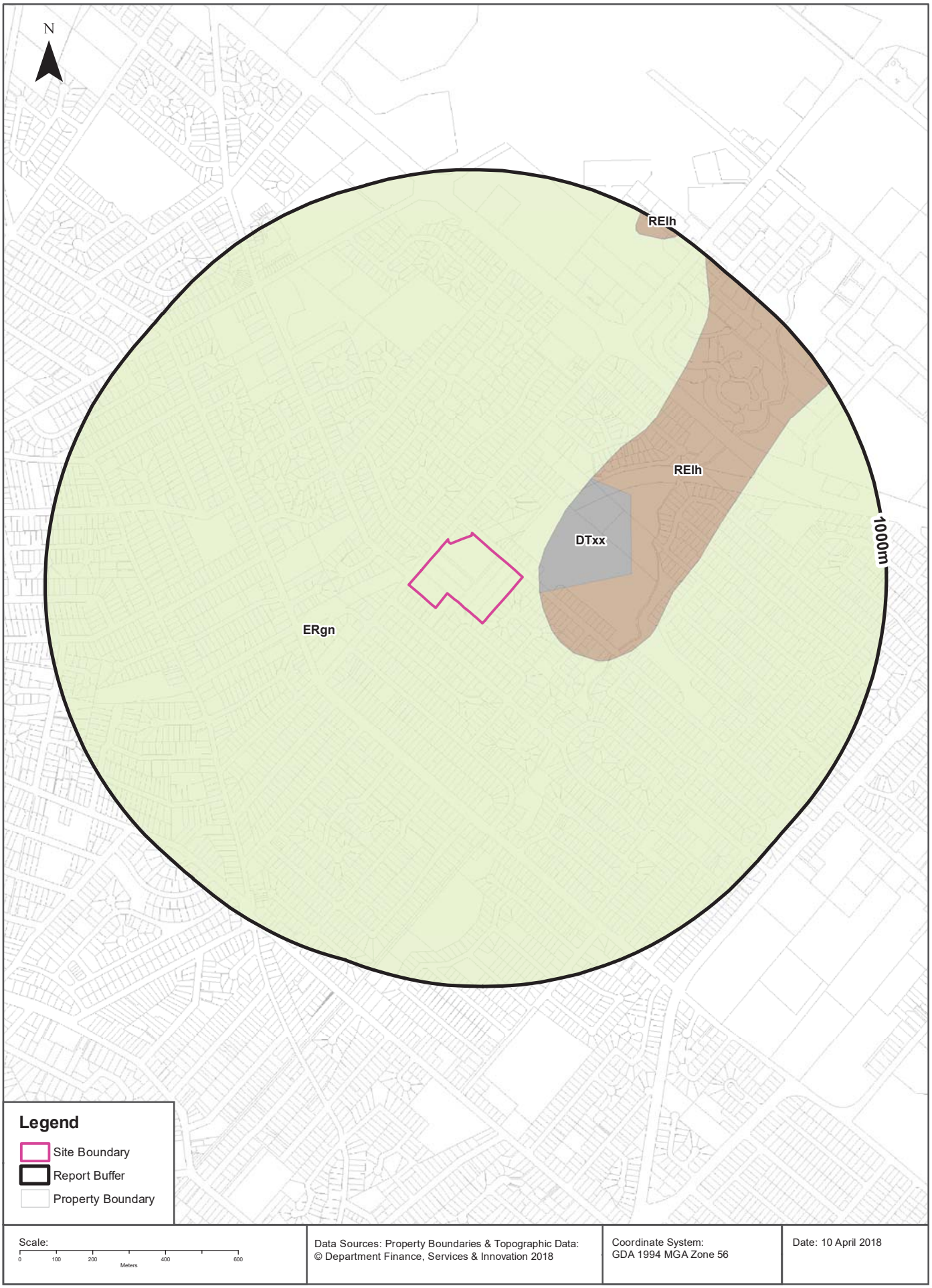
Naturally Occurring Asbestos Potential within the dataset buffer:

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

Soil Landscapes

126 Kent Road, Marsfield, NSW 2122



Soils

126 Kent Road, Marsfield, NSW 2122

Soil Landscapes

What are the onsite Soil Landscapes?

Soil Code	Name	Group	Process	Map Sheet	Scale
ERgn	GLENORIE		EROSIONAL	Sydney	1:100,000

What are the Soil Landscapes within the dataset buffer?

Soil Code	Name	Group	Process	Map Sheet	Scale
DTxx	DISTURBED TERRAIN		DISTURBED TERRAIN	Sydney	1:100,000
ERgn	GLENORIE		EROSIONAL	Sydney	1:100,000
RElh	LUCAS HEIGHTS		RESIDUAL	Sydney	1:100,000

Soils Landscapes Data Source : NSW Office of Environment and Heritage
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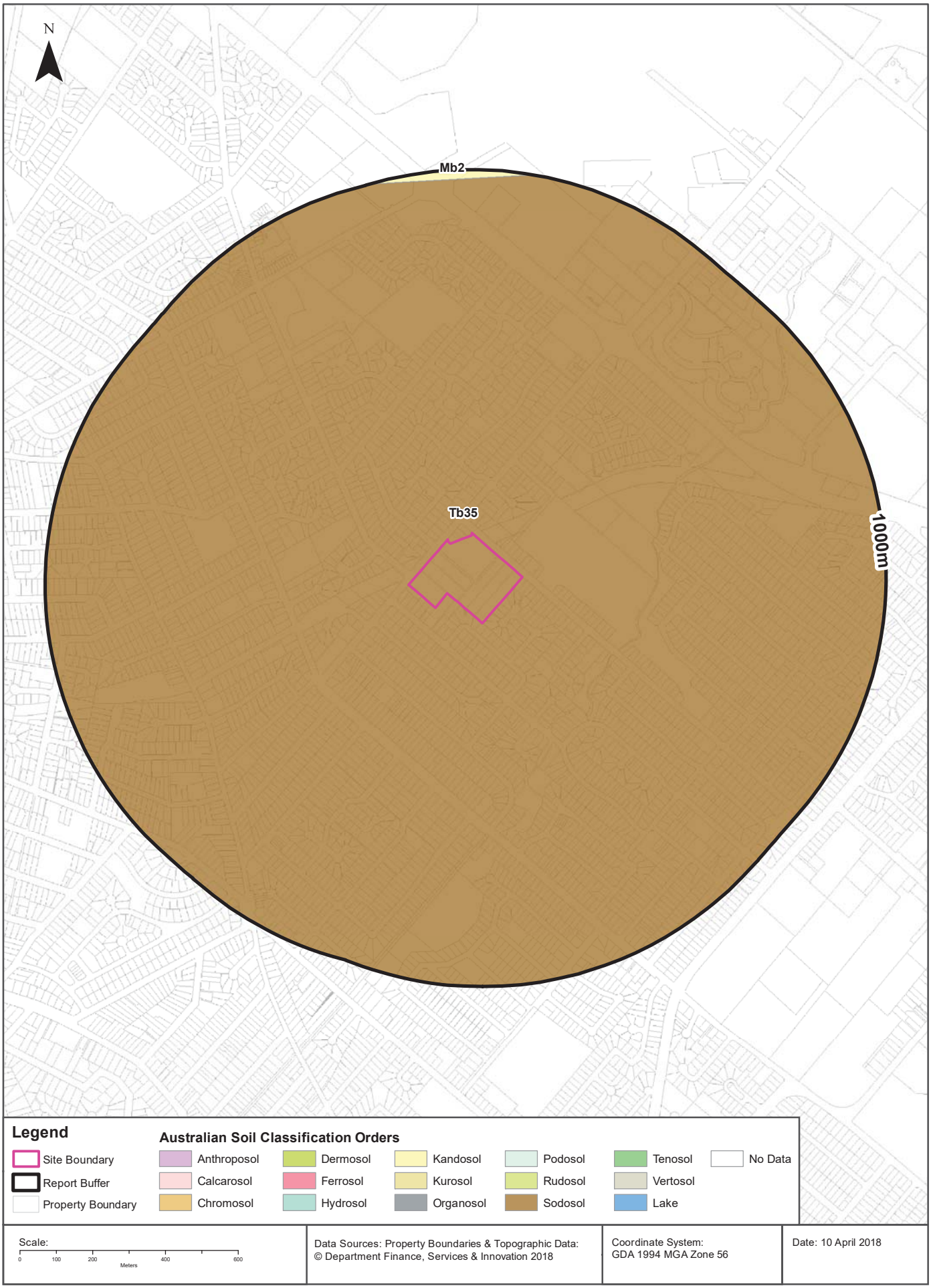
Atlas of Australian Soils

126 Kent Road, Marsfield, NSW 2122



Soils

126 Kent Road, Marsfield, NSW 2122

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
Tb35	Sodosol	Dissected plateau remnants--flat to undulating ridge tops with moderate to steep side slopes: chief soils are hard acidic yellow and yellow mottled soils (Dy3.41), (Dy2.21), and (Dy2.41) and hard acidic red soils (Dr2.21); many shallow profiles occur and profile thickness varies considerably over short distances. Associated are: (Gn3.54), (Gn3.14), and possibly other (Gn3) soils; (Db1.2) soils on some ridges; (Dy5.81) soils in areas transitional to unit Mb2; soils common to unit Mb2; and eroded lateritic remnants. Small areas of other soils are likely. Flat ferruginous shale or sandstone fragments are common on and/or in and/or below the soils of this unit.	0m
Mb2	Kandosol	Dissected sandstone plateau of moderate to strong relief with sandstone pillars, ledges, and slabs-- level to undulating ridges, irregularly benched slopes, steep ridges, cliffs, canyons, narrow sandy valleys: chief soils are (i) on areas of gentle to moderate relief, acid yellow leached earths (Gn2.74) and (Gn2.34) and acid leached yellow earths (Gn2.24)-sometimes these soils contain ironstone gravel; and (ii) on, or adjacent to, areas of strong relief, siliceous sands (Uc1.2), leached sands (Uc2.12) and (Uc2.2), and shallow forms of the above (Gn2) soils. Associated are: (i) on flat to gently undulating remnants of the original plateau surface, leached sands (Uc2.3), siliceous sands (Uc1.2), sandy earths (Uc5.22), and (Gn2) soils as for (i) above (these areas are in part comparable with unit Cb29); (ii) on flat ironstone gravelly remnants of the original plateau surface, (Gn2) soils as for unit Mb5(i); (iii) on gently undulating ridges where interbedded shales are exposed, shallow, often stony (Dy3.41), (Dr2.21), and related soils similar to unit Tb35; (iv) narrow valleys of (Uc2.3) soils flanked by moderate slopes of (Dy3.41) soils; (v) escarpments of steep hills with shallow (Dy) and (Dr) soils between sandstone pillars; and (vi) shallow (Um) soils, such as (Um6.21) on steep hills of basic rocks. As mapped, minor areas of units Mg20, Mm1, and Mw8 are included. Data are limited.	974m

Atlas of Australian Soils Data Source: CSIRO
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Acid Sulfate Soils

126 Kent Road, Marsfield, NSW 2122

Standard Local Environmental Plan Acid Sulfate Soils

What is the on-site Acid Sulfate Soil Plan Class that presents the largest environmental risk?

Soil Class	Description	LEP
N/A		

If the on-site Soil Class is 5, what other soil classes exist within 500m?

Soil Class	Description	LEP	Distance	Direction
N/A				

Acid Sulfate Data Source Accessed 07/10/2016: NSW Crown Copyright - Planning and Environment
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Atlas of Australian Acid Sulfate Soils

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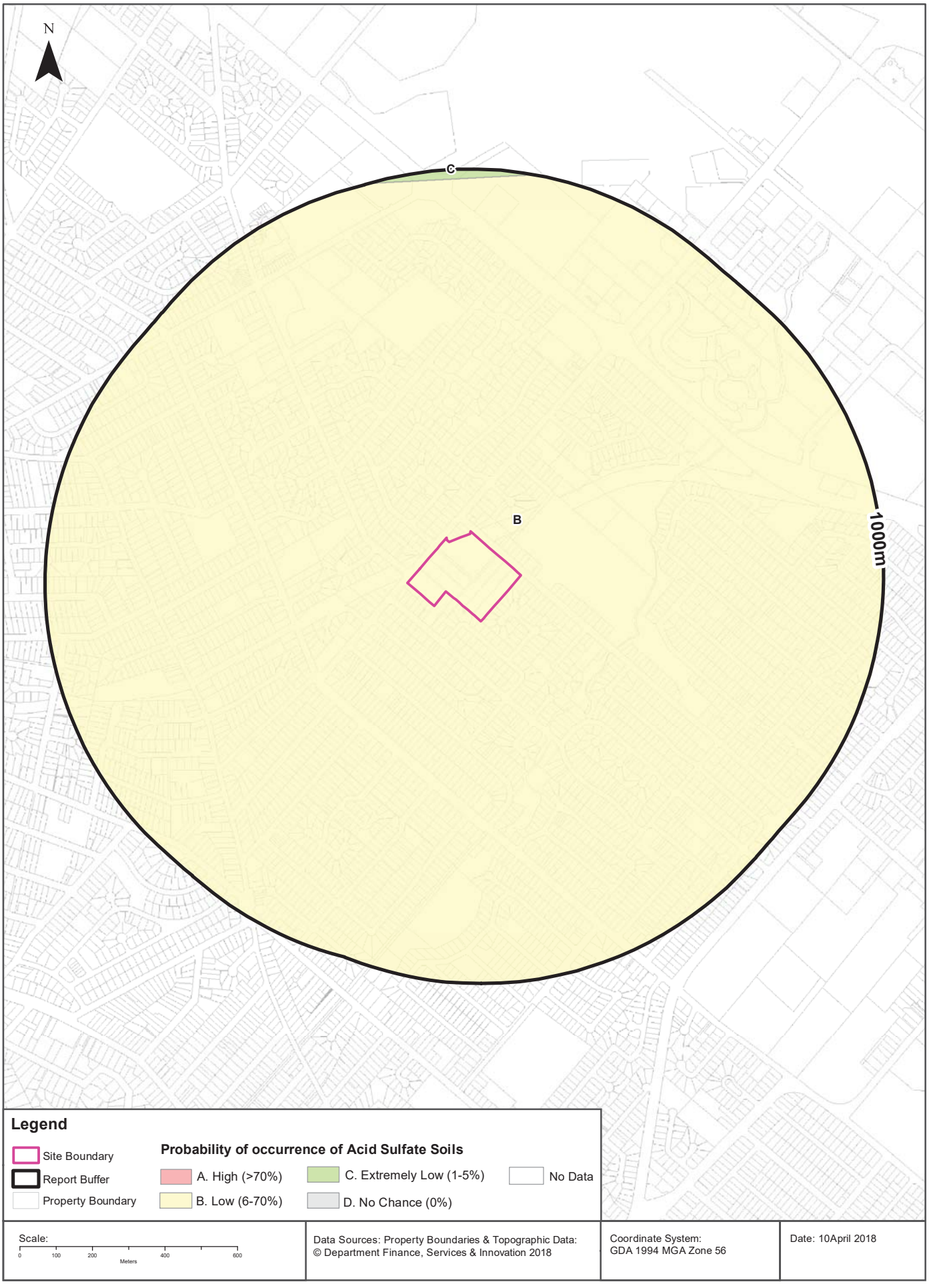

Acid Sulfate Soils

126 Kent Road, Marsfield, NSW 2122

Atlas of Australian Acid Sulfate Soils

Atlas of Australian Acid Sulfate Soil categories within the dataset buffer:

Class	Description	Distance
B	Low Probability of occurrence. 6-70% chance of occurrence.	0m
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	974m

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO
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Dryland Salinity

126 Kent Road, Marsfield, NSW 2122

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
N/A	Outside Data Coverage			

Dryland Salinity Potential of Western Sydney Data Source : NSW Office of Environment and Heritage
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Mining Subsidence Districts

126 Kent Road, Marsfield, NSW 2122

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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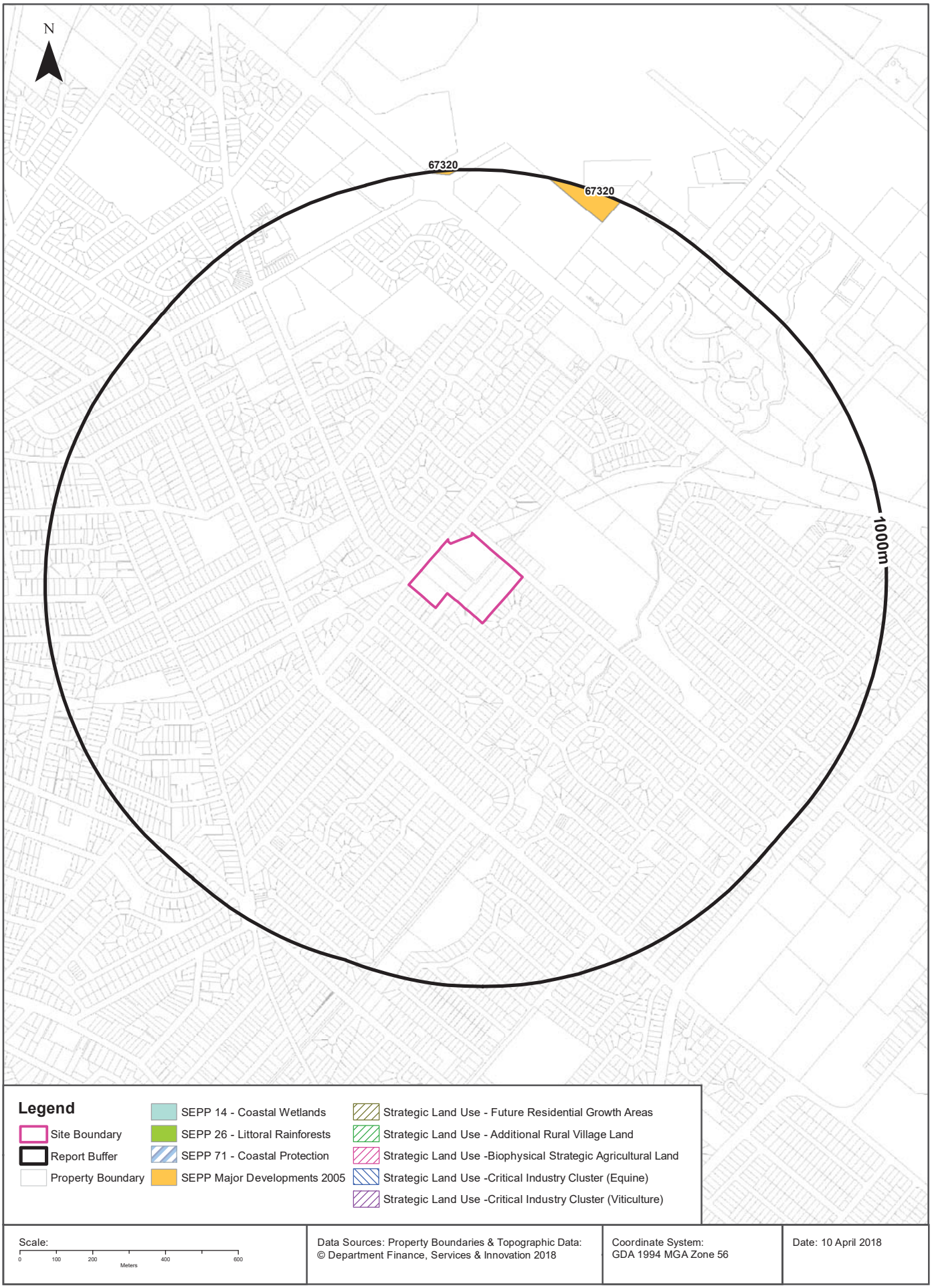
State Environmental Planning Policy

126 Kent Road, Marsfield, NSW 2122



Environmental Zoning

126 Kent Road, Marsfield, NSW 2122

State Environmental Planning Policy Protected Areas

Are there any State Environmental Planning Policy Protected Areas onsite or within the dataset buffer?

Dataset	Onsite	Within Site Buffer	Distance
SEPP14 - Coastal Wetlands	No	No	N/A
SEPP26 - Littoral Rainforests	No	No	N/A
SEPP71 - Coastal Protection Zone	No	No	N/A

SEPP Protected Areas Data Source: NSW Department of Planning & Environment
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State Environmental Planning Policy Major Developments (2005)

State Environmental Planning Policy Major Developments within the dataset buffer:

Map Id	Feature	Effective Date	Distance	Direction
67320	Macquarie University	11/09/2009	925m	North

SEPP Major Development Data Source: NSW Department of Planning & Environment
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State Environmental Planning Policy Strategic Land Use Areas

State Environmental Planning Policy Strategic Land Use Areas onsite or within the dataset buffer:

Strategic Land Use	SEPPNo	Effective Date	Amendment	Amendment Year	Distance	Direction
No records within buffer						

SEPP Strategic Land Use Data Source: NSW Department of Planning & Environment
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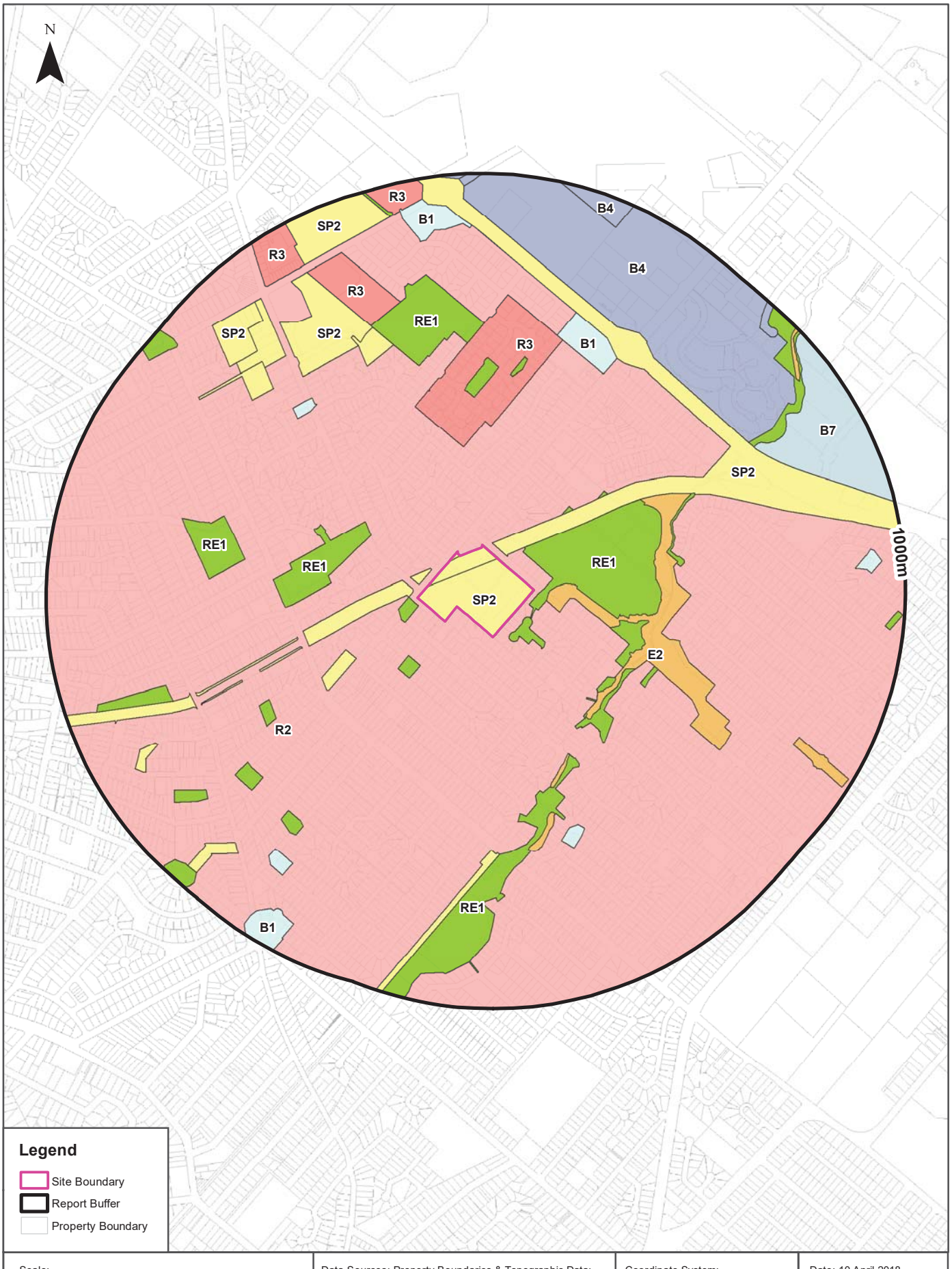
LEP Planning Zones

126 Kent Road, Marsfield, NSW 2122



Local Environmental Plan

126 Kent Road, Marsfield, NSW 2122

Land Zoning

What Local Environmental Plan Land Zones exist within the dataset buffer?

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
SP2	Infrastructure	Educational Establishment	Ryde Local Environmental Plan 2014	10/04/2015	10/04/2015	24/11/2017	Amendment No 2	0m	Onsite
SP2	Infrastructure	Classified Road	Ryde Local Environmental Plan 2014	10/04/2015	10/04/2015	24/11/2017	Amendment No 2	0m	Onsite
R2	Low Density Residential		Ryde Local Environmental Plan 2014	10/04/2015	10/04/2015	24/11/2017	Amendment No 2	0m	South West
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		14m	East
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		15m	West
SP2	Infrastructure	Classified Road	Ryde Local Environmental Plan 2014	10/04/2015	10/04/2015	24/11/2017	Amendment No 2	20m	North East
SP2	Infrastructure	Classified Road	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		20m	West
SP2	Infrastructure	Classified Road	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		21m	West
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		29m	South East
E2	Environmental Conservation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		38m	East
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		134m	South West
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		201m	North East
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		206m	West
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		227m	East
SP2	Infrastructure	Place of Public Worship	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		233m	South West
R3	Medium Density Residential		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		268m	North
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		295m	South East
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		297m	North East
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		302m	South East
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		321m	South East
SP2	Infrastructure	Classified Road	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		339m	West
SP2	Infrastructure	Classified Road	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		340m	West
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		369m	East
E2	Environmental Conservation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		373m	South East
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		378m	South
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		380m	South East
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		398m	North
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		461m	North

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		476m	West
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		485m	South West
E2	Environmental Conservation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		497m	South
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		509m	North
SP2	Infrastructure	Classified Road	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		522m	West
B1	Neighbourhood Centre		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		548m	North West
B1	Neighbourhood Centre		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		551m	South
SP2	Infrastructure	Educational Establishment	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		555m	North West
B1	Neighbourhood Centre		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		563m	North East
SP2	Infrastructure	Water Sewer and Drainage	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		574m	South
SP2	Infrastructure	Place of Public Worship	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		614m	North West
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		637m	South West
R3	Medium Density Residential		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		651m	North
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		661m	South West
SP2	Infrastructure	Water Supply System	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		662m	North West
SP2	Infrastructure	Classified Road	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		663m	West
B4	Mixed Use		Ryde Local Environmental Plan 2014	10/04/2015	10/04/2015	24/11/2017	Amendment No 2	679m	North East
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		699m	North East
SP2	Infrastructure	Place of Public Worship	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		700m	North West
B7	Business Park		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		705m	East
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		713m	West
SP2	Infrastructure	Educational Establishment	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		762m	North West
B1	Neighbourhood Centre		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		763m	South West
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		770m	South West
SP2	Infrastructure	Place of Public Worship	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		801m	South West
E2	Environmental Conservation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		810m	South East
SP2	Infrastructure	Place of Public Worship	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		819m	South West
B1	Neighbourhood Centre		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		832m	North
B1	Neighbourhood Centre		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		864m	East
R3	Medium Density Residential		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		873m	North West
SP2	Infrastructure	Convent and Hospital	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		874m	North
B1	Neighbourhood Centre		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		892m	South West
E2	Environmental Conservation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		905m	North East
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		917m	North

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
R3	Medium Density Residential		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		919m	North
B4	Mixed Use		Ryde Local Environmental Plan 2014	01/10/2015	01/10/2015	24/11/2017	State Environmental Planning Policy (Major Development) Amendment (Ryde) 2015	925m	North
B4	Mixed Use		Ryde Local Environmental Plan 2014	01/10/2015	01/10/2015	24/11/2017	State Environmental Planning Policy (Major Development) Amendment (Ryde) 2015	930m	North East
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		931m	North West
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		947m	East
RE1	Public Recreation		Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017		949m	South West
B4	Mixed Use		Ryde Local Environmental Plan 2014	29/07/2016	29/07/2016	24/11/2017	Amendment No 8	968m	North

Local Environment Plan Data Source: NSW Crown Copyright - Planning & Environment
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Local Environmental Plan

126 Kent Road, Marsfield, NSW 2122

Minimum Subdivision Lot Size

What are the onsite Local Environmental Plan Minimum Subdivision Lot Sizes?

Symbol	Minimum Lot Size	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
No Data							

Maximum Height of Building

What are the onsite Local Environmental Plan Maximum Height of Buildings?

Symbol	Maximum Height of Building	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
No Data							

Floor Space Ratio

What are the onsite Local Environmental Plan Floor Space Ratios?

Symbol	Floor Space Ratio	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
4	0.50	LEP	12/09/2014	12/09/2014	24/11/2017		0.5

Land Application

What are the onsite Local Environmental Plan Land Applications?

Application Type	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
Included	Ryde Local Environmental Plan 2014	10/04/2015	10/04/2015	10/04/2015	Amendment No 2	100

Land Reservation Acquisition

What are the onsite Local Environmental Plan Land Reservation Acquisitions?

Reservation	LEP	Published Date	Commenced Date	Currency Date	Amendment	Comments	Percentage of Site Area
Infrastructure	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	24/11/2017			16.2

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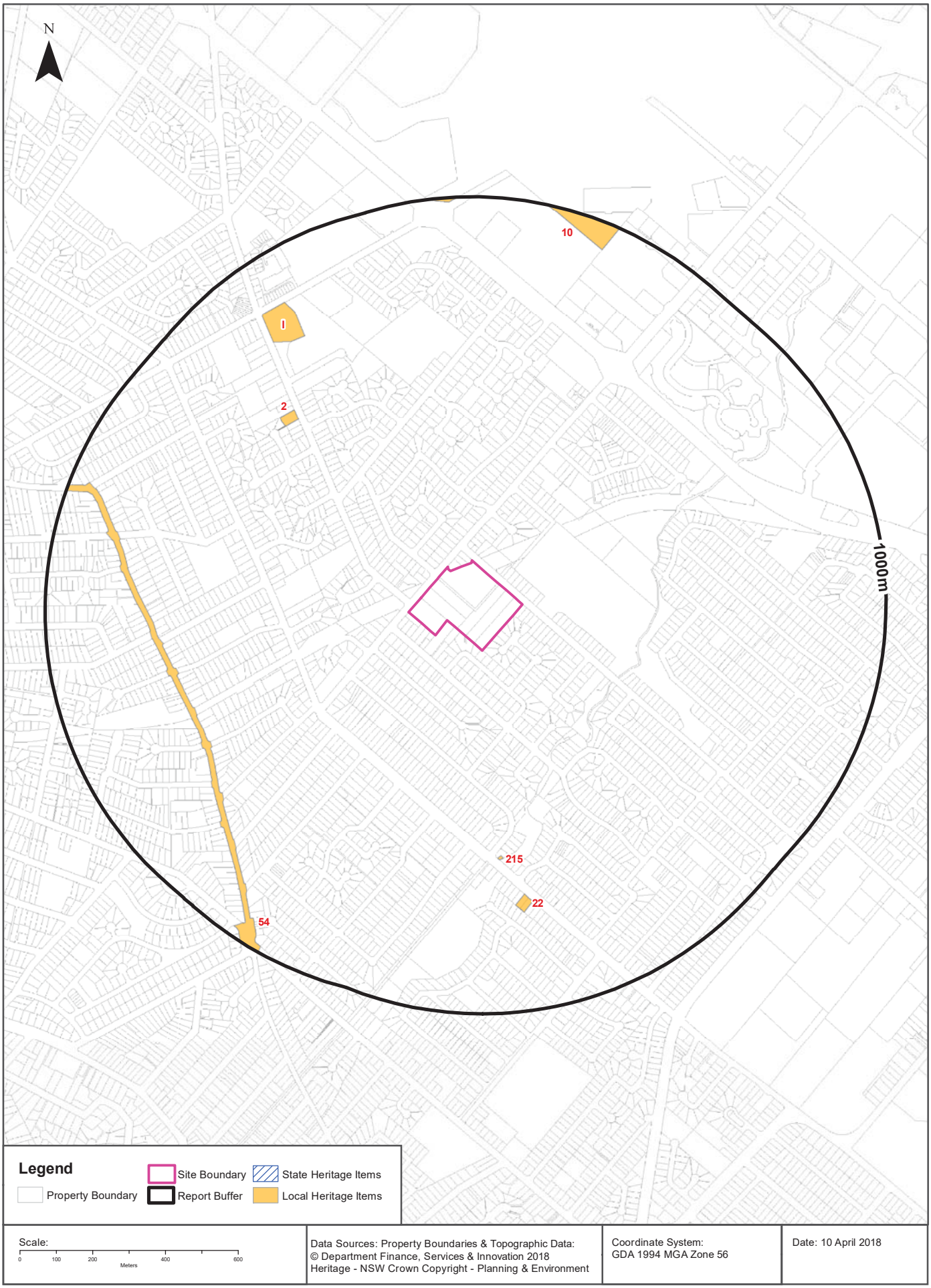
Heritage Items

126 Kent Road, Marsfield, NSW 2122



Heritage

126 Kent Road, Marsfield, NSW 2122

State Heritage Items

What are the State Heritage Items located within the dataset buffer?

Map Id	Name	Address	LGA	Listing Date	Listing No	Plan No	Distance	Direction
N/A	No records in buffer							

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Local Heritage Items

What are the Local Heritage Items located within the dataset buffer?

Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
215	Stone Marker (Outside 54 Bridge Road)	Item - General	Local	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	19/08/2016	567m	South
2	Eastwood Town Hall	Item - General	Local	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	19/08/2016	577m	North West
54	Great North Road	Item - General	State	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	19/08/2016	646m	South
22	House	Item - General	Local	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	19/08/2016	679m	South
I	Curzon Hall (restaurant)	Item - General	State	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	19/08/2016	747m	North West
10	Macquarie University (ruins)	Item - General	Local	Ryde Local Environmental Plan 2014	12/09/2014	12/09/2014	19/08/2016	925m	North

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Natural Hazards

126 Kent Road, Marsfield, NSW 2122

Bush Fire Prone Land

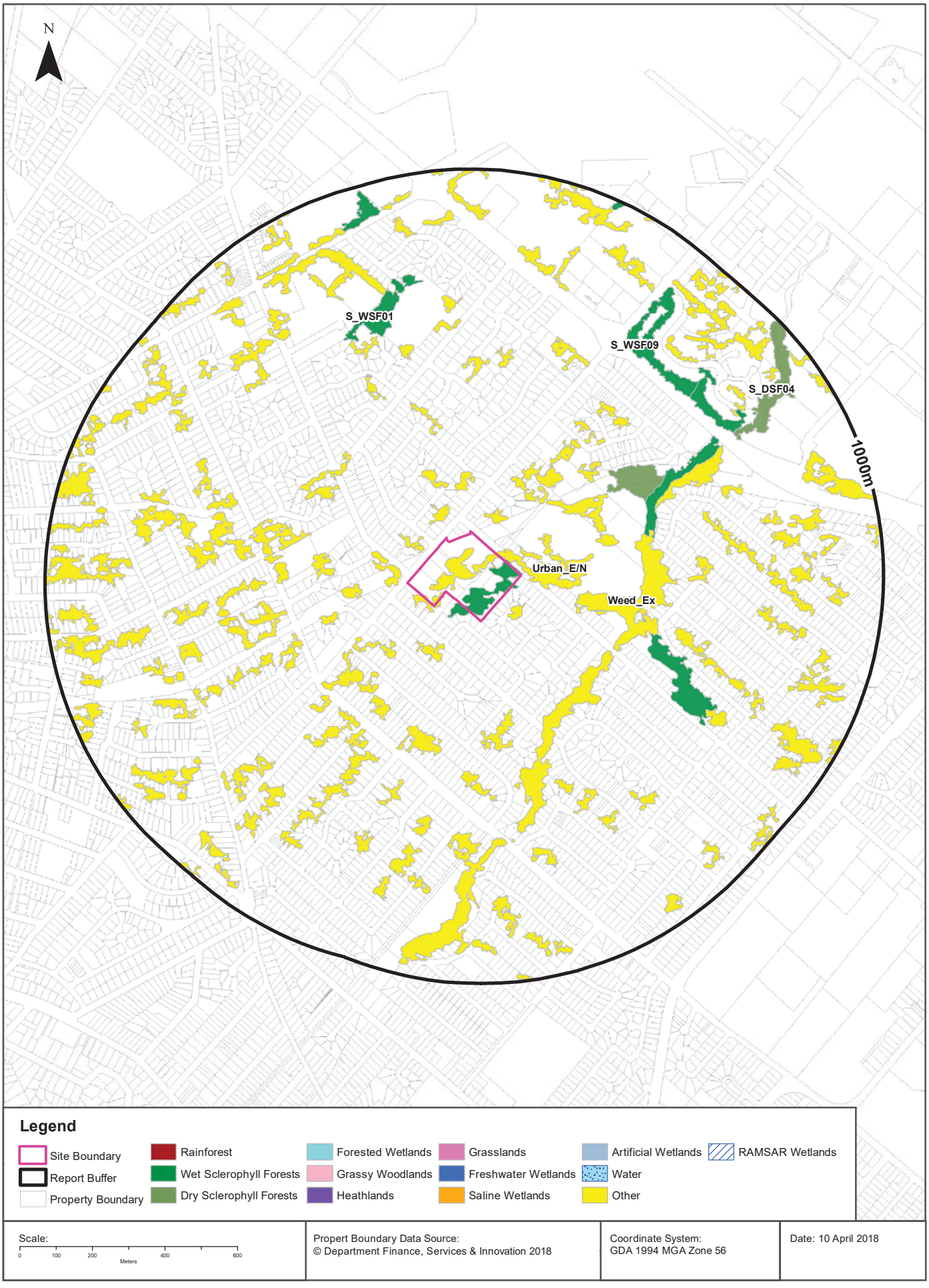
What are the nearest Bush Fire Prone Land Categories that exist within the dataset buffer?

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

126 Kent Road, Marsfield, NSW 2122



Ecological Constraints

126 Kent Road, Marsfield, NSW 2122

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
S_WSF01	S_WSF01: Blue Gum High Forest	Blue Gum High Forest		15: Grassy natives and exotics	24: Urban mixed use	4: Very high	E.salignaE.pilularis/S.glomullifera/E.paniculata/A.costata	0m	Onsite
Urban_E/N	Urban_E/N: Urban Exotic/Native			00: Not assessed	00: Not assessed	0: Not assessed	Urban Exotic/Native	0m	Onsite
Weed_Ex	Weed_Ex: Weeds and Exotics			00: Not assessed	00: Not assessed	0: Not assessed	Exotic Species >90%cover	164m	East
S_DSF04	S_DSF04: Coastal Enriched Sandstone Dry Forest			12: Dry xeric shrubs	13: Weeds	1: Low	E.pilularis/S.glomuliferaA.costata/E.resinifera	330m	North East
S_WSF09	S_WSF09: Sydney Turpentine-Ironbark Forest	Sydney Turpentine Ironbark Forest	Turpentine Ironbark Forest (possible)	20: Weeds and exotics	13: Weeds	3: High	E.pilularis/S.glomuliferaA.costata/E.resinifera	352m	East

Native Vegetation of the Sydney Metropolitan Area : NSW Office of Environment and Heritage
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RAMSAR Wetlands

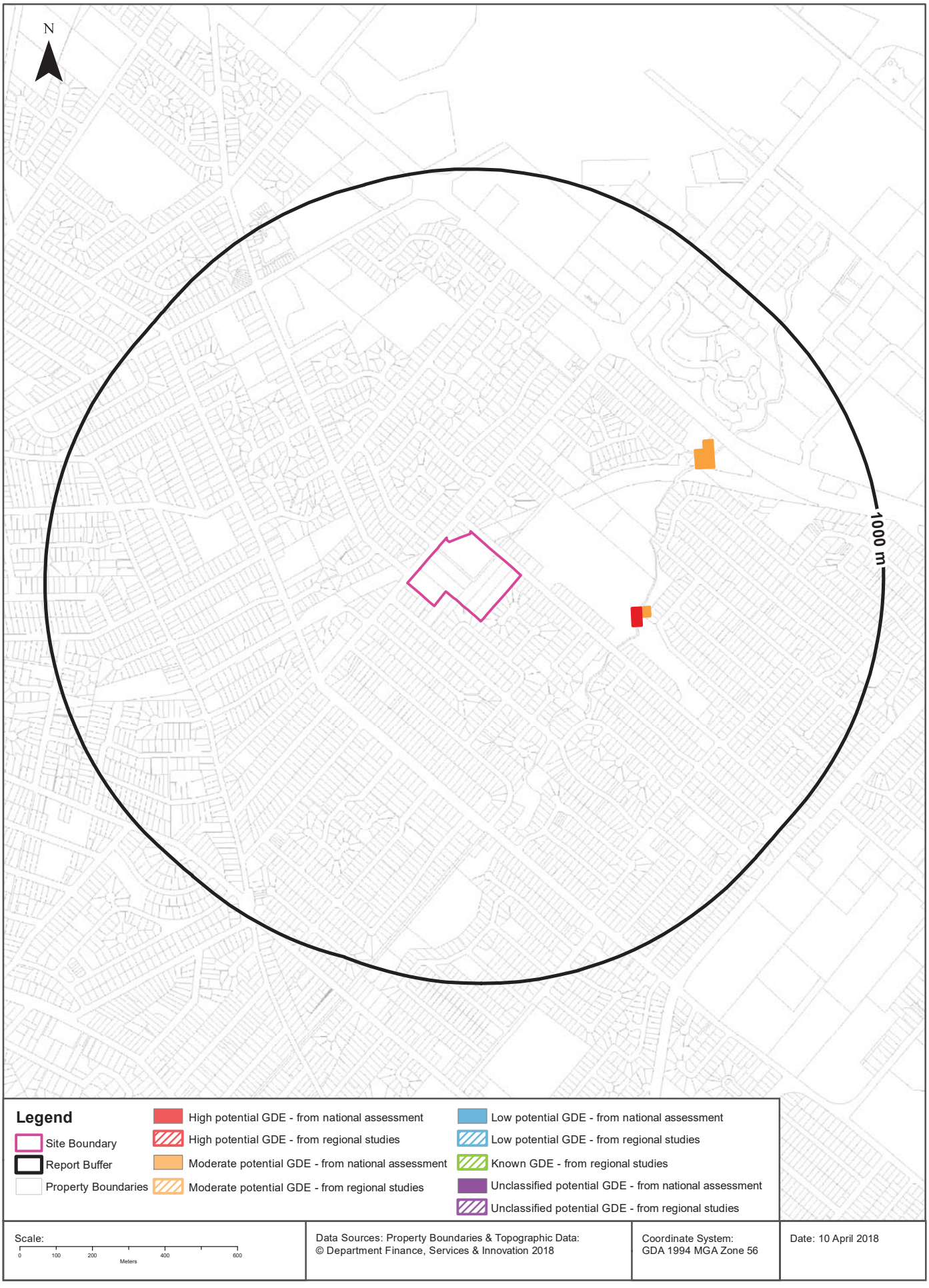
What RAMSAR Wetland areas exist within the dataset buffer?

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

126 Kent Road, Marsfield, NSW 2122



Ecological Constraints

126 Kent Road, Marsfield, NSW 2122

Groundwater Dependent Ecosystems Atlas

Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
Terrestrial	High potential GDE - from national assessment	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	317m
Terrestrial	Moderate potential GDE - from national assessment	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	341m

Groundwater Dependent Ecosystems Atlas Data Source: The Bureau of Meteorology
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Ecological Constraints - Inflow Dependent Ecosystems Likelihood

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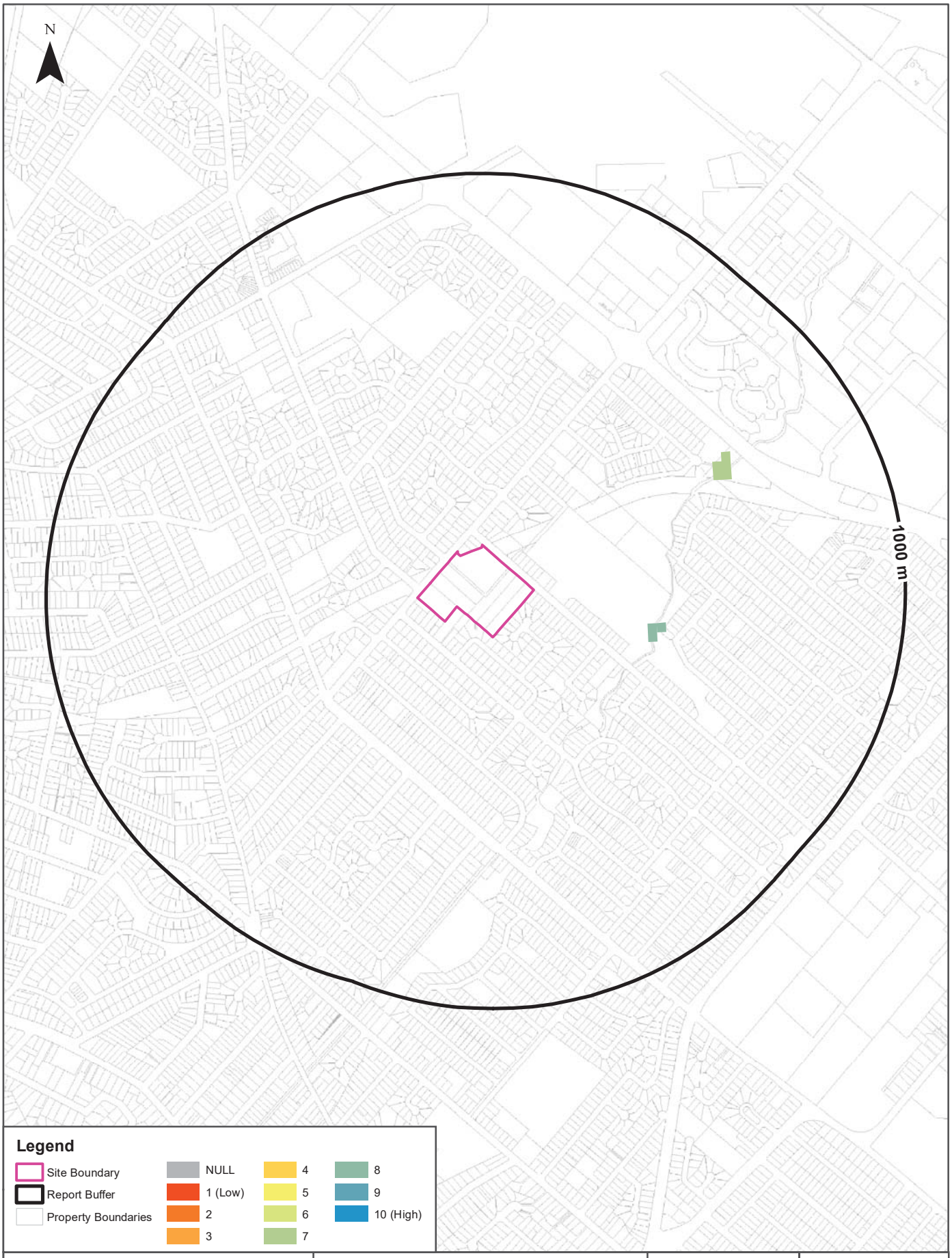

Ecological Constraints

126 Kent Road, Marsfield, NSW 2122

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
Terrestrial	8	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	317m
Terrestrial	7	Deeply dissected sandstone plateaus.	Vegetation	Consolidated sedimentary	565m

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology
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Ecological Constraints

126 Kent Road, Marsfield, NSW 2122

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	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	Ardea ibis	Cattle Egret	Not Listed	Not Sensitive	Not Listed	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 mauri	Western Sandpiper	Not Listed	Not Sensitive	Not Listed	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 lathami	Glossy Black-Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Cecropis daurica	Red-rumped Swallow	Not Listed	Not Sensitive	Not Listed	ROKAMBA
Animalia	Aves	Charadrius leschenaultii	Greater Sand-plover	Vulnerable	Not Sensitive	Vulnerable	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	Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Egretta sacra	Eastern Reef Egret	Not Listed	Not Sensitive	Not Listed	CAMBA

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
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;CAMBA; 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 fuliginosus	Sooty Oystercatcher	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	CAMBA
Animalia	Aves	Hieraaetus morphnoides	Little Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hirundapus caudacutus	White-throated Needletail	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Hydroprogne caspia	Caspian Tern	Not Listed	Not Sensitive	Not Listed	CAMBA;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	Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Merops ornatus	Rainbow Bee-eater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Motacilla flava	Yellow Wagtail	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
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
Animalia	Aves	Numenius phaeopus	Whimbrel	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Pachycephala olivacea	Olive Whistler	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	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Philomachus pugnax	Ruff	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Plegadis falcinellus	Glossy Ibis	Not Listed	Not Sensitive	Not Listed	CAMBA
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 swainsonii	Superb Parrot	Vulnerable	Category 3	Vulnerable	
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	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	Pommerhelix duralensis	Dural Woodland Snail	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Cercartetus nanus	Eastern Pygmy-possum	Vulnerable	Not Sensitive	Not Listed	
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	Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Miniopterus australis	Little Bentwing-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Mormopterus norfolkensis	Eastern Freetail-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Myotis macropus	Southern Myotis	Vulnerable	Not Sensitive	Not Listed	
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	Phascolarctos cinereus	Koala	Vulnerable	Not Sensitive	Vulnerable	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Mammalia	Pseudomys novaehollandiae	New Holland Mouse	Not Listed	Not Sensitive	Vulnerable	
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	Chelonia mydas	Green Turtle	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Reptilia	Myuchelys bellii	Bell's Turtle, Western Sawshelled Turtle	Endangered	Not Sensitive	Vulnerable	
Animalia	Reptilia	Varanus rosenbergi	Rosenberg's Goanna	Vulnerable	Not Sensitive	Not Listed	
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	
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 gordonii		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Acacia pubescens	Downy Wattle	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Acacia terminalis subsp. terminalis	Sunshine Wattle	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Argyrotegium nitidulum	Shining Cudweed	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Caladenia tessellata	Thick Lip Spider Orchid	Endangered	Category 2	Vulnerable	
Plantae	Flora	Callistemon linearifolius	Netted Bottle Brush	Vulnerable	Category 3	Not Listed	
Plantae	Flora	Cryptostylis hunteriana	Leafless Tongue Orchid	Vulnerable	Category 2	Vulnerable	
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		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Epacris purpurascens subsp. purpurascens		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	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
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	Galium australe	Tangled Bedstraw	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Genoplesium baueri	Bauer's Midge Orchid	Endangered	Category 2	Endangered	
Plantae	Flora	Genoplesium plumosum	Tallong Midge Orchid	Critically 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 caleyi	Caley's Grevillea	Critically Endangered	Category 3	Endangered	
Plantae	Flora	Grevillea hilliana	White Yiel Yiel	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Grevillea juniperina subsp. juniperina	Juniper-leaved Grevillea	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Grevillea parviflora subsp. parviflora	Small-flower Grevillea	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Haloragodendron lucasii		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Hibbertia spanantha	Julian's Hibbertia	Critically Endangered	Category 2	Critically Endangered	
Plantae	Flora	Hibbertia superans		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Hypsela sessiliflora		Not Listed	Category 3	Extinct	
Plantae	Flora	Lasiopetalum joyceae		Vulnerable	Not Sensitive	Vulnerable	
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 biconvexa	Biconvex Paperbark	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 mollis subsp. maxima		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Persoonia nutans	Nodding Geebung	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Pimelea curviflora subsp. curviflora		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Pimelea curviflora var. curviflora		Vulnerable	Not Sensitive	Vulnerable	
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	Pterostylis nigricans	Dark Greenhood	Vulnerable	Category 2	Not Listed	
Plantae	Flora	Pterostylis saxicola	Sydney Plains Greenhood	Endangered	Category 2	Endangered	
Plantae	Flora	Senecio behrianus		Presumed Extinct	Not Sensitive	Endangered	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
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.
NSW BioNet: © State of NSW and Office of Environment and Heritage
Data obtained 10/04/2018

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APPENDIX C SURESEARCH REPORT

SureSearch
UNDERGROUND SERVICES
A Cardno Company

Arcadis Australia Pacific Pty Ltd, 126 Kent Road, Marsfield, NSW 2122

Suresearch Job Number
64232

Date
30/7/19, 9:15 am

Completed on
30/7/19, 10:16 am

Invoicing Details

Question	Response	Details
Details for Invoicing		
Site Contact Name	Colin Biggs 0423 369 098	
Site Contact Phone	Colin Biggs 0423 369 098	
Site Contact Email	natasha.pasley@arcadis.com	
Is the client an Account holder or Credit Card?	Account	
Location	126 Kent Road Marsfield NSW 2122 Australia (-33.78741757899052, 151.1091618795147)	
Technicians name and times		
Add Technician		
Add Technician 1		
Technician Name	Ron	
Start Time	0700	
Finish Time	1000	
Total Hours	3	
Additional Charges	Nil	
General Comments	Client area of works is to clear services inside of private property for test pits. Located and marked utilities as per DBYD provided by the client. Client is excavating over marked utilities,slit trench and pot hole is required for every utility marked. This was verbally discussed with the client prior to leaving site and was acknowledged by Colin.	
All services/utilities have been marked to Australian Standard AS5488.1 2019 and are a guide only, it is the responsibility of the person/s undertaking works to adhere to asset owners duties of care when working in and around the utilities or areas marked or investigated by Suresearch, potholing is required prior to commencing excavation or any ground disturbance.		

Question	Response	Details	
Invoice Acceptance - Client Site Representative Name and Signature	ColinBiggs	30/7/19 9:54 am	
Clients please complete Customer Satisfaction Survey: https://www.surveymonkey.com/r/7HKBFK5			

Locator Report - 1/2 - 50%

Question	Response	Details
Job Details		
Was the job Completed and report being submitted?	Yes	
DBYD Plans required?	Yes	
DBYD plans provided by	Customer	
Are DBYD plans current	Yes	
Attach picture or screeenshot of front page of DBYD		
Media 1		
Were additional plans provided?	Yes	
Type of Plans Provided	As-Builts	
Plans Provided by	Client	
Media 2 Media 3 Media 4		
Plans indicated services in the vicinity?	Yes	
Is a sketch required?	No	
Area / Location Scanned :		
Complete details for every area inspected by utility locator		
Area Number		
Area Number 1		
Area description		

Question	Response	Details
Add Picture of area if needed		
Media 5 Media 6 Media 7 Media 8		
Add and complete for every service located in the area		
Identified service		
Identified service 1		
Type of service located	Unidentified Service	
Equipment Used	Ground Penetrating Radar, Electromagnetic Locating	
Site Marking Completed?	Yes	
SUI Quality Levels used for this asset type (Tick Multiple Boxes if more than one class used)	Quality C, Quality D	
Attach a photo		
Media 9 Media 10 Media 11 Media 12 Media 13 Media 14 Media 15 Media 16 Media 17		
Comments	Unknown utilities were located by GPR scan and classed QL-D and in passive radio scan was classed QL-C. Only possible location of unknown services was located and marked in pink, X indicating centre of pipe. Potholing is required to confirm service type, depth and location. Please note depths and marks are only indicative and potholing is required prior to any ground disturbances.	

Question	Response	Details
Identified service 2		
Type of service located	Gas	
Equipment Used	Electromagnetic Locating	
Site Marking Completed?	Yes	
SUI Quality Levels used for this asset type (Tick Multiple Boxes if more than one class used)	Quality B	
Attach a photo		
Media 18 Media 19		
Comments	Gas services was traced by direct connect method and was classed QL-B at depth of 300mm near test Pit 6. Please note depths are only indicative and potholing is required prior to any ground disturbances	
Identified service 3		
Type of service located	Electricity	
Equipment Used	Electromagnetic Locating	
Site Marking Completed?	Yes	
SUI Quality Levels used for this asset type (Tick Multiple Boxes if more than one class used)	Quality C	
Attach a photo		
Media 20 Media 21		
Comments	Electrical underground was located in passive power scan and induction method.Direct connected to earth stake at main switchboard and a scratchy signal was received at TP3. Service was classed QL-C. Potholing required to confirm depth and location of service. Please note depths	

	are only indicative and potholing is required prior to any ground disturbances

Traced and marked the approximate location of traceable live services in the area required using the equipment required. please refer to report for further detailed information.
All marked and noted underground services should be potholed prior to any ground disturbance. "This service and the depths advised are a guide only"

ELECTRONIC TRACING:
All work has been carried out in accordance with Australian Standards AS 5488.1-2019 Classification of subsurface utility information. Electronic detection is only an indication of the existence of underground utilities/networks and can be subject to interference from other services and/or local conditions. All depths given are only a guide.
Electronic detection should not be used solely to determine the location of underground utilities/networks for construction purposes, the electronic location/measurements must be proven by physically sighting the asset (see Validation).
Electronic tracing should be used as a guide only and all asset owners “Duty of Care” should be adhered to when working in and around underground utilities/networks, potholing is required and should be undertaken prior to any ground disturbance and in accordance with asset owners requirements and “Duty of Care

General Comments for job	Utilities was traced and marked by electro- magnetic locating and classed QL-B and QL-C. Passive power and radio scans was conducted in area of works. GPR scan was conducted in area of works and services were classed QL-D. Please refer to each utility owners duty of care and validation of utilities by NDD to QL-A. Please note depths and marks are only indicative and potholing is required prior to any ground disturbances.This service is only a guide. Colours Denote: Pink- Unkown Utilities Blue - Water White - Telstra/communications Orange - Electricity Red -RMS Service/Fire Service Green - Storm Pipe / Drainage Cream - Sewer Yellow - Gas Purple - Recycle Water Brown- Petroleum Products Abbreviations and Symbols -x- Location mark -^- Service travels across other services -] End of Trace I.L- Invert Level (Inside Bottom Of Pipe) O.L - Obvert Level (Inside Top Of Pipe) N.S. - No signal FOD - Full of debris FOW -Full of water EOT - End of trace (unable to locate past this point due to loss of signal or service terminates). UTL- Unable To Locate UTO- Unable To Open TMH- Telstra Manhole NDD- Non Distructive Digging

Question	Response	Details
Have you explained to the client the job details - what was found and what was unable to be found, limitations and recommendations?	Yes	

DBYD Certified Locator Sign Off

Signed by Service Locator	Roneel Chand	30/7/19 10:14 am	
Date & Time of Signing		30/7/19, 10:12 am	

This report is accurate at the time of the completion date and the report is valid until the expiry of the Dial Before You Dig plan referenced within the report or no more than 30 days from completion of this report.

Question	Response	Details

Terms and Conditions

Terms & Conditions of Trade

1. Definitions
The Contractor
1.1 "Client" means the person/s requesting The Contractor to provide the Services as specified in the Quote of these terms and conditions and if there is more than one person requesting the Services, this is a reference to each person jointly and severally.
1.2 "Contractor" means the entity listed in the Quote as providing the Services or if this item is left blank, the entity that is to provide the Services to the Client.
1.3 "Incidental Items" means any goods, documents, designs, drawings or materials supplied, consumed, created or deposited incidentally by the Contractor in the course of it conducting, or supplying to the Client, any Services.
1.4 "Services" means all Services supplied by the Contractor to the Client at the Client's request from time to time.
1.5 "Underground Services" means any underground pipes, cables, structures, reinforcement, sewer, drainage, telecommunications, gas, fuel, electrical, water and leaks located and marked by the Contactor.
1.6 "Works" means the work undertaken to locate the approximate position and depth of Underground Services (including leaks) and any other services performed by the Contactor for the Client.
1.7 "Price" means the price payable for the Services as agreed between the Contractor and the Client in accordance with clause 4 of this contract.
1.8 "Quote" means the document that provides information on the Services, Prices or Reimbursable Expenses or all of it. The Quote forms part of this Terms and Conditions.
1.9 "Reimbursable Expenses" means all costs and expenses (in addition to the Price) that are incurred by the Contractor in the performance of the Services.

2. Acceptance
2.1 The Client is taken to have exclusively accepted and is immediately bound, jointly and severally, by these terms and conditions if the Client places an order for, or accepts Services provided by the Contractor.
2.2 These terms and conditions may only be amended with the Contractor's consent in writing and shall prevail to the extent of any inconsistency with any other document or agreement between the Client and the Contractor.
2.3 As a standard procedure, reports will not be supplied to the Client. Requests by the Client for any written reports must be made to the Contractor at the time of acceptance to provide the Service. It is then at the Contractor's sole discretion as to the cost of supplying such a report, and any cost associated with acceptance of the report must be paid by the Client in accordance with the below payment terms of the Contractor. Reports will be based on normally accepted theory and practice and on the limit of information available.
2.4 Where the Contractor gives advice, recommendations, information, assistance or service to the Client or the Clients agent, regarding the Goods or Services then it is given in good faith and the Contractor shall not be liable in any way whatsoever for any damages, losses or costs however arising resulting from the Client relying on the same.

3. Change in Control
3.1 The Client shall give the Contractor not less than fourteen (14) days prior written notice of any proposed change of ownership of the Client and/or any other change in the Client's details (including but not limited to, changes in the Client's name, address, contact phone or fax number/s, or business practice). The Client shall be liable for any loss incurred by the Contractor as a result of the Client's failure to comply with this clause 3.

4. Price and Payment
4.1 At the Contractor's sole discretion the Price shall be either:
(a) as indicated on any invoice provided by the Contractor to the Client; or
(b) the Contractor's quoted price (subject to the provisions in clause 4 below) which will be valid for the period stated in the quotation or otherwise for a period of thirty (30) days,
and the reimbursable expenses as indicated in the Quote of these terms and conditions.
4.2 The Contractor reserves the right to change the Price if a variation to the Contractor's quotation is requested. Any variation from the plan of scheduled works or specifications (including, but not limited to, any variation due to unforeseen circumstances, such as a lack of or restricted access, or as a result of increases to the Contractor in the cost of materials and labour) will be charged for on the basis of the Contractor's quotation and will be shown as variations on the invoice. Payment for all variations must be made in full at their time of completion. The Contractor may also vary the Price accordingly if the Client varies the scope, character, quality, sequence of timing of the Services.
4.3 If after the date of signing these terms and conditions, the there is any change to the laws, by-laws, regulations or ordinances of the Commonwealth of Australia or a State or Territory of Australia (or any country or territory where the Services are to be performed) or any Statutory Authority, and that change directly or indirectly increases or decreases the Price or Reimbursable Expenses, the Contractor may vary the Price and Reimbursable Expenses.
4.4 Unless agreed otherwise, where the Contractor considers that an external consultant or contractor is required to enable the Contractor to provide the Services, the Contractor may engage such a consultant or contractor. If it is mutually agreed that the consultant or contractor is engaged as a sub-contractor to the Contractor, then the Client shall pay the Contractor a separate fee for that consultant or contractor.
4.5 At the Contractor's sole discretion a deposit may be required.
4.6 Time for payment for the Services being of the essence, the Price will be payable by the Client on the date/s determined by the Contractor, which may be:
(a) on delivery of the Services;
(b) thirty (30) days following the end of the month in which a statement is posted to the Client's address or address for notices;
(c) the date specified on any invoice or other form as being the date for payment; or
(d) failing any notice to the contrary, the date which is seven (7) days following the date of any invoice given to the Client by the Contractor.
4.7 If the Client disputes an invoice, the Client shall pay the undisputed portion within 14 days of the issue of that invoice and shall notify the Contractor in writing of the reasons for disputing the remaining portion. The Contractor may invoke the dispute resolution at clause 17.
4.8 If the performance of the Services is delayed by an act, omission or default of the Client or its employees, agents, consultants or contractors, then the Client shall pay the Contractor for the costs and expenses incurred as a result of the delay.
4.9 Payment may be made by cash, bank cheque, electronic/on-line banking, credit card or by any other method as agreed to between the parties.
4.10 Unless otherwise stated the Price does not include GST. In addition to the Price the Client must pay to the Contractor an amount equal to any GST the Contractor must pay for any supply by the Contractor under this or any other agreement for providing the Contractor's Services. The Client must pay GST, without deduction or set off of any other amounts, at the same time and on the same basis as the Client pays the Price. In addition the Client must pay any other taxes and duties that may be applicable in addition to the Price except where they are expressly included in the Price.

5. Delivery of Services
5.1 At the Contractor's sole discretion delivery of the Services shall take place when the Services are supplied to the Client at the Client's nominated address.
5.2 Delivery of the Services to a third party nominated by the Client is deemed to be delivery to the Client for the purposes of this agreement.
5.3 The Contractor may deliver the Services by separate instalments. Each separate instalment shall be invoiced and paid for in accordance with clause 4.
5.4 Any time specified by the Contractor for delivery of the Services is an estimate only and the Contractor will not be liable for any loss or damage incurred by the Client as a result of delivery being late. However both parties agree that they shall make every endeavour to enable the Services to be supplied at the time and place as was arranged. In the event that the Contractor is unable to supply the Services as agreed solely due to any action or inaction of the Client then the Contractor shall be entitled to charge a reasonable fee for re-supplying the Services at a later time and date.

6. Risk
6.1 Irrespective of whether the Contractor retains ownership of any Incidental Items all risk for such items shall pass to the Client as soon as such items are delivered to the Client and shall remain with the Client until such time as the Contractor may repossess the Incidental Items. The Client must insure all Incidental Items on or before delivery.
6.2 The Contractor reserves its right to seek compensation or damages for any damage, destruction or loss suffered in relation to the Incidental Items as a result of the Client's failure to insure in accordance with clause 6.1.

7. Access
7.1 The Client shall ensure that the Contractor has clear and free access to the work site or other places reasonably required at all times to enable the Contractor to undertake the works. The Contractor shall not be liable for any loss or damage to the site (including, without limitation, damage to pathways, driveways and concreted or paved or grassed areas) unless due to the negligence of the Contractor.
7.2 The Contractor reserves the right to refuse to enter the site to undertake the Services if the Contractor believes the site to be unsafe. In this event, the Client agrees that it is their responsibility to ensure the site is made safe before the Contractor will enter the site, and the Contractor shall not be liable for any delays caused, loss, damages, or costs however resulting from an unsafe site.

8. Location and marking of Underground Services
8.1 The Contractor agrees to take all reasonable care in locating and marking the approximate position of Underground Services and utilities
8.2 If any work or other activity is to be conducted in the vicinity of any Underground Service or any other location marked by the Contractor, the Client must visually establish the presence or absence (as the case may be) of any relevant Underground Services by using Non-Destructive excavation prior to the commencement of that work or activity. The Client releases and must indemnify the Contractor from and against any loss, liability or expense suffered or incurred by the Contractor in connection with the Contractor's or Client's failure to comply with this clause.

9. Title
9.1 The Contractor and the Client agree that where it is intended that the ownership of Incidental Items is to pass to the Client that such ownership shall not pass until:
(a) the Client has paid the Contractor all amounts owing for the Services; and
(b) the Client has met all other obligations due by the Client to the Contractor in respect of all contracts between the Contractor and the Client.
9.2 Receipt by the Contractor of any form of payment other than cash shall not be deemed to be payment until that payment has been honoured, cleared or recognised and until then the Contractor's ownership or rights in respect of the Incidental Items shall continue.
9.3 It is further agreed that:
(a) the Client is only a bailee of the Incidental Items and must return the Incidental Items to the Contractor immediately upon request by the Contractor;
(b) the Client holds the benefit of the Client's insurance of the Incidental Items on trust for the Contractor and must pay to the Contractor the proceeds of any insurance in the event of the Incidental Items being lost, damaged or destroyed;
(c) the Client must not sell, dispose, or otherwise part with possession of the Incidental Items. If the Client sells, disposes or parts with possession of the Incidental Items then the Client must hold the proceeds of sale of the Incidental Items on trust for the Contractor and must pay or deliver the proceeds to the Contractor on demand.
(d) the Client should not convert or process the Incidental Items or intermix them with other goods. If the Client does so then the Client holds the resulting product on trust for the benefit of the Contractor and must dispose of or return the resulting product to the Contractor as directed.
(e) the Client shall not charge or grant an encumbrance over the Incidental Items nor grant nor otherwise give away any interest in the Incidental Items while they remain the property of the Contractor;
(f) the Client irrevocably authorises the Contractor to enter any premises where the Contractor believes the Incidental Items are kept and recover possession of the Incidental Items.

10. Personal Property Securities Act 2009 ("PPSA")
10.1 In this clause financing statement, financing change statement, security agreement, and security interest has the meaning given to it by the PPSA.
10.2 The Client acknowledges that these Terms and Conditions of Trade constitute a security agreement for the purposes of the PPSA and creates a security interest in all Incidental Items that have previously been supplied and that will be supplied in the future by the Contractor to the Client.
10.3 The Client undertakes to:
(a) promptly sign and/or provide any further documents or information which the Contractor may reasonably require to;
(i) register a financing statement or financing change statement in relation to a security interest on the Personal Property Securities Register;
(ii) register any other document required to be registered by the PPSA; or
(iii) correct a defect in a statement referred to in clause 10.3(a)(i) or 10.3(a)(ii);
(b) indemnify, and upon demand reimburse, the Contractor for all expenses incurred in registering a financing statement or financing change statement or releasing any Incidental Items charged thereby;
(c) not register a financing change statement in respect of a security interest without the Contractor's written consent;
(d) not register, or permit to be registered, a financing statement or a financing change statement in relation to the Incidental Items in favour of a third party without the Contractor's written consent.
10.4 The Contractor and the Client agree that sections 96, 115 and 125 of the PPSA do not apply.10.5 The Client waives their rights to receive notices under sections 95, 118, 121(4), 130, 132(3)(d) and 132(4) of the PPSA. 10.6 The Client waives their rights as a grantor and/or a debtor under sections 142 and 143 of the PPSA and waives their right to
receive a verification statement in accordance with section 157 of the PPSA.
10.8 The Client must unconditionally ratify any actions taken by the Contractor under clauses 10.3 to 10.5.
10.9 Nothing in these terms and conditions is intended to have the effect of contracting out of the PPSA.

11. Security and Charge
11.1 In consideration of the Contractor agreeing to supply Services, the Client charges all of its rights, title and interest (whether joint or several) in any land, realty or other assets capable of being charged, owned by the Client either now or in the future, to secure the performance by the Client of its obligations under these terms and conditions (including, but not limited to, the payment of any money).
11.2 The Client indemnifies the Contractor from and against all the Contractor's costs and disbursements including legal costs on a solicitor and own client basis incurred in exercising the Contractor's rights under this clause.
11.3 The Client irrevocably appoints the Contractor and each director of the Contractor as the Client's true and lawful attorney/s to perform all necessary acts to give effect to the provisions of this clause 11 including, but not limited to, signing any document on the Client's behalf.

12. Defects, Warranties and the Competition and Consumer Act 2010 (CCA)
12.1 The Client must inspect the Contractor's Services on completion of the Services and must within seven (7) days notify the Contractor in writing of any evident defect in the Services or Incidental Items provided or of any other failure by the Contractor to comply with the description of, or quote for, the Services. The Client must notify any other alleged defect in the Contractor's Services or Incidental Items as soon as is reasonably possible after any such defect becomes evident. The Client must allow the Contractor to review the Services or Incidental Items that were provided.
12.2 Statutory implied guarantees and warranties (including, without limitation the statutory guarantees under the CCA) may be implied into these terms and conditions ("**Non-Excluded Guarantees**") and nothing in these terms and conditions modifies or excludes the Non-Excluded Guarantees.
12.3 Except as expressly set out in these terms and conditions or in respect of the Non-Excluded Guarantees, the Contractor makes no warranties or other representations including, but not limited to, the quality or suitability of the Services. The Contractor's liability in respect of these warranties is limited as per clause 18.
12.4 If the Client is a consumer within the meaning of the CCA, the Contractor's liability is limited to the extent permitted by section 64A of Schedule 2.
12.5 If the Contractor is required to rectify, re-supply, or pay the cost of re-supplying the Services under this clause or the CCA, but is unable to do so, then the Contractor may refund any of the Price paid by the Client but only to the extent that such refund shall take into account the value of Services and Incidental Items which have been provided to the Client which were not defective.
12.6 Notwithstanding clauses 12.1 to 12.5 but subject to the CCA, the Contractor shall not be liable for any defect or damage which may be caused or partly caused by or arise as a result of:
(a) the Client failing to properly maintain or store any Incidental Items;
(b) the Client using the Incidental Items for any unintended;
(c) the Client continuing to use any Incidental Item after any defect became apparent or should have become apparent to a reasonably prudent user;
(d) interference with the Services by the Client or any third party without the Contractor's approval;
(e) the Client failing to follow any instructions or guidelines provided by the Contractor;
(f) fair wear and tear or any accident, or act of God.

13. Default and Consequences of Default
13.1 Interest on overdue invoices shall accrue daily from the date when payment becomes due, until the date of payment, at a rate of ten percent (10%) per annum (and at the Contractor's sole discretion such interest shall compound monthly at such a rate) after as well as before any judgment.
13.2 If the Client owes the Contractor any money the Client shall indemnify the Contractor from and against all costs and disbursements incurred by the Contractor in recovering the debt (including but not limited to internal administration fees, legal costs on a solicitor and own client basis, the Contractor's collection agency costs, and bank dishonour fees).
13.3 Without prejudice to any other remedies the Contractor may have, if at any time the Client is in breach of any obligation (including those relating to payment) under these terms and conditions the Contractor may suspend or terminate Services. The Contractor will not be liable to the Client for any loss or damage the Client suffers under this clause.
13.4 Without prejudice to the Contractor's other remedies at law the Contractor shall be entitled to cancel all or any part of any order of the Client which remains unfulfilled and all amounts owing to the Contractor shall, whether or not due for payment, become immediately payable if:
(a) any money payable to the Contractor becomes overdue, or in the Contractor's opinion the Client will be unable to make a payment when it falls due;
(b) the Client becomes insolvent, convenes a meeting with its creditors or proposes or enters into an arrangement with creditors, or makes an assignment for the benefit of its creditors; or
(c) a receiver, manager, liquidator (provisional or otherwise) or similar person is appointed in respect of the Client or any asset of the Client.

14. Compliance with Laws
14.1 The Client and the Contractor shall comply with the provisions of all statutes, regulations and bylaws of government, local and other public authorities that may be applicable to the works.
14.2 The Client shall obtain (at their expense) all licenses and approvals that may be required for the works.
14.3 The Client agrees that the site will comply with any occupational health and safety laws and any other relevant safety standards or legislation.
14.4 The Client warrants that they will comply with all applicable anti-corruption laws related to this agreement and the Client warrants that they or their representatives have not violated any anti-corruption law.

15. Cancellation
15.1 The Contractor may cancel any contract to which these terms and conditions apply or cancel the delivery of Services at any time before the Services are commenced by giving written notice to the Client. On giving such notice the Contractor shall repay to the Client any of the Price paid and the Contractor shall not be liable for any loss or damage whatsoever arising from such cancellation.
15.2 In the event that the Client wishes to cancel delivery of the Services, then the Client must provide the Contractor with no less than four (4) working hours' notice prior to the start of the scheduled Service or stand down period, however in the event the Service is scheduled to start in the morning then notice must be received by the Contractor by close of business on the previous day (5pm AEST). If the Client cancels the Services within 24 hours of the scheduled Services, the Client will be liable to pay a fee equal to 75% of the rate quoted Price for the Services cancelled. The Contractor reserves the right to charge a cancellation fee equal to four (4) hours Service charges and the Client shall be liable for any and all loss incurred (whether direct or indirect) by the Contractor as a direct result of the cancellation (including, but not limited to, any loss of profits).

16. Intellectual Property Rights
16.1 Intellectual Property in all drawings, reports, specifications, bills of quantities, calculations and other documents produced by the Contractor in connection with the Services vests in the Contractor upon creation. The Contractor agrees to grant the Client an irrevocable, royalty-free perpetual licence to use the Intellectual Property for the purpose of the Services under this agreement.
16.2 The Contractor will entitle the Client to hard copies or pdf electronic copies of drawings, reports and other final documents, but shall not be entitled to other electronic versions, data, drafts or working documents.
16.3 If, during the course of providing the Services, the Contractor researches, develops, discovers or first reduces to practice a concept, product or process which is capable of being patented or commercialised, such concept, product or process is the property of the Contractor and the Client shall not use, infringe or otherwise appropriate the same without first obtaining the written consent of the Contractor.
16.4 Both parties retain ownership in pre-existing intellectual property and each party grants to the other party a non-exclusive, royalty-free licence to use, reproduce or modify this pre-existing intellectual property for the purpose of the Services.

17. Dispute Resolution
17.1 If a dispute arises out of or in connection with this agreement, either party may provide written notice to the other party of the dispute.
17.2 Within 14 days after service of a notice under clause 17.1, senior representatives of each party must meet and use their best endeavours to resolve the dispute or agree on a process for resolving the dispute. If the dispute is not resolved or a process for resolving the dispute is not agreed to within 28 days of the representatives meeting, either party may litigate.

18. Liability
18.1 For the avoidance of doubt, the Contractor is not liable to the Client for any Consequential Loss incurred by the Client from or in connection with this agreement. Consequential Loss means, but is not limited to, loss of profits (whether direct or indirect), loss of production, loss or denial of opportunity, loss of access to markets, loss of goodwill, loss of business reputation, future reputation or publicity.
18.2 Despite any other clause in these terms and conditions, the maximum liability of the Contractor arising out of the performance or non-performance of the Services, whether under the law of contract, tort or otherwise, shall be the lesser of $200,000 or the Price. The limitation of liability does not apply to a claim which cannot be limited at law.
18.3 The Contractor shall not be liable to the Client for:
(1) the acts, omissions or defaults of other contractors or consultants engaged by the Client (including consultants or contractors engaged by the Contractor as agent for the Client);
(2) any changes, alterations or additions to the Services made by others without the express approval of the Contractor;
(3) any Services that are not performed in accordance with the agreement, unless the Contractor is notified in writing of the non-performance within 1 year of the provision of those Services;
(4) the accuracy of any quantity and cost estimates;
(5) any loss, damage or claim to the extent that such loss, damage or claim was caused or contributed to by the Client or its employees, agents, consultants or contractors.
18.3 The Contractor shall not be liable to any third party for any claim whatsoever arising out of or in connection with the Services.

19. Privacy Act 1988
19.1 The Client agrees for the Contractor to obtain a credit report containing the Client's personal credit information in relation to credit provided by the Contractor.
19.2 The Contractor may exchange information about the Client with those credit providers either named as trade referees by the Client or named in a consumer credit report issued by a credit reporting agency for the following purposes:
(a) to assess an application by the Client; and/or
(b) to notify other credit providers of a default by the Client; and/or
(c) to exchange information with other credit providers as to the status of this credit account, where the Client is in default with other credit providers; and/or
(d) to assess the creditworthiness of the Client.
19.3 The Client consents to the Contractor being given a consumer credit report to collect overdue payment on commercial credit (Section 18H(1)(h) Privacy Act 1988).
19.4 The Client agrees that personal credit information provided may be used and retained by the Contractor for:
(a) the provision of Services; and/or
(b) the marketing of Services by the Contractor; and/or
(c) analysing, verifying a nd/or checking the Client's credit, payment and/or status in relation to the provision of Services; and/or
(d) processing of any payment instructions, direct debt facilities and/or credit facilities requested by the Client; and/or
(e) enabling the daily operation of Client's account and/or the collection of amounts outstanding in the Client's account in relation to the Services.
19.5 The Contractor may give information about the Client to a credit reporting agency:
(a) to obtain a consumer credit report about the Client;
(b) to allow the credit reporting agency to create or maintain a credit information file containing information about the Client.
19.6 The information given to the credit reporting agency may include:
(a) personal particulars (the Client's name, sex, address, previous addresses, date of birth, name of employer and driver's licence number);
(b) details concerning the Client's application for credit or commercial credit and the amount requested;
(c) advice that the Contractor is a current credit provider to the Client;
(d) advice of any overdue accounts, loan repayments, and/or any outstanding monies owing which are overdue by more than sixty (60) days, and for which debt collection action has been started;
(e) that the Client's overdue accounts, loan repayments and/or any outstanding monies are no longer overdue in respect of any default that has been listed;
(f) information that, in the opinion of the Contractor, the Client has committed a serious credit infringement (that is, fraudulently or shown an intention not to comply with the Client's credit obligations);
(g) advice that cheques drawn by the Client for ($100) or more, have been dishonoured more than once;
(h) that credit provided to the Client by the Contractor has been paid or otherwise discharged.

20. General
20.1 The failure by the Contractor to enforce any provision of these terms and conditions shall not be treated as a waiver of that provision, nor shall it affect the Contractor's right to subsequently enforce that provision. If any provision of these terms and conditions shall be invalid, void, illegal or unenforceable the validity, existence, legality and enforceability of the remaining provisions shall not be affected, prejudiced or impaired.
20.2 These terms and conditions and any contract to which they apply shall be governed by the laws of the state in which the Contractor has its principal place of business, and are subject to the jurisdiction of the courts in that state.
20.3 The Client shall not be entitled to set off against, or deduct from the Price, any sums owed or claimed to be owed to the Client by the Contractor nor to withhold payment of any invoice because part of that invoice is in dispute.
20.4 The Contractor may license or sub-contract all or any part of its rights and obligations without the Client's consent.
20.5 The Client agrees that the Contractor may amend these terms and conditions at any time. If the Contractor makes a change to these terms and conditions, then that change will take effect from the date on which the Contractor notifies the Client of such change. The Client will be taken to have accepted such changes if the Client makes a further request for the Contractor to provide Services to the Client.
20.6 Neither party shall be liable for any default due to any act of God, war, terrorism, strike, lock-out, industrial action, fire, flood, storm or other event beyond the reasonable control of either party.
20.7 The Client warrants that it has the power to enter into this agreement and has obtained all necessary authorisations to allow it to do so, it is not insolvent and that this agreement creates binding and valid legal obligations on it.

Please note that a larger print version of these terms and conditions is available from Contractor on request

Question	Response	Details

AS5488 Classification SUI

AS 5488-2013 CLASSIFICATION OF SUBSURFACE UTILITY INFORMATION (SUI)

AS 5488-2013 CLASSIFICATION OF SUBSURFACE UTILITY INFORMATION (SUI)

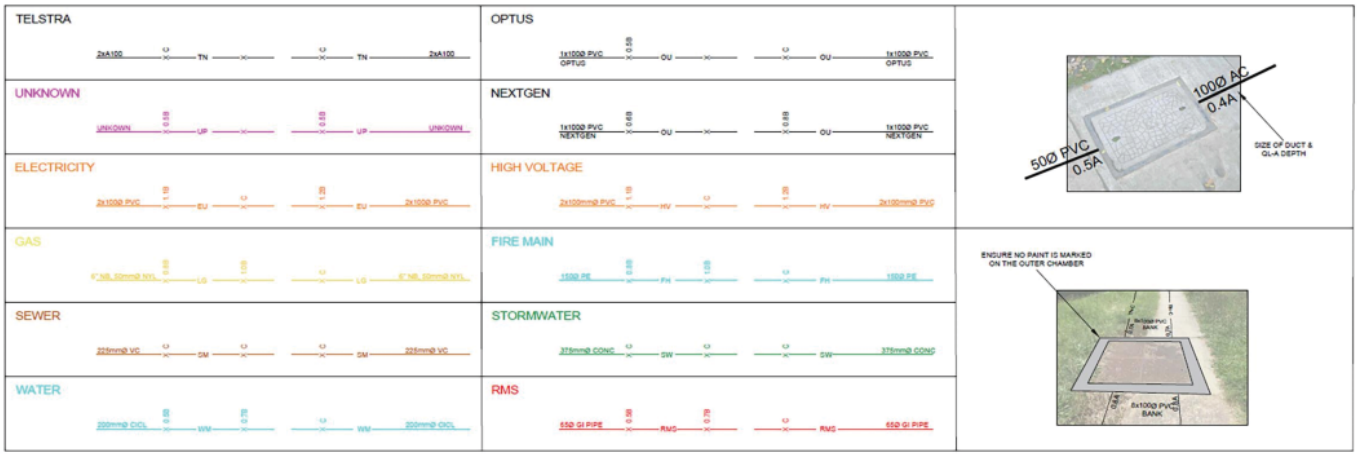
A - VALIDATED. Potholed & sighted is 'Absolute Spatial Position' in 3d +/- 50mm horizontally and vertically.

B - TRACED. Electronically traced with good signal with a depth 'Given Horizontal Tolerance +/- 300mm and vertical tolerance of +/- 500mm.

C - ALIGNED. Aligned using surface features & historical records electronically traced without depth & or poor scratchy signal.

D - INDICATIVE. Indicative location 'ONLY' using DBYD/Historical records.

1. Mark every 10 steps as standard, if this needs to change due to site conditions, please keep the spacing of the marks consistent.
2. Depth every second mark, unless depth change is greater than +/- 200mm, if this occurs depth needs to be indicated on appropriate mark.
3. Depth 'C' indicates where a locate of the line was established but the depth was not great.
4. Service code to be marked every second interval as shown in sample below;
5. Quality level classification is required on every mark as shown below;
6. Service identification should be labeled at the start and end of every trace, eg. tracing water, start of line "200mmØ CICL" to be mark along line marking at start of trace and end of trace as shown below;
7. Telstra locates are considered QL-C in regards to depth. No depths are to be marked along Telstra owned assets. The exception being at the pit chambers. Eg. refer to marked photo images.



Question	Response	Details

AS5488-1 2019 Surveyed Risk Vs Confidence

SureSearch UNDERGROUND SERVICES
www.suresearch.com.au
1300 884 520

UTILITY LOCATING DISCLAIMER

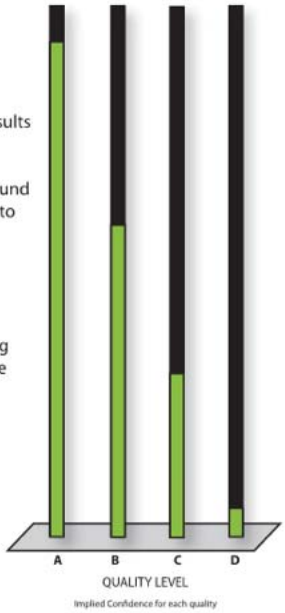
www.dialbeforeyoudig.com.au
DIAL 1100 BEFORE YOU DIG

DISCLAIMERS/CUSTOMER RISK
There is no way to eliminate all risk onsite our service is to minimise, not eliminate, your risk.

AS 5488-2013 CLASSIFICATION OF SUBSURFACE UTILITY INFORMATION (SUI)
A - VALIDATED - Potholed & Sighted is Absolute Spatial Position in Three Dimensions ±50 mm horizontally and vertically.
B - TRACED - Electronically traced with good signal with a depth Given Horizontal Tolerance ±300 mm and Vertical Tolerance of ±500mm.
C - ALIGNED - Aligned using surface features & historical records electronically traced without depth & or poor scratchy signal.
D - INDICATIVE – Indicative location (ONLY) using DBYD/Historical records.

NOTE: The higher the quality level the higher the Confidence (Green), lower the quality level higher the Risk (Black).

RISK v CONFIDENCE



ANY GROUND DISTURBANCE WILL BE AT YOUR OWN RISK

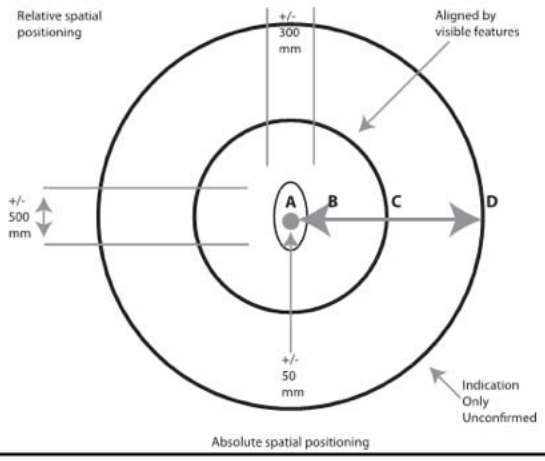
ELECTRONIC TRACING
We cannot accept responsibility for any damages, as we cannot actually see into the ground. Any results / markings are indicative only and would require visual confirmation. All work will be carried out in accordance with Australian Standards AS 5488-2013.
Electronic tracing is a guide only and all duty of care should be adhered to when working in and around underground services and utilities, potholing may be required and if so should be undertaken prior to any ground disturbance and in accordance with service providers requirements and "Duty of Care"
ALL RISK REMAINS WITH THE CUSTOMER we are engaged to help minimise your risk, not eliminate.
A risk was present prior to our engagement.

"DIAL BEFORE YOU DIG" PLANS/ "DUTY OF CARE"
It is the customer's responsibility to obtain the "Dial Before You Dig Plans" prior to SureSearch arriving onsite. Customers must inform themselves of all the various service providers and there 'Duty of Care and 'Essential Precautions' prior to performing any works.

DBYD EXPIRY DATES ON PLANS
Customers must ensure DBYD plans are current; refer to various service providers requirements. NSW legislation requires DBYD plans to be within 30 days of commencing work.

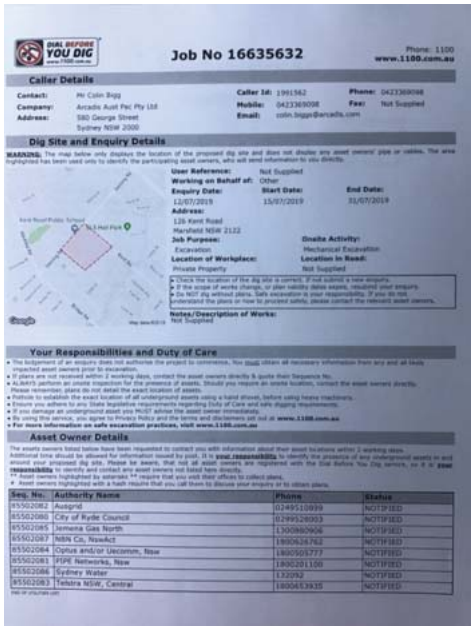
POTHOLING
It is the customer's responsibility to comply with service provider requirements and safe tolerances. If potholing will be required within danger zones asset owners need to be notified and standbys organised prior to SureSearch arriving. Standby costs are to be incurred by the customer.

ACCURACY



Utility Locating Disclaimer - Jan 2019

Media



Job No 16635632

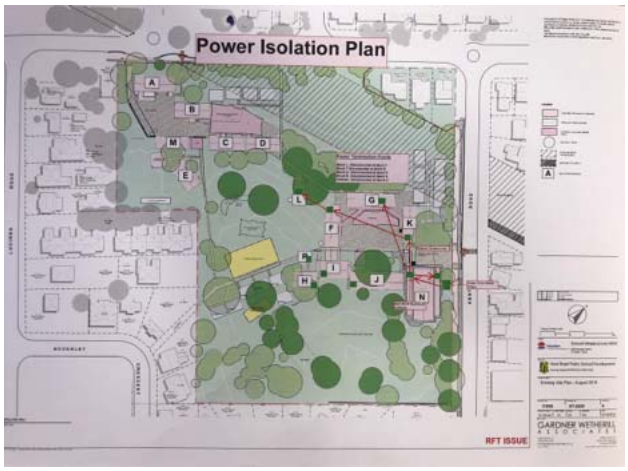
Caller Details

Dig Site and Enquiry Details

Your Responsibilities and Duty of Care

Asset Owner Details

Media 1



Media 2

Media 3

Media 4

Media 5

Media 6

Media 7

Media 8

Media 9

Media 10

Media 11

Media 12

Media 13

Media 14

Media 15

Media 16

Media 17

Media 18

Media 19

Media 20

Media 21

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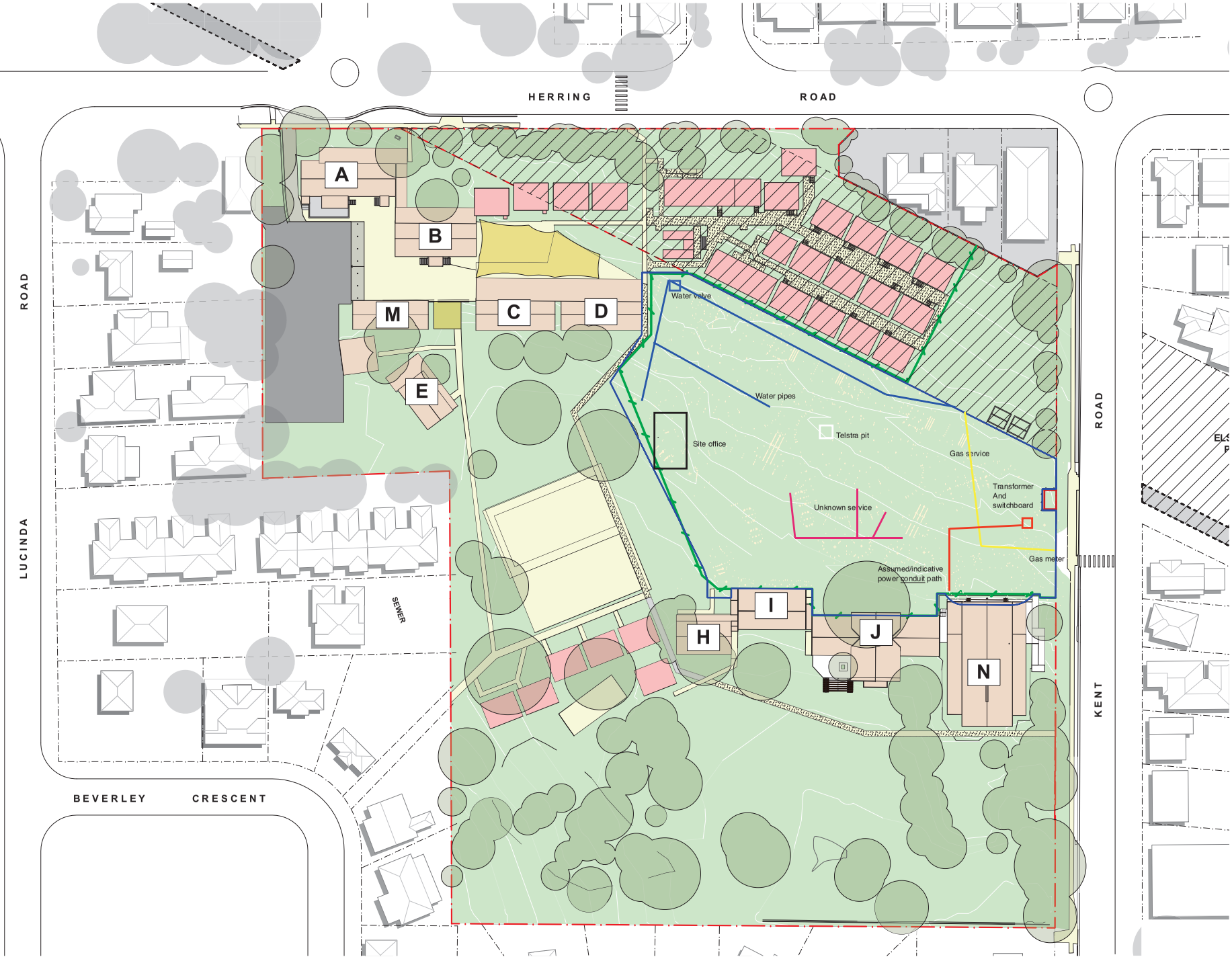
All Levels and Dimensions to be verified prior to the commencement of work.
Use figured dimensions only. Do not scale.
All work to comply with current regulations and S.A.A. Standards.



LEGEND

- EXISTING PERMANENT BUILDING
- EXISTING DEMOUNTABLE
- EXISTING COLA AND SHADE SAILS
- EXISTING PATH
- EXISTING TREES
- ROAD RESERVE - NO BUILDING
- A — BLOCK REFERENCES
- A CLASS PLYWOOD HOARDING, PAINTED OFF WHITE

No	ISSUE	DATE	REVISION DETAILS
P1	DO	22/10/2018	SP50 Issue
A	DO	30/10/2018	Issued for Co-ordination RFT ISSUE

1:500 @ ORIGINAL SIZE
0 10 20 30 50m

CLIENT
NSW Education School Infrastructure
School Infrastructure NSW
259 George Street
SYDNEY 2000

PROJECT
Kent Road Public School Development
Herring Road MARSFIELD NSW 2122

DRAWING TITLE
Existing Site Plan - Main Works Commencement

PROJECT No	DRAWING No	REVISION
17058	MT-0200	A

DRAWING SCALE	SHEET SIZE	DRAWN	CHECKED	DATE
As Shown	A1	DC	RG	30/10/2018

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RFT ISSUE

APPENDIX D FIELD NOTES AND LOGS

ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP1

Sheet: 1 of 1

Project Name: Kent Rd Marsfield
Project Number: 10034229
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 10/08/2019 Logger: Colin Biggs
Date Completed: 10/08/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Topsoil, SILT with some clay, dark brown, organic PACM (Bonded) and glass pieces.		0.0	TP1 @ 0.0-0.2	No odour	Backfilled with native material	
		0.2			FILL: Silty CLAY, light brown, non plastic, inclusions (Tile) terracotta/Concrete.	Slightly moist			No odour PACM (Bonded fragment)		
		0.3									
		0.4									
		0.5									
		0.6					0.1	TP1 @ 0.6			
		0.7	Natural		Silty CLAY, reddish brown, non plastic, stiff.	Slightly moist	0.0	TP1 @ 0.75	No odour No visual PACM or inclusions		
		0.8									
		0.9									
		1.0			End of test pit at 0.9 mBGL.						

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Excavator
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level;
70g of PACM in 10L sieve sample TP1.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: 33.47'13.68"
East Coor: 151.6'31.14"

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\083020191\10034229 BARBORO CONSTRUCTIONS P.GPJ GRAYS WIMBLE.GDT 30/8/19

ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP2

Sheet: 1 of 1

Project Name: Kent Rd Marsfield
Project Number: 10034229
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 10/08/2019 Logger: Colin Biggs
Date Completed: 10/08/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Wood chips and SILT, brown, medium to fine silt some clay.		0.0		No visual PACM Organic odours	Backfilled with native material	
		0.2			FILL: Silty CLAY, brownish red, non plastic, stiff.		0.0	TP2 @ 0.2	No visual PACM No odour.		
		0.4	Natural		Silty CLAY, reddish brown, non plastic.	slightly moist	0.0	TP2 @ 0.5	No visual PACM No odour.		
		0.6			End of test pit at 0.6 mBGL.						
		0.7									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Excavator
Drilling Fluid: None
Remarks: 10 L sample sieved - no PACM

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: 33.47'13.24"
East Coor: 151.6'31.76"

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ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP3

Sheet: 1 of 1

Project Name: Kent Rd Marsfield
Project Number: 10034229
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 10/08/2019 Logger: Colin Biggs
Date Completed: 10/08/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Natural		Clayey SILT (soft medium to fine silt), dark grey.	slightly moist	1.3	TP3 @ 0.2	PACM fragment found on surface No visual PACM within test pit No odour	Backfilled with native material	
		0.3			Silty CLAY, reddish brown, slightly plastic.	slightly moist	0.1	TP3 @ 0.4	No visual PACM No odour		
		0.4									
		0.5			End of test pit at 0.5 mBGL.						
		0.6									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Excavator
Drilling Fluid: None
Remarks: 9 gram PACM fragment on surface. No sieve sample

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: 33.47'12.77"
East Coor: 151.6'32.82"

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ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP4

Sheet: 1 of 1

Project Name: Kent Rd Marsfield
Project Number: 10034229
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 10/08/2019 Logger: Colin Biggs
Date Completed: 10/08/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: SILT with some clay inclusions tile/brick/concrete/PACM), dark brown.	slightly moist	0.0	TP4 @ 0.2	No odour, Visual PACM	Backfilled with native material	
		0.5	Natural		Silty CLAY, orange brown, non plastic, stiff.	slightly moist	0.0	TP4 @ 0.6	No odour No visual PACM		
		0.7			End of test pit at 0.7mBGL.						
		0.8									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Excavator
Drilling Fluid: None
Remarks: 25 gram on sieve after 10 L sieving (PACM)

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: 33.47'14.35"
East Coor: 151.6'32.47"

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ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP05

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 01/10/2019 Logger: Colin Biggs
Date Completed: 01/10/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Natural		Sandy SILT (Loam), brown, highly organic roots (mat) to 2 mm (plastic/woodchips), fine sand and silt.		0.0	TP05 @ 0.0-0.2	Organic odour Man made inclusion No PACM visual No PACM in sieve	Backfilled with native material	
		0.2							Not sieve sampled		
		0.3						TP05 @ 0.2-0.4			
		0.4									
		0.5									
		0.6			Silty CLAY, light brown, non plastic, small 2 mm rounded fresh shale gravels (occasional).	slightly moist			No PACM or man made inclusions		
		0.7									
		0.8									
		0.9									
		1.0			End of test pit at 0.9 mBGL.						

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

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ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP6

Sheet: 1 of 1

Project Name: Kent Rd Marsfield
Project Number: 10034229
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 10/08/2019 Logger: Colin Biggs
Date Completed: 10/08/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Silty CLAY, non plastic, inclusions tile/brick/steel/wood.		0.0	TP6 @ 0.2 (QA1 and QA2)	No Visual PACM No odour	Backfilled with native material	
		0.2									
		0.3									
		0.4	Natural		Silty CLAY, dark brown, non plastic, stiff.	slightly moist			No visual PACM Organic odour		
		0.5					0.0	TP6 @ 0.5			
		0.6			End of hole at 0.5 mBGL.						

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Excavator
Drilling Fluid: None
Remarks: No PACM on sieve following 10 L sieve
EOH

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: 33.47'14.20"
East Coor: 151.6'33.38"

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ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP7

Sheet: 1 of 1

Project Name: Kent Rd Marsfield
Project Number: 10034229
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 10/08/2019 Logger: Colin Biggs
Date Completed: 10/08/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		Bitumen						
					FILL: Road base with some silty clay compacted.			TP7 @ 0.0-0.2	No visual PACM No odour		
		0.2									
		0.3					0.1	TP7 @ 0.3			
		0.4			FILL: Reworked Natural CLAY, mottled reddish orange, slightly plastic compacted in layers.	slightly moist			No visual PACM No odour		
		0.5								Backfilled with native material	
		0.6					0.0	TP7 @ 0.6			
		0.7	Natural		Silty CLAY Reworked Natural, orange brown with some grey mottles, non plastic, stiff.	slightly moist			No visual PACM No odour		
		0.8					0.0	TP7 @ 0.8			
		0.9									
		1.0									
		1.1					0.0	TP7 @ 1.1			
		1.2			End of test pit at 1.1 mBGL.						

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Excavator
Drilling Fluid: None
Remarks: No sieving conducted
EOH

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: 33.47'13.40"
East Coor: 151.6'34.20"

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ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP8

Sheet: 1 of 1

Project Name: Kent Rd Marsfield
Project Number: 10034229
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 10/08/2019 Logger: Colin Biggs
Date Completed: 10/08/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Clayey Silty SAND, brown, medium grained sand, brick/tile inclusions.	slightly moist	0.0	TP8 @ 0.0-0.1	No odour No visual PACM	Backfilled with native material	
		0.2			FILL: Silty CLAY, light brown, non plastic, tree roots.	slightly moist	0.0	TP8 @ 0.2	No odour No visual PACM / inclusions		
		0.3	Natural		Silty CLAY, orange brown, non plastic.	slightly moist	0.1	TP8 @ 0.5	No odour No visual PACM / inclusions		
		0.8			End of test pit at 0.8 mBGL.						
		0.9									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Excavator
Drilling Fluid: None
Remarks: No PACM on sieve following 10 L sieving

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: 33.47'12.62"
East Coor: 151.6'34.47"

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ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP09

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 02/10/2019 Logger: Colin Biggs
Date Completed: 02/10/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Natural		Sandy SILT, light gray brown, occasional poorly sorted gravel to 10 mm.		0.1	TP09 @ 0.0-0.1	No visual Man made/PACM, No PACM in sieved sample	Backfilled with native material	
		0.2									
		0.3					0.0	TP09 @ 0.1-0.4			
		0.4			Silty CLAY, red brown, non plastic, stiff, fresh shale to 50 mm (angular).	slightly moist					
		0.5									
		0.6									
		0.7			End of test pit at 0.7 mBGL.						
		0.8									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

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ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP10

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 02/10/2019 Logger: Colin Biggs
Date Completed: 02/10/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
			Fill		FILL: Road Base aggregate, fine sands and silt, aggregate angular to 50 mm, some occasional concrete inclusions.		1.6	TP10 @ 0.0-0.1	No PACM in sieve sample Concrete inclusions in sieve		
		0.1			FILL: Silty CLAY compaction layer.		0.8	TP10 @ 0.1-0.25	No PACM or man made inclusions No sieving done	Backfilled with native material	
		0.2	Natural		Silty CLAY, red brown, non plastic, stiff.	slightly moist	1.6				
		0.3									
		0.4			End of test pit at 0.35 mBGL.						
		0.5									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

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ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP11

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 02/10/2019 Logger: Colin Biggs
Date Completed: 02/10/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Natural		SANDY Clayey Silts (Loam), fine grained sands and silt, some clay, non plastic.		0.5	TP11 @ 0.1-0.3	No visual man made inclusions No PACM in sieved sample	Backfilled with native material	
		0.2									
		0.3			Silty CLAY, red brown, slightly plastic, stiff.	slightly moist			No inclusions No sieved sample		
		0.4									
		0.5					0.9	TP11 @ 0.5			
		0.6									
		0.7					1.2	TP11 @ 0.7			
		0.8			End of test pit at 0.8 mBGL.						
		0.9									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

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ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP12

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 01/10/2019 Logger: Colin Biggs
Date Completed: 01/10/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.0	Fill		FILL: Sandy Clayey SILT, brown, non plastic clays in clumps, poorly sorted gravels to 15 mm, pieces of concrete and brick (PACM).		0.0	TP12 @ 0.0-0.1	No Visual PACM 1 Piece of PACM found in sieve		
		0.1	Natural		Silty CLAY, brown, slightly plastic.	slightly moist	0.0		No Visual inclusions	Backfilled with native material	
		0.6			End of test pit at 0.6 mBGL.						
		0.7									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\08302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP13

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 02/10/2019 Logger: Colin Biggs
Date Completed: 02/10/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Natural		Sandy Clayey SILT (Loam) compacted, fine to medium grained yellow sand, clumpy clay, non plastic, fine silt.	slightly moist	3.2	TP13 @ 0.0-0.15	No visual man made inclusion No PACM in sieve sample	Backfilled with native material	
		0.2			Silty CLAY, red brown, some grey mottling, fresh shale to 50 mm.		0.0		No visual man made inclusions		
		0.3									
		0.4									
		0.5					0.0				
		0.6			End of test pit at 0.6 mBGL.						
		0.7									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\08302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP14

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 02/10/2019 Logger: Colin Biggs
Date Completed: 02/10/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Road Base aggregate, fine silt, coarse to medium grained sand, occasional brick/tile piece to 20 mm, aggregates to 35 mm.		0.2	TP14 @ 0.0-0.1	No visual PACM No PACM in sieve sample	Backfilled with native material	
		0.2			FILL: Silty CLAY compaction layer		0.4	TP14 @ 0.1-0.3	No visual man made inclusions No sieve sample		
		0.3	Natural		Silty CLAY, red brown, slightly plastic, stiff.	slightly moist	0.3	TP14 @ 0.3	No inclusions		
		0.4									
		0.5									
		0.6									
		0.7									
		0.8			End of test pit at 0.8 mBGL.						
		0.9									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\08302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP15

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 30/09/2019 Logger: Colin Biggs
Date Completed: 30/09/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Road Base GRAVELS and SILT, non plastic clays, gravel to 35 mm, angular.				No visual PACM		
			Natural		Silty CLAY, highly plastic, subangular gravel (Fresh shale) to 5 mm.	slightly moist	0.0	TP15 @ 0.0-0.2	No odour No visual PACM or man made inclusion Not sieve sampled.	Backfilled with native material	
		0.2									
		0.3									
		0.4					0.0				
		0.5									
		0.6									
		0.7			End of test pit at 0.65 mBGL.						
		0.8									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\08302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP16

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 30/09/2019 Logger: Colin Biggs
Date Completed: 30/09/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Road Base GRAVEL, some brick pieces inclusion to 25 mm, sort with gravels.		0.0	TP16 @ 0.0-0.3	No odour PACM found in sieved material.	Backfilled with native material	
		0.2									
		0.3			FILL: Silty CLAY compacted, angular gravels to 15 mm, angular (organic plastic sheet).		0.0		No odour No PACM or no man made inclusions 10kg sieved sample.		
		0.4	Natural		Silty CLAY, reddish brown, slightly plastic.				No odour No PACM or man made inclusions		
		0.5									
		0.6									
		0.7			End of test pit at 0.65 mBGL.						
		0.8									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTION\S08302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

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Test Pit Log

Test Pit ID: TP17

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 30/09/2019 Logger: Colin Biggs
Date Completed: 30/09/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Road Base aggregate, angular gravel to 35 mm, sand, coarse grained.		0.0	TP17 @ 0.0-0.2	No visual PACM No man made inclusions No PACM sieved sample	Backfilled with native material	
		0.2			FILL: Silty CLAY compaction layer, no inclusions						
		0.3	Natural		Silty CLAY, reddish brown, non plastic.	slightly moist			No visual inclusion of PACM or man made		
		0.4									
		0.5									
		0.6			End of test pit at 0.6 mBGL.						
		0.7									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\08302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

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Test Pit Log

Test Pit ID: TP18

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Date Started: 01/10/2019
Logger: Colin Biggs
Project Number: 10035770
Date Completed: 01/10/2019
Editor: NA
Project Location: 126 Kent Road, Marsfield, NSW 2122
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Silty CLAY, reddish brown/brown, non plastic, stiff root and rootlets to 3 mm, brick and tile inclusions. Becoming brown.	slightly moist	0.0	TP18 @ 0.0-0.2	No visual PACM No PACM in sieve	Backfilled with native material	
		0.2							sieved sample		
		0.3					0.0	TP18 @ 0.2-0.35	No sieved sample		
		0.4	Natural		Silty CLAY, light brown/brown, non plastic, stiff.	slightly moist	0.0		No inclusions		
		0.5			Becoming light brown.						
		0.6			End of test pit at 0.6 mBGL.						
		0.7									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\08302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

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Test Pit Log

Test Pit ID: TP19

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 30/09/2019 Logger: Colin Biggs
Date Completed: 30/09/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Road Base aggregate, some silt and clays compacted.		0.0	TP19 @ 0.0-0.2	No PACM or man made inclusions No odour	Backfilled with native material	
		0.2			FILL: Compacted Silty CLAY, poorly sorted gravels to 5 mm.		0.0		No PACM or man made inclusions No odour		
		0.3	Natural		Silty CLAY, reddish brown, slightly plastic, stiff.	slightly moist	0.0		No PACM or man made inclusions No odour		
		0.4									
		0.5			End of test pit at 0.5 mBGL.						
		0.6									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\08302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

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Test Pit Log

Test Pit ID: TP20

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 30/09/2019 Logger: Colin Biggs
Date Completed: 30/09/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Road Base GRAVELS and SANDS, aggregate to 35 mm (angular), light grey medium to coarse grained sands.		0.2	TP20 @ 0.0-0.1	No visual PACM or man maid inclusion No PACM in sieved sample	Backfilled with native material	
		0.2			FILL: Silty CLAY, very stiff/compacted.		0.0	TP20 @ 0.1-0.2	No sieve sample No visual inclusions		
		0.3	Natural		Silty CLAY, reddish brown, slightly plastic, stiff, fresh shale gravel to 15 mm angular.	slightly moist	0.0		No man made inclusions		
		0.4									
		0.5			End of test pit at 0.5 mBGL.						
		0.6									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\08302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

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Test Pit Log

Test Pit ID: TP21

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 30/09/2019 Logger: Colin Biggs
Date Completed: 30/09/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Natural		Clayey Sandy SILT (Loam), dark brown, soft, roots to 10 mm, flat pieces of organic shale to 15 mm/organic weak sandstone to 30 mm, angular.		2.0	TP21 @ 0.0-0.15	No odour No visual PACM or man made material	Backfilled with native material	
		0.2									
		0.3									
		0.4			Silty CLAY, light brown, plastic, stiff, some minor angular shale to 5 mm.	slightly moist			No odour No visual PACM or man made inclusions		
		0.5			Sieve sampled but no PACM or man made inclusions, not sampled.						
		0.6									
		0.7			End of test pit at 0.65 mBGL.						
		0.8									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\80302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP22

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 30/09/2019 Logger: Colin Biggs
Date Completed: 30/09/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Road Base GRAVEL, angular to 35 mm		0.0	TP22 @ 0.0-0.15	No odour No visual PACM or man made material	Backfilled with native material	
		0.2	Natural		Silty CLAY, reddish brown, plastic, stiff to very stiff, some light brown/yellow mottling.				No odour No visual PACM or man made material		
		0.3									
		0.4									
		0.5									
		0.6									
		0.7			End of test pit at 0.65 mBGL.						
		0.8									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\08302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP23

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 30/09/2019 Logger: Colin Biggs
Date Completed: 30/09/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Silty CLAY, mixed brown/reddish brown, soft, beyond plastic in sections, brick/tile/terracotta/wood inclusions.		0.0	TP23 @ 0.0-0.35	No visual PACM Sieved top 100 mm	Backfilled with native material	
		0.2									
		0.3									
		0.4			FILL: Reworked natural CLAY (concrete and large 50 mm and gravels, highly plastic, concrete block).	slightly moist			No visual PACM		
		0.5									
		0.6									
		0.7									
		0.8									
		0.9	Natural		Fresh SHALE, light brown, hard.						
		1.0									
		1.1									
		1.2			End of test pit at 1.2 mBGL.						
		1.3									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\80302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP24

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 01/10/2019 Logger: Colin Biggs
Date Completed: 01/10/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Silty CLAY, brown, slightly plastic, occasional angular gravels to 35 mm.	slightly moist	0.0	TP24 @ 0.0-0.2	No PACM or man made inclusion in sample Organic odour	Backfilled with native material	
		0.2	Natural		Silty CLAY, reddish brown, some occasional fresh shale gravels to 2mm, resh shale gravels to 2mm, plastic.	slightly moist	0.0		No PACM or man made inclusion in sample Organic odour		
		0.3									
		0.4									
		0.5			End of test pit at 0.5 mBGL.						
		0.6									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\08302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP25

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 30/09/2019 Logger: Colin Biggs
Date Completed: 30/09/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Dark loamy Topsoil, slight organic odour.		0.0	TP25 @ 0.0-0.15	10.4 kg sample sieved No PACM on sieve	Backfilled with native material	
		0.2									
		0.3	Natural		Silty CLAY, reddish brown, non plastic, stiff, round gravel, fresh shale to 5 mm, pieces of angular shale/slate 4.5 to 15 mm, 2mm thick.	slightly moist	0.0	TP25 @ 0.3	No odour No visual PACM or man made inclusions		
		0.4									
		0.5									
		0.6									
		0.7			End of test pit at 0.65 mBGL.						
		0.8									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\80302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP26

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 01/10/2019 Logger: Colin Biggs
Date Completed: 01/10/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Silty SAND, brown, loose, large concrete and tile inclusions to 10 mm and plumbing pipe, medium to fine grained sand.	slightly moist	0.0	TP26 @ 0.0-0.15	No Visual PACM in sieve Tile/Brick/screws/ plastic identified on sieve 2x item of PACM collected and bag		
		0.2					0.0	TP26 @ 0.15-0.3	No visual PACM or man made inclusion in sieve No PACM of man made in sorted sample		
		0.3							No visual PACM or man made inclusion in sieve No PACM of man made in sorted sample		
		0.4									
		0.5					0.0	TP26 @ 0.3-0.6		Backfilled with native material	
		0.6	Natural		Silty CLAY, reddish brown, slightly plastic, fresh shale gravels to subangular to 35 mm.	slightly moist			No odour		
		0.7									
		0.8					0.0				
		0.9									
		1.0			End of test pit at 0.9 mBGL.						

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\08302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP27

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 30/09/2019 Logger: Colin Biggs
Date Completed: 30/09/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL:Sandy SILT, dark brown, loose, wood chip and angular gravel to 35 mm.	slightly moist	0.0	TP27 @ 0.0-0.15	Organic odour Sieved no visual PACM or man made inclusions	Backfilled with native material	
		0.2			Becoming compacted (stiff)		0.0	TP27 @ 0.25			
		0.3									
		0.4	Natural		Silty CLAY, reddish brown, non plastic, weak sandstone inclusions (60 mm), subangular gravels to 2-4 mm fresh shale.				Sieved no PACM on sieve or in walls of pit		
		0.5					0.0	TP27 @ 0.35-0.65			
		0.6			More compacted reddish brown clay, less crumbly, no inclusions		0.0		No visual PACM		
		0.7			End of test pit at 0.65 mBGL.						
		0.8									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\08302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP28

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 30/09/2019 Logger: Colin Biggs
Date Completed: 30/09/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Sandy SILT (Loam), light brown, soft, fine sand and silt, poorly sorted gravels to 15 mm, rootlets.	slightly moist		TP28 @ 0.0-0.1	No PACM in sort in sieve Organic odour No man made inclusions		
		0.2	Natural		Silty CLAY, orange brown, slightly plastic, roots to 5 mm.	slightly moist		TP28 @ 0.1-0.2	No sieve sample No visual man made inclusions	Backfilled with native material	
		0.5			End of test pit at 0.5 mBGL.						
		0.6									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\08302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

ARCADIS Design & Consultancy for natural and built assets

Test Pit Log

Test Pit ID: TP29

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 02/10/2019 Logger: Colin Biggs
Date Completed: 02/10/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Mixed GRAVELS including debris to 50 mm.		0.0	TP29 @ 0.0-0.2	No PACM visual in sieved sample Organic odour	Backfilled with native material	
		0.2			FILL: Clayey Silty SAND, light brown, mixed brown, slightly plastic clay, poorly sorted gravel (angular) to 35 mm, plastic tile glass inclusions.	slightly moist					
		0.3						TP29 @ 0.2-0.4	No PACM visual in sieved sample Organic odour		
		0.4									
		0.5	Natural		Silty CLAY, brown, slightly moist, no plastic, stiff.						
		0.6			Becoming light brown, plastic, stiff.	slightly moist					
		0.7									
		0.8			End of test pit at 0.75 mBGL.						
		0.9									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTION\S08302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

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Test Pit Log

Test Pit ID: TP30

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 02/10/2019 Logger: Colin Biggs
Date Completed: 02/10/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Road Base aggregate, angular gravels to 35 mm, sand, coarse grained.		0.3	TP30 @ 0.0-0.1	No PACM or man made inclusion Visually or sieved No odour	Backfilled with native material	
		0.2			FILL: Silty CLAY, compaction/very stiff, layer (no inclusions)		0.3		No odour		
		0.3	Natural		Silty CLAY, reddish brown, slightly plastic.	slightly moist	0.0		No odour No visual inclusions		
		0.4									
		0.5			End of test pit at 0.75 mBGL.						
		0.6									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\08302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

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Test Pit Log

Test Pit ID: GB2

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 02/10/2019 Logger: Colin Biggs
Date Completed: 02/10/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Silty CLAY with brick/tile/pipe (ceramic).		0.0	GB2 @ 0.0-0.3	1 piece of PACM at 0.0-0.1	Backfilled with native material	
		0.2									
		0.3							No PACM in sieve sample		
		0.4						GB2 @ 0.3-0.5			
		0.5									
		0.6									
		0.7									
		0.8									
		0.9	Natural		Silty CLAY, reddish brown, slightly plastic, stiff.	slightly moist					
		1.0									
		1.1									
		1.2			End of test pit at 1.2 mBGL.						
		1.3									

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\08302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

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Test Pit Log

Test Pit ID: GB3

Sheet: 1 of 1

Project Name: Characterise Extent of ACM Impact
Project Number: 10035770
Project Location: 126 Kent Road, Marsfield, NSW 2122

Date Started: 02/10/2019 Logger: Colin Biggs
Date Completed: 02/10/2019 Editor: NA
Weather Conditions: NA

Method	Water Level	Depth (mbgl)	Material Type	USCS Class	Description	Moisture	PID (ppm)	Sample ID	Observations / Comments	Construction Details	Well
Excavator		0.1	Fill		FILL: Silty CLAY with wood chip inclusions (piece of bitumen and concrete), roots to 20 mm.		0.0	GB3 @ 0.0-0.2	No visual PACM		
		0.2									
		0.3						GB3 @ 0.2-0.5			
		0.4			FILL: Silty CLAY, reddish brown, large concrete inclusions.				Damp organic odour No visual PACM No sieved sample	Backfilled with native material	
		0.5									
		0.6									
		0.7									
		0.8									
		0.9									
		1.0			End of test pit at 0.9 mBGL.						

Drilling Co.: Ken Coles
Driller: NA
Drilling Method: Test Pits/Excavation
Drilling Fluid: None
Remarks: m = metre; cm = centimetre; BGL = below ground level; EOH = end of hole; BTOC = below top of casing; ppm = parts per million; NA = not applicable / available.

Sampling Method: NA
Sampling Interval: NA
Water Level Start (mBTOC): NA
Water Level Finish (mBTOC): NA
Converted to Well: ☐ Yes ☒ No
Top of Well Casing Elev (M): NA
South Coor: NA
East Coor: NA

10034229 BARBORO CONSTRUCTIONS_V0 D:\1. GINT BORING LOGS\AUS\10034229 BARBORO CONSTRUCTIONS\08302019\10034229 BARBORO CONSTRUCTIONS P - NEW.GPJ GRAYS WIMBLE.GDT 11/10/19

APPENDIX E RESULTS TABLES

				Inorganics		Metals								TPH									TRH										
				>C10 - C40 Fraction (sum) (SG)	Moisture Content	Fluoride	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	C6-C9	TPH C10-C14 Fraction after Silica Cleanup	TPH C15-C28 Fraction after Silica Cleanup	TPH C29-C36 Fraction after Silica Cleanup	TPH C10-C36 (Total) (after silica gel clean-up)	C10-C14	C15-C28	C29-C36	C10-C36 (Sum of total)	C6-C10	>C6-C10 less BTEX (F1)	TRH >C10-C16 (after silica gel clean-up) less Naphthalene (F2)	TRH >C10-C16 (after silica gel clean-up)	TRH >C16-C34 (after silica gel clean-up)	TRH >C34-C40 (after silica gel clean-up)	C10-C16	>C10-C16 less Naphthalene (F2)	C16-C34	C34-C40	>C10 - C40 (Sum of total)
				mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				50	0.1	40	4	0.4	1	1	1	0.1	1	1	10	50	100	100	50	50	100	100	50	10	10	50	100	100	100	50	50	100	100	50
CRCCare (2011) Direct Contact HSL-A																								4400						3300		4500	6300	
CRCCare (2011) Direct Contact Intrusive Maintenance Worker																								82000						62000		85000	120000	
CRCCare (2011) Intrusive maintenance worker,																								NL[#1]						NL[#1]				
NEPM 2013 Table 1A(1) HILs Res A Soil							100[#3]	20	100	6000	300[#4]	40[#5]	400	7400																					
NEPM 2013 Table 1A(1) HILs Res B Soil							500[#3]	150	500	30000	1200[#4]	120[#5]	1200	60000																					
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt																																			
0-1m																									40[#8]						230[#9]				
1-2m																									65[#8]						NL[#10]				
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil																									180[#11]						120[#12]	1300	5600		
0-2m																																			
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil																								800[#13]						1000[#13]		3500	10000		
Location_Code	**Sampled_Date_Time**	**Lab_Report_Number**	**Sample_Depth_Range**	**Field_ID**																															
SB01	13-Jul-18	196252	0.2	SB01	-	18	-	5	<0.4	15	12	42	<0.1	6	34	<25	-	-	-	-	<50	<100	<100	-	<25	<25	-	-	-	-	<50	<50	<100	<100	<50
SB02	13-Jul-18	196252	0.2	SB02	-	15	-	4	<0.4	12	28	37	<0.1	7	100	<25	-	-	-	-	<50	<100	<100	-	<25	<25	-	-	-	-	<50	<50	<100	<100	<50
SB03	13-Jul-18	196252	0.2	SB03	-	29	-	11	<0.4	23	24	24	<0.1	7	92	<25	-	-	-	-	210	1600	1800	-	<25	<25	-	-	-	-	410	410	3000	790	4200
SB04	13-Jul-18	196252	0.2	SB04	-	14	-	6	<0.4	19	14	33	<0.1	9	55	<25	-	-	-	-	<50	<100	<100	-	<25	<25	-	-	-	-	<50	<50	<100	<100	<50
SB05	13-Jul-18	196252	0.2	SB05	-	16	-	6	<0.4	21	18	30	<0.1	7	25	<25	-	-	-	-	<50	<100	<100	-	<25	<25	-	-	-	-	<50	<50	<100	<100	<50
SB06	13-Jul-18	196252	0.2	SB06	-	12	-	6	<0.4	18	18	47	<0.1	10	89	<25	-	-	-	-	<50	<100	<100	-	<25	<25	-	-	-	-	<50	<50	120	<100	120
SB07	13-Jul-18	196252	0.2	SB07	-	16	-	10	<0.4	15	28	23	<0.1	8	49	<25	-	-	-	-	78	660	610	-	<25	<25	-	-	-	-	270	270	980	330	1600
SB08	13-Jul-18	196252	0.2	SB08	-	20	-	<4	<0.4	10	21	33	<0.1	4	88	<25	-	-	-	-	100	470	780	-	<25	<25	-	-	-	-	150	150	1100	360	1600
TP1@0.0-0.2	10-Aug-19	ES1925652	0.0-0.2	TP1@0.0-0.2	-	13.2	-	5	<1	18	28	56	<0.1	5	186	<10	-	-	-	-	<50	<100	<100	<50	<10	<10	-	-	-	-	<50	<50	120	<100	120
TP1@0.6	10-Aug-19	ES1925652	0.6	TP1@0.6	-	13.4	-	6	<1	15	17	73	<0.1	6	278	<10	-	-	-	-	<50	<100	<100	<50	<10	<10	-	-	-	-	<50	<50	<100	<100	<50
TP2@0.2	10-Aug-19	ES1925652	0.2	TP2@0.2	-	15.5	-	<5	<1	17	16	30	<0.1	9	78	<10	-	-	-	-	<50	<100	<100	<50	<10	<10	-	-	-	-	<50	<50	<100	<100	<50
TP2@0.5	10-Aug-19	ES1925652	0.5	TP2@0.5	-	16.1	-	8	<1	28	16	21	<0.1	4	19	<10	-	-	-	-	<50	<100	<100	<50	<10	<10	-	-	-	-	<50	<50	<100	<100	<50
TP3@0.2	10-Aug-19	ES1925652	0.2	TP3@0.2	-	18.9	-	<5	<1	16	8	32	<0.1	5	35	<10	-	-	-	-	<50	<100	<100	<50	<10	<10	-	-	-	-	<50	<50	<100	<100	<50
TP3@0.4	10-Aug-19	ES1925652	0.4	TP3@0.4	-	16.9	-	<5	<1	23	6	18	<0.1	3	23	<10	-	-	-	-	<50	<100	<100	<50	<10	<10	-	-	-	-	<50	<50	<100	<100	<50
TP4@0.2	10-Aug-19	ES1925652	0.2	TP4@0.2	-	16.6	-	6	<1	17	20	112	<0.1	6	215	<10	-	-	-	-	<50	<100	<100	<50	<10	<10	-	-	-	-	<50	<50	<100	<100	<50
TP4@0.6	10-Aug-19	ES1925652	0.6	TP4@0.6	-	13.4	-	6	<1	20	9	20	<0.1	4	15	<10	-	-	-	-	<50	<100	<100	<50	<10	<10	-	-	-	-	<50	<50	<100	<100	<50
TP6@0.2	10-Aug-19	ES1925652	0.2	TP6@0.2	-	13	-	<5	<1	15	8	25	<0.1	4	27	<10	-	-	-	-	<50	<100	<100	<50	<10	<10	-	-	-	-	<50	<50	<100	<100	<50
TP6@0.5	10-Aug-19	ES1925652	0.5	TP6@0.5	-	12.4	-	<5	<1	17	6	18	<0.1	3	8	<10	-	-	-	-	<50	<100	<100	<50	<10	<10	-	-	-	-	<50	<50	<100	<100	<50
TP7@0.0-0.2	10-Aug-19	ES1925652	0.0-0.2	TP7@0.0-0.2	-	4.7	-	<5	<1	6	113	<5	<0.1	81	32	<10	-	-	-	-	<50	<100	<100	<50	<10	<10	-	-	-	-	<50	<50	<100	<100	<50
TP7@0.6	10-Aug-19	ES1925652	0.6	TP7@0.6	-	22.2	-	6	<1	28	9	19	<0.1	5	12	<10	-	-	-	-	<50	<100	<100	<50	<10	<10	-	-	-	-	<50	<50	<100	<100	<50
TP8@0.0-0.2	10-Aug-19	ES1925652	0.0-0.2	TP8@0.0-0.2	-	14.9	-	6	<1	18	44	48	<0.1	6	71	<10	-	-	-	-	<50	<100	<100	<50	<10	<10	-	-	-	-	<50	<50	<100	<100	<50
TP8@0.2	10-Aug-19	ES1925652	0.2	TP8@0.2	-	16.2	-	7	<1	22	12	33	<0.1	5	36	<10	-	-	-	-	<50	<100	<100	<50	<10	<10	-	-	-	-	<50	<50	<100	<100	<50
TP22 @0.0-0.15	30-Sep-19	ES1932358	0.0-0.15	TP22 @0.0-0.15	-	9.7	220	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP25@0.3-0.65	30-Sep-19	ES1932358	0.3-0.65	TP25@0.3-0.65	-	17.2	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP27@0.35-0.65	30-Sep-19	ES1932358	0.35-0.65	TP27@0.35-0.65	<50	17.1	-	-	-	-	-	-	-	-	-	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<50	<50	<100	<100	<50	<50	<100	<100	<50
TP28@0.1 -0.2	30-Sep-19	ES1932358	0.1 -0.2	TP28@0.1 -0.2	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05@0.0-0.2	01-Oct-19	ES1932358	0.0-0.2	TP05@0.0-0.2	-	18.2	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP26@0.15-0.3	01-Oct-19	ES1932358	0.15-0.3	TP26@0.15-0.3	-	-	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GB3@0.0-0.3	02-Oct-19	ES1932358	0.0-0.3	GB3@0.0-0.3	-	-	190	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP10@0.1 -0.5	02-Oct-19	ES1932358	0.1 -0.5	TP10@0.1 -0.5	<50	17.9	-	-	-	-	-	-	-	-	-	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<50	<50	<100	<100	<50	<50	<100	<100	<50
TP11@0.1 -0.3	02-Oct-19	ES1932358	0.1-0.3	TP11@0.1-0.3	-	22.2	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11@0.7	02-Oct-19	ES1932358	0.7	TP11@0.7	<50	21.2	-	-	-	-	-	-	-	-	-	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<50	<50	<100	<100	<50	<50	<100	<100	<50
TP14@0.1 -0.3	02-Oct-19	ES1932358	0.1 -0.3	TP14@0.1 -0.3	<50	17.2	-	-	-	-	-	-	-	-	-	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<50	<50	<100	<100	<50	<50	<100	<100	<50
Statistical Summary																																			
Number of Results				4	30	7	22	22	22	22	22	22	22	22	26	4	4	4	4	26	26	26	18	26	26	4	4	4	4	26	26	26	26	26
Number of Detects				0	30	7	15	0	22	22	21	0	22	22	0	0	0	0	0	3	3	3	0	0	0	0	0	0	0	3	3	5	3	5
Minimum Concentration				<50	4.7	80	<4	<0.4	6	6	<5	<0.1	3	8	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<50	<50	<100	<100	<50	<50	<100	<100	<50
Minimum Detect				ND	4.7	80	4	ND	6	6	18	ND	3	8	ND	ND	ND	ND	ND	78	470	610	ND	ND	ND	ND	ND	ND	ND	150	150	120	330	120
Maximum Concentration				<50	29	220	11	<1	28	113	112	<0.1	81	278	<25	<50	<100	<100	<50	210	1600	1800	<50	<25	<25	<50	<50	<100	<100	410	410	3000	790	4200
Maximum Detect				ND	29	220	11	ND	28	113	112	ND	81	278	ND	ND	ND	ND	ND	210	1600	1800	ND	ND	ND	ND	ND	ND	ND	410	410	3000	790	4200
Average Concentration				25	16	141	5.2	0.39	18	22	35	0.05	9.3	71	7.3	25	50	50	25	37	149	167	25	7.3	7.3	25	25	50	50	54	54	245	101	314
Median Concentration				25	16.15	130	6	0.5	17.5	16.5	31	0.05	6	42.5	5	25	50	50	25	25	50	50	25	5	5	25	25	50	50	25	25	50	50	25
Standard Deviation				0	4.3	49	2.5	0.15	5.2	22	23	0	16	71	3.5	0	0	0	0	39	328	377	0	3.5	3.5	0	0	0	0	90	90	623	162	900
Number of Guideline Exceedances				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0
Number of Guideline Exceedances(Detects Only)				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0

Data Comments

#1 Reported Analyte LOR is higher than Requested Analyte LOR
#2 Mid brown soil.
#3 A. SMYLIE
#4 C.OWLER
#5 No

| | | |

					PCBs							Organochlorine Pesticides																							
					Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)	a-BHC	Aldrin	Dieldrin	Aldrin + Dieldrin	b-BHC	chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	4,4-DDE	DDT	DDT+DDE+DDD	Endosulfan	Endrin ketone	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1
CRCCare (2011) Direct Contact HSL-A																																				
CRCCare (2011) Direct Contact Intrusive Maintenance Worker																																				
CRCCare (2011) Intrusive maintenance worker,																																				
NEPM 2013 Table 1A(1) HILs Res A Soil												1[#7]				6		50							240	270				10			6		300
NEPM 2013 Table 1A(1) HILs Res B Soil												1[#7]				10		90							600	400				20			10		500
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt																																				
0-1m																																				
1-2m																																				
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil																																				
0-2m																																				
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil																																				
Location_Code	Sampled_Date_Time	Lab_Report_Number	Sample_Depth_Range	Field_ID																																
SB01	13-Jul-18	196252	0.2	SB01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SB02	13-Jul-18	196252	0.2	SB02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SB03	13-Jul-18	196252	0.2	SB03	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	<1	-	<1	<1	<1	<1	<1	<1	<1	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
SB04	13-Jul-18	196252	0.2	SB04	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SB05	13-Jul-18	196252	0.2	SB05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SB06	13-Jul-18	196252	0.2	SB06	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SB07	13-Jul-18	196252	0.2	SB07	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	<1	-	<1	<1	<1	<1	<1	<1	<1	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
SB08	13-Jul-18	196252	0.2	SB08	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	<1	-	<1	<1	<1	<1	<1	<1	<1	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1
TP1@0.0-0.2	10-Aug-19	ES1925652	0.0-0.2	TP1@0.0-0.2	-	-	-	-	-	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
TP1@0.6	10-Aug-19	ES1925652	0.6	TP1@0.6	-	-	-	-	-	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
TP2@0.2	10-Aug-19	ES1925652	0.2	TP2@0.2	-	-	-	-	-	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
TP2@0.5	10-Aug-19	ES1925652	0.5	TP2@0.5	-	-	-	-	-	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
TP3@0.2	10-Aug-19	ES1925652	0.2	TP3@0.2	-	-	-	-	-	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
TP3@0.4	10-Aug-19	ES1925652	0.4	TP3@0.4	-	-	-	-	-	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
TP4@0.2	10-Aug-19	ES1925652	0.2	TP4@0.2	-	-	-	-	-	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
TP4@0.6	10-Aug-19	ES1925652	0.6	TP4@0.6	-	-	-	-	-	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
TP6@0.2	10-Aug-19	ES1925652	0.2	TP6@0.2	-	-	-	-	-	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
TP6@0.5	10-Aug-19	ES1925652	0.5	TP6@0.5	-	-	-	-	-	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
TP7@0.0-0.2	10-Aug-19	ES1925652	0.0-0.2	TP7@0.0-0.2	-	-	-	-	-	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
TP7@0.6	10-Aug-19	ES1925652	0.6	TP7@0.6	-	-	-	-	-	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
TP8@0.0-0.2	10-Aug-19	ES1925652	0.0-0.2	TP8@0.0-0.2	-	-	-	-	-	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
TP8@0.2	10-Aug-19	ES1925652	0.2	TP8@0.2	-	-	-	-	-	-	-	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
TP22 @0.0-0.15	30-Sep-19	ES1932358	0.0-0.15	TP22 @0.0-0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP25@0.3-0.65	30-Sep-19	ES1932358	0.3-0.65	TP25@0.3-0.65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP27@0.35-0.65	30-Sep-19	ES1932358	0.35-0.65	TP27@0.35-0.65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP28@0.1 -0.2	30-Sep-19	ES1932358	0.1 -0.2	TP28@0.1 -0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05@0.0-0.2	01-Oct-19	ES1932358	0.0-0.2	TP05@0.0-0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP26@0.15-0.3	01-Oct-19	ES1932358	0.15-0.3	TP26@0.15-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GB3@0.0-0.3	02-Oct-19	ES1932358	0.0-0.3	GB3@0.0-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP10@0.1 -0.5	02-Oct-19	ES1932358	0.1 -0.5	TP10@0.1 -0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11@0.1-0.3	02-Oct-19	ES1932358	0.1-0.3	TP11@0.1-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11@0.7	02-Oct-19	ES1932358	0.7	TP11@0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP14@0.1 -0.3	02-Oct-19	ES1932358	0.1 -0.3	TP14@0.1 -0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Statistical Summary																																				
Number of Results					8	8	8	8	8	8	8	22	22	22	22	14	22	14	22	22	22	22	22	22	22	14	14	22	22	22	22	22	22	22	22	22
Number of Detects					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
Minimum Detect					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.05	<1	<0.05	<1	<1	<1	<1	<1	<1	<1	<0.05	<0.05	<1	<1	<1	<1	<1	<1	<1	<1	<1
Maximum Detect					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration					0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.11	0.095	0.095	0.095	0.025	0.095	0.025	0.095	0.095	0.095	0.095	0.095	0.14	0.095	0.025	0.025	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.095	0.14
Median Concentration					0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.1	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.1
Standard Deviation					0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.16	0.16	0.16	0.16	0	0.16	0	0.16	0.16	0.16	0.16	0.16	0.15	0.16	0	0	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15
Number of Guideline Exceedances					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Data Comments

#1 Reported Analyte LOR is higher than Requested Analyte LOR
#2 Mid brown soil.
#3 A. SMYLIE
#4 C.OWLER
#5 No

					Organophosphorous Pesticides																										
					Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenamiphos	Fenitrothion	Fenthion	Malathion	Methyl parathion	Monocrotophos	Parathion	Pirimphos-ethyl	Prothiofos	Ronnel	2,4,5-Trichlorophenoxy Acetic Acid	2,4,5-TP (Silvex)	2,4-D	2,4-Dichlorprop	4-(2,4-Dichlorophenoxy)butyric Acid (2,4-DB)	4-Chlorophenoxy acetic acid	Ametryn
					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.2	0.2	0.1	0.05	0.05	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.002
CRCCare (2011) Direct Contact HSL-A																															
CRCCare (2011) Direct Contact Intrusive Maintenance Worker																															
CRCCare (2011) Intrusive maintenance worker,																															
NEPM 2013 Table 1A(1) HILs Res A Soil									160																	600		900				
NEPM 2013 Table 1A(1) HILs Res B Soil									340																	900		1600				
NEPM 2013 Table 1A(3) Res A/ B Soil HSL for Vapour Intrusion, Silt																															
0-1m																															
1-2m																															
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil																															
0-2m																															
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil																															
Location_Code	**Sampled_Date_Time**	**Lab_Report_Number**	**Sample_Depth_Range**	**Field_ID**																											
SB01	13-Jul-18	196252	0.2	SB01	<0.1	<0.1	-	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	-	<0.1	-	-	<0.1	-	-	-	-	-	-	-
SB02	13-Jul-18	196252	0.2	SB02	<0.1	<0.1	-	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	-	<0.1	-	-	<0.1	-	-	-	-	-	-	-
SB03	13-Jul-18	196252	0.2	SB03	<1	<1	-	-	<1	<1	-	<1	<1	<1	<1	-	<1	-	<1	-	-	<1	-	-	<1	-	-	-	-	-	-	-
SB04	13-Jul-18	196252	0.2	SB04	<0.1	<0.1	-	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	-	<0.1	-	-	<0.1	-	-	-	-	-	-	-
SB05	13-Jul-18	196252	0.2	SB05	<0.1	<0.1	-	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	-	<0.1	-	-	<0.1	-	-	-	-	-	-	-
SB06	13-Jul-18	196252	0.2	SB06	<0.1	<0.1	-	-	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	-	<0.1	-	-	<0.1	-	-	-	-	-	-	-
SB07	13-Jul-18	196252	0.2	SB07	<1	<1	-	-	<1	<1	-	<1	<1	<1	<1	-	<1	-	<1	-	-	<1	-	-	<1	-	-	-	-	-	-	-
SB08	13-Jul-18	196252	0.2	SB08	<1	<1	-	-	<1	<1	-	<1	<1	<1	<1	-	<1	-	<1	-	-	<1	-	-	<1	-	-	-	-	-	-	-
TP1@0.0-0.2	10-Aug-19	ES1925652	0.0-0.2	TP1@0.0-0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05	-	-	-	-	-	-	-	-
TP1@0.6	10-Aug-19	ES1925652	0.6	TP1@0.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05	-	-	-	-	-	-	-	-
TP2@0.2	10-Aug-19	ES1925652	0.2	TP2@0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05	-	-	-	-	-	-	-	-
TP2@0.5	10-Aug-19	ES1925652	0.5	TP2@0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05	-	-	-	-	-	-	-	-
TP3@0.2	10-Aug-19	ES1925652	0.2	TP3@0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05	-	-	-	-	-	-	-	-
TP3@0.4	10-Aug-19	ES1925652	0.4	TP3@0.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05	-	-	-	-	-	-	-	-
TP4@0.2	10-Aug-19	ES1925652	0.2	TP4@0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05	-	-	-	-	-	-	-	-
TP4@0.6	10-Aug-19	ES1925652	0.6	TP4@0.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05	-	-	-	-	-	-	-	-
TP6@0.2	10-Aug-19	ES1925652	0.2	TP6@0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05	-	-	-	-	-	-	-	-
TP6@0.5	10-Aug-19	ES1925652	0.5	TP6@0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05	-	-	-	-	-	-	-	-
TP7@0.0-0.2	10-Aug-19	ES1925652	0.0-0.2	TP7@0.0-0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05	-	-	-	-	-	-	-	-
TP7@0.6	10-Aug-19	ES1925652	0.6	TP7@0.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05	-	-	-	-	-	-	-	-
TP8@0.0-0.2	10-Aug-19	ES1925652	0.0-0.2	TP8@0.0-0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05	-	-	-	-	-	-	-	-
TP8@0.2	10-Aug-19	ES1925652	0.2	TP8@0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05	-	-	-	-	-	-	-	-
TP22 @0.0-0.15	30-Sep-19	ES1932358	0.0-0.15	TP22 @0.0-0.15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.002
TP25@0.3-0.65	30-Sep-19	ES1932358	0.3-0.65	TP25@0.3-0.65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.002
TP27@0.35-0.65	30-Sep-19	ES1932358	0.35-0.65	TP27@0.35-0.65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP28@0.1 -0.2	30-Sep-19	ES1932358	0.1 -0.2	TP28@0.1 -0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05@0.0-0.2	01-Oct-19	ES1932358	0.0-0.2	TP05@0.0-0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.002
TP26@0.15-0.3	01-Oct-19	ES1932358	0.15-0.3	TP26@0.15-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GB3@0.0-0.3	02-Oct-19	ES1932358	0.0-0.3	GB3@0.0-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP10@0.1 -0.5	02-Oct-19	ES1932358	0.1 -0.5	TP10@0.1 -0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11@0.1-0.3	02-Oct-19	ES1932358	0.1-0.3	TP11@0.1-0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.002
TP11@0.7	02-Oct-19	ES1932358	0.7	TP11@0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP14@0.1 -0.3	02-Oct-19	ES1932358	0.1 -0.3	TP14@0.1 -0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Statistical Summary																															
Number of Results					22	22	14	14	22	22	14	22	22	22	22	14	8	14	22	14	14	22	14	14	8	4	4	4	4	4	4	4
Number of Detects					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration					<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.2	<0.2	<0.1	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.002
Minimum Detect					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration					<1	<1	<0.05	<0.05	<1	<1	<0.05	<1	<1	<1	<1	<0.05	<1	<0.05	<1	<0.2	<0.2	<1	<0.05	<0.05	<1	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.002
Maximum Detect					ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration					0.095	0.095	0.025	0.025	0.095	0.095	0.025	0.095	0.095	0.095	0.095	0.025	0.22	0.025	0.095	0.1	0.1	0.14	0.025	0.025	0.22	0.018	0.018	0.018	0.018	0.018	0.018	0.001
Median Concentration					0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.05	0.025	0.025	0.1	0.1	0.1	0.025	0.025	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.001
Standard Deviation					0.16	0.16	0	0	0.16	0.16	0	0.16	0.16	0.16	0.16	0	0.23	0	0.16	0	0	0.15	0	0	0.23	0.005	0.005	0.005	0.005	0.005	0.005	0
Number of Guideline Exceedances					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Data Comments

#1 Reported Analyte LOR is higher than Requested Analyte LOR
#2 Mid brown soil.
#3 A. SMYLIE
#4 C.OWLER
#5 No

						Herbicides												Halogenated Benzenes
						Atrazine	Clopyralid	Cyanazine	Dicamba	Fluroxypyr	2-Methyl-4-chlorophenoxyacetic acid	2-Methyl-4-Chlorophenoxy Butanoic Acid	Mecoprop	Prometryn	Propazine	Simazine	Terbutryn	Terbutylazine	Triclopyr	Hexachlorobenzene
						mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg
EQL						0.002	0.02	0.005	0.02	0.02	0.02	0.02	0.02	0.002	0.002	0.005	0.1	0.002	0.02	50
CRCCare (2011) Direct Contact HSL-A																				
CRCCare (2011) Direct Contact Intrusive Maintenance Worker																				
CRCCare (2011) Intrusive maintenance worker,																				
NEPM 2013 Table 1A(1) HILs Res A Soil						320					600	600	600							10000
NEPM 2013 Table 1A(1) HILs Res B Soil						470					900	900	900							15000
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt																				
0-1m																				
1-2m																				
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil																				
0-2m																				
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil																				
Location_Code	Sampled_Date_Time	Lab_Report_Number	Sample_Depth_Range	Field_ID																
SB01	13-Jul-18	196252	0.2	SB01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<100
SB02	13-Jul-18	196252	0.2	SB02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<100
SB03	13-Jul-18	196252	0.2	SB03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1000
SB04	13-Jul-18	196252	0.2	SB04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<100
SB05	13-Jul-18	196252	0.2	SB05		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<100
SB06	13-Jul-18	196252	0.2	SB06		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<100
SB07	13-Jul-18	196252	0.2	SB07		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1000
SB08	13-Jul-18	196252	0.2	SB08		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1000
TP1@0.0-0.2	10-Aug-19	ES1925652	0.0-0.2	TP1@0.0-0.2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50
TP1@0.6	10-Aug-19	ES1925652	0.6	TP1@0.6		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50
TP2@0.2	10-Aug-19	ES1925652	0.2	TP2@0.2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50
TP2@0.5	10-Aug-19	ES1925652	0.5	TP2@0.5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50
TP3@0.2	10-Aug-19	ES1925652	0.2	TP3@0.2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50
TP3@0.4	10-Aug-19	ES1925652	0.4	TP3@0.4		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50
TP4@0.2	10-Aug-19	ES1925652	0.2	TP4@0.2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50
TP4@0.6	10-Aug-19	ES1925652	0.6	TP4@0.6		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50
TP6@0.2	10-Aug-19	ES1925652	0.2	TP6@0.2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50
TP6@0.5	10-Aug-19	ES1925652	0.5	TP6@0.5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50
TP7@0.0-0.2	10-Aug-19	ES1925652	0.0-0.2	TP7@0.0-0.2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50
TP7@0.6	10-Aug-19	ES1925652	0.6	TP7@0.6		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50
TP8@0.0-0.2	10-Aug-19	ES1925652	0.0-0.2	TP8@0.0-0.2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50
TP8@0.2	10-Aug-19	ES1925652	0.2	TP8@0.2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<50
TP22 @0.0-0.15	30-Sep-19	ES1932358	0.0-0.15	TP22 @0.0-0.15		<0.002	<0.02	<0.005	<0.02	<0.02	<0.02	<0.02	<0.02	<0.002	<0.002	<0.005	<0.1	<0.002	<0.02	-
TP25@0.3-0.65	30-Sep-19	ES1932358	0.3-0.65	TP25@0.3-0.65		<0.002	<0.04#1	<0.005	<0.04#1	<0.04#1	<0.04#1	<0.04#1	<0.04#1	<0.002	<0.002	<0.005	<0.1	<0.002	<0.04#1	-
TP27@0.35-0.65	30-Sep-19	ES1932358	0.35-0.65	TP27@0.35-0.65		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP28@0.1 -0.2	30-Sep-19	ES1932358	0.1 -0.2	TP28@0.1 -0.2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP05@0.0-0.2	01-Oct-19	ES1932358	0.0-0.2	TP05@0.0-0.2		<0.002	<0.04#1	<0.005	<0.04#1	<0.04#1	<0.04#1	<0.04#1	<0.04#1	<0.002	<0.002	<0.005	<0.1	<0.002	<0.04#1	-
TP26@0.15-0.3	01-Oct-19	ES1932358	0.15-0.3	TP26@0.15-0.3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GB3@0.0-0.3	02-Oct-19	ES1932358	0.0-0.3	GB3@0.0-0.3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP10@0.1 -0.5	02-Oct-19	ES1932358	0.1 -0.5	TP10@0.1 -0.5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP11@0.1-0.3	02-Oct-19	ES1932358	0.1-0.3	TP11@0.1-0.3		<0.002	<0.04#1	<0.005	<0.04#1	<0.04#1	<0.04#1	<0.04#1	<0.04#1	<0.002	<0.002	<0.005	<0.1	<0.002	<0.04#1	-
TP11@0.7	02-Oct-19	ES1932358	0.7	TP11@0.7		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TP14@0.1 -0.3	02-Oct-19	ES1932358	0.1 -0.3	TP14@0.1 -0.3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Statistical Summary

Number of Results	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	22
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.002	<0.02	<0.005	<0.02	<0.02	<0.02	<0.02	<0.02	<0.002	<0.002	<0.005	<0.1	<0.002	<0.02	<50	
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.002	<0.04	<0.005	<0.04	<0.04	<0.04	<0.04	<0.04	<0.002	<0.002	<0.005	<0.1	<0.002	<0.04	<1000	
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration	0.001	0.018	0.0025	0.018	0.018	0.018	0.018	0.018	0.001	0.001	0.0025	0.05	0.001	0.018	95	
Median Concentration	0.001	0.02	0.0025	0.02	0.02	0.02	0.02	0.02	0.001	0.001	0.0025	0.05	0.001	0.02	25	
Standard Deviation	0	0.005	0	0.005	0.005	0.005	0.005	0.005	0	0	0	0	0	0.005	165	
Number of Guideline Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Number of Guideline Exceedances(Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Data Comments

#1 Reported Analyte LOR is higher than Requested Analyte LOR
#2 Mid brown soil.
#3 A. SMYLIE
#4 C.OWLER
#5 No

					Identificat		Asbestos										
					Weight Used for % Calculation	Organic Fibre	Synthetic Mineral Fibre	Weight of sample	Asbestos (Trace)	Asbestos fibres	Asbestos Type	Description	Approved Identifier:	Asbestos (Fines and Fibrous <7mm)	Asbestos (Fines and Fibrous FA+AF)	Fibrous Asbestos >7mm
					kg	g/kg	g/kg	g	Fibres	Fibres	-	--	--	g	% (w/w)	g
EQL					0.0001	0.1	0.1	0.01	5					0.0004	0.001	0.0004
Location_Code	Sampled_Date_Time	Lab_Report_Number	Sample_Depth_Range	Field_ID												
SB01	13-Jul-18	196252	0.2	SB01	-	-	-	-	-	0	-	-	-	-	-	-
SB02	13-Jul-18	196252	0.2	SB02	-	-	-	-	-	0	-	-	-	-	-	-
SB03	13-Jul-18	196252	0.2	SB03	-	-	-	-	-	0	-	-	-	-	-	-
SB04	13-Jul-18	196252	0.2	SB04	-	-	-	-	-	0	-	-	-	-	-	-
SB05	13-Jul-18	196252	0.2	SB05	-	-	-	-	-	0	-	-	-	-	-	-
SB06	13-Jul-18	196252	0.2	SB06	-	-	-	-	-	0	-	-	-	-	-	-
SB07	13-Jul-18	196252	0.2	SB07	-	-	-	-	-	0	-	-	-	-	-	-
SB08	13-Jul-18	196252	0.2	SB08	-	-	-	-	-	0	-	-	-	-	-	-
TP1	10-Aug-19	ES1925652	-	TP1	0.484	0[#5]	0[#5]	484	0[#5]	-	1	1[#2]	1[#3]	<0.0004	<0.001	<0.0004
TP2	10-Aug-19	ES1925652	-	TP2	0.423	0[#5]	0[#5]	423	0[#5]	-	1	1[#2]	1[#3]	<0.0004	<0.001	<0.0004
TP3	10-Aug-19	ES1925652	-	TP3	0.486	0[#5]	0[#5]	486	0[#5]	-	1	1[#2]	1[#3]	<0.0004	<0.001	<0.0004
TP4	10-Aug-19	ES1925652	-	TP4	0.543	0[#5]	0[#5]	543	0[#5]	-	1	1[#2]	1[#3]	<0.0004	<0.001	<0.0004
TP6	10-Aug-19	ES1925652	-	TP6	0.611	0[#5]	0[#5]	611	0[#5]	-	1	1[#2]	1[#3]	<0.0004	<0.001	<0.0004
TP8	10-Aug-19	ES1925652	-	TP8	0.5	0[#5]	0[#5]	500	0[#5]	-	1	1[#2]	1[#3]	<0.0004	<0.001	<0.0004
TP15@0.0-0.2	30-Sep-19	ES1932358	0.0-0.2	TP15@0.0-0.2	0.408	-	-	408	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP16@0.0-0.3	30-Sep-19	ES1932358	0.0-0.3	TP16@0.0-0.3	0.404	-	-	404	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP17@0.0-0.2	30-Sep-19	ES1932358	0.0-0.2	TP17@0.0-0.2	0.448	-	-	448	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP19@0.0-0.2	30-Sep-19	ES1932358	0.0-0.2	TP19@0.0-0.2	0.465	-	-	465	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP20@0.0-0.1	30-Sep-19	ES1932358	0.0-0.1	TP20@0.0-0.1	0.443	-	-	443	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP20@0.1-0.2	30-Sep-19	ES1932358	0.1-0.2	TP20@0.1-0.2	0.411	-	-	411	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP21@0.0-0.1 5	30-Sep-19	ES1932358	0.0-0.1 5	TP21@0.0-0.1 5	0.41	-	-	410	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP22 @0.0-0.15	30-Sep-19	ES1932358	0.0-0.15	TP22 @0.0-0.15	0.339	-	-	339	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP23@0.0-0.35	30-Sep-19	ES1932358	0.0-0.35	TP23@0.0-0.35	0.427	-	-	427	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP25@0.0-0.15	30-Sep-19	ES1932358	0.0-0.15	TP25@0.0-0.15	0.367	-	-	367	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP25@0.3-0.65	30-Sep-19	ES1932358	0.3-0.65	TP25@0.3-0.65	0.224	-	-	224	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP27@0.0-0.15	30-Sep-19	ES1932358	0.0-0.15	TP27@0.0-0.15	0.398	-	-	398	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP28@0.0-0.10	30-Sep-19	ES1932358	0.0-0.10	TP28@0.0-0.10	0.365	-	-	365	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP05@0.0-0.2	01-Oct-19	ES1932358	0.0-0.2	TP05@0.0-0.2	0.34	-	-	340	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP05@0.2-0.4	01-Oct-19	ES1932358	0.2-0.4	TP05@0.2-0.4	0.406	-	-	406	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP18@0.0-0.2	01-Oct-19	ES1932358	0.0-0.2	TP18@0.0-0.2	0.402	-	-	402	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP18@0.2-0.35	01-Oct-19	ES1932358	0.2-0.35	TP18@0.2-0.35	0.406	-	-	406	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP26@0.0-0.15	01-Oct-19	ES1932358	0.0-0.15	TP26@0.0-0.15	0.415	-	-	415	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP26@0.15-0.3	01-Oct-19	ES1932358	0.15-0.3	TP26@0.15-0.3	0.357	-	-	357	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
GB2@0.0-0.3	02-Oct-19	ES1932358	0.0-0.3	GB2@0.0-0.3	0.461	-	-	461	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
GB3@0.0-0.2	02-Oct-19	ES1932358	0.0-0.2	GB3@0.0-0.2	0.461	-	-	461	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP09@0.0-0.1	02-Oct-19	ES1932358	0.0-0.1	TP09@0.0-0.1	0.417	-	-	417	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP09@0.1-0.4	02-Oct-19	ES1932358	0.1-0.4	TP09@0.1-0.4	0.397	-	-	397	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP10@0.0-0.10	02-Oct-19	ES1932358	0.0-0.10	TP10@0.0-0.10	0.494	-	-	494	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP10@0.1 -0.5	02-Oct-19	ES1932358	0.1 -0.5	TP10@0.1 -0.5	0.427	-	-	427	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP11@0.1-0.3	02-Oct-19	ES1932358	0.1-0.3	TP11@0.1-0.3	0.332	-	-	332	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP12 @0.0-0.1	02-Oct-19	ES1932358	0.0-0.1	TP12 @0.0-0.1	0.416	-	-	416	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP13@0.0-0.1 5	02-Oct-19	ES1932358	0.0-0.1 5	TP13@0.0-0.1 5	0.425	-	-	425	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP14@0.0-0.1	02-Oct-19	ES1932358	0.0-0.1	TP14@0.0-0.1	0.448	-	-	448	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP24@0.0-0.2	02-Oct-19	ES1932358	0.0-0.2	TP24@0.0-0.2	0.414	-	-	414	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP29@0.0-0.2	02-Oct-19	ES1932358	0.0-0.2	TP29@0.0-0.2	0.418	-	-	418	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP29@0.2-0.4	02-Oct-19	ES1932358	0.2-0.4	TP29@0.2-0.4	0.414	-	-	414	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
TP30@0.0-0 .1	02-Oct-19	ES1932358	0.0-0 .1	TP30@0.0-0 .1	0.448	-	-	448	-	-	1	1[#2]	1[#4]	<0.0004	<0.001	-
Statistical Summary																
Number of Results					39	6	6	39	6	8	39	39	39	39	39	6
Number of Detects					39	6	6	39	6	8	39	39	39	0	0	0
Minimum Concentration					0.224	<0	<0	224	<0	0	1	1	1	<0.0004	<0.001	<0.0004
Minimum Detect					0.224	ND	ND	224	ND	ND	1	1	1	ND	ND	ND
Maximum Concentration					0.611	0	0	611	0	0	1	1	1	<0.0004	<0.001	<0.0004
Maximum Detect					0.611	ND	ND	611	ND	ND	1	1	1	ND	ND	ND
Average Concentration					0.42	0	0	422	0	0	1	1	1	0.0002	0.0005	0.0002
Median Concentration					0.416	0	0	416	0	0	1	1	1	0.0002	0.0005	0.0002
Standard Deviation					0.063	0	0	63	0	0	0	0	0	0	0	0
Number of Guideline Exceedances					0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)					0	0	0	0	0	0	0	0	0	0	0	0

Data Comments

#1 Reported Analyte LOR is higher than Requested Analyte LOR
#2 Mid brown soil.
#3 A. SMYLIE
#4 C.OWLER
#5 No

				s Identificati		Asbestos					
				Organic Fibre	Synthetic Mineral Fibre	Weight of sample	Asbestos (Trace)	Asbestos Type	Description	Approved Identifier:
				g/kg	g/kg	g	Fibres	-	--	--
EQL				0.1	0.1	0.01	5			
Location_Code	**Sampled_Date_Time**	**Lab_Report_Number**	**Field_ID**							
TP1A	10-Aug-19	ES1925652	TP1A	0[#19]	0[#19]	66.5	1[#17]	**1[#16]**	1[#1]	1[#14]
TP3A	10-Aug-19	ES1925652	TP3A	0[#19]	0[#19]	8.38	1[#17]	**1[#20]**	1[#7]	1[#14]
TP4A	10-Aug-19	ES1925652	TP4A	1[#18]	0[#19]	23.3	1[#17]	**1[#12]**	1[#2]	1[#14]
TP16@0.0-0.3	30-Sep-19	ES1932358	TP16@0.0-0.3	1[#18]	0[#19]	0.66	1[#17]	1	1[#9]	1[#13]
TP20@0.0-0.1	30-Sep-19	ES1932358	TP20@0.0-0.1	0[#19]	0[#19]	4.79	1[#17]	1	1[#10]	1[#13]
Sample 1	01-Oct-19	ES1932358	Sample 1	0[#19]	0[#19]	15.4	1[#17]	**1[#12]**	1[#5]	1[#13]
Sample 4	01-Oct-19	ES1932358	Sample 4	0[#19]	0[#19]	7.78	1[#17]	**1[#20]**	1[#6]	1[#13]
Sample 8	01-Oct-19	ES1932358	Sample 8	0[#19]	0[#19]	12.8	1[#17]	**1[#15]**	1[#3]	1[#13]
TP12@0.0-0.1	01-Oct-19	ES1932358	TP12@0.0-0.1	0[#19]	0[#19]	15.2	1[#17]	**1[#20]**	1[#8]	1[#13]
TP26@0.0-0.15	01-Oct-19	ES1932358	TP26@0.0-0.15	0[#19]	0[#19]	3.69	1[#17]	1	1[#11]	1[#13]
GB2@0.0-0.3	02-Oct-19	ES1932358	GB2@0.0-0.3	0[#19]	0[#19]	5.11	1[#17]	**1[#15]**	1[#4]	1[#13]
Statistical Summary										
Number of Results				11	11	11	11	11	11	11
Number of Detects				11	11	11	11	11	11	11
Minimum Concentration				<0	<0	0.66	1	1	1	1
Minimum Detect				1	ND	0.66	1	1	1	1
Maximum Concentration				1	0	66.5	1	1	1	1
Maximum Detect				1	ND	66.5	1	1	1	1
Average Concentration				0.18	0	15	1	1	1	1
Median Concentration				0	0	8.38	1	1	1	1
Standard Deviation				0.4	0	18	0	0	0	0
Number of Guideline Exceedances				0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)				0	0	0	0	0	0	0

Env Stds Comments

Data Comments

#1 Several pieces of asbestos cement sheeting approximately 125x70x5mm.
#2 Three pieces of asbestos cement sheeting approximately 40x25x5mm.
#3 Two pieces of asbestos cement sheeting approximately 45x25x5mm.
#4 One piece of asbestos cement sheeting approximately 30x25x5mm.
#5 One piece of asbestos cement sheeting approximately 50x45x5mm.
#6 One piece of asbestos cement sheeting approximately 55x35x5mm.
#7 One piece of asbestos cement sheeting approximately 70x30x5mm.
#8 One piece of asbestos cement sheeting approximately 80x40x5mm.
#9 Two pieces of cement sheeting.
#10 One piece of cement sheeting.
#11 Two pieces of plastic.
#12 Ch + Am + Cr
#13 A. RISTOSKI
#14 A .SMYLIE
#15 Ch + Am
#16 Ch + Cr
#17 N/A
#18 Yes
#19 No
#20 Ch

Table 4 - Waste Classification Summary

				Metals										TPH									TRH											
				Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Lead (filtered)	Mercury	Nickel	Nickel (filtered)	Zinc	C6-C9	TPH C10-C14 Fraction after Silica Cleanup	TPH C15-C28 Fraction after Silica Cleanup	TPH C29-C36 Fraction after Silica Cleanup	TPH C10-C36 (Total) (after silica gel clean-up)	C10-C14	C15-C28	C29-C36	C10-C36 (Sum of total)	C6-C10	>C6-C10 less BTEX (F1)	TRH >C10-C16 (after silica gel clean-up) less Naphthalene (F2)	TRH >C10-C16 (after silica gel clean-up)	TRH >C16-C34 (after silica gel clean-up)	TRH >C34-C40 (after silica gel clean-up)	C10-C16	>C10-C16 less Naphthalene (F2)	C16-C34	C34-C40	>C10 - C40 (Sum of total)
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/L	mg/kg	mg/kg	µg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				4	0.4	1	1	1	100	0.1	1	100	1	10	50	100	100	50	50	100	100	50	10	10	50	50	100	100	50	50	100	100	50	
NSW 2014 General Solid Waste CT1 (No Leaching)				100	20	100		100		4	40			650								10,000												
NSW 2014 General Solid Waste SCC1 (with leached)				500	100	1900		1,500		50	1,050			6,500								10,000												
NSW 2014 General Solid Waste TCLP1 (leached)									5,000			2,000																						
NSW 2014 Restricted Solid Waste CT2 (No Leaching)				400	80	400		400		16	160			2,600								40,000												
NSW 2014 Restricted Solid Waste SCC2 (with leached)				2,000	400	7600		6,000		200	4,200			2,600								40,000												
NSW 2014 Restricted Solid Waste TCLP2 (leached)									20,000			8,000																						
Lab Report Number	**Date**	**Field ID**	**Depth**																																
196252	13-07-18	SB06	0.2	6	<0.4	18	18	47		<0.1	10		89	<25					<50	<100	<100		<25	<25					<50	<50	120	<100	120	
196252	13-07-18	SB04	0.2	6	<0.4	19	14	33		<0.1	9		55	<25					<50	<100	<100		<25	<25					<50	<50	<100	<100	<50	
196252	13-07-18	SB02	0.2	4	<0.4	12	28	37		<0.1	7		100	<25					<50	<100	<100		<25	<25					<50	<50	<100	<100	<50	
196252	13-07-18	SB05	0.2	6	<0.4	21	18	30		<0.1	7		25	<25					<50	<100	<100		<25	<25					<50	<50	<100	<100	<50	
196252	13-07-18	SB07	0.2	10	<0.4	15	28	23		<0.1	8		49	<25					78	660	610		<25	<25					270	270	980	330	1,600	
196252	13-07-18	SB01	0.2	5	<0.4	15	12	42		<0.1	6		34	<25					<50	<100	<100		<25	<25					<50	<50	<100	<100	<50	
196252	13-07-18	SB08	0.2	<4	<0.4	10	21	33		<0.1	4		88	<25					100	470	780		<25	<25					150	150	1,100	360	1,600	
196252	13-07-18	SB03	0.2	11	<0.4	23	24	24		<0.1	7		92	<25					210	1,600	1,800		<25	<25					410	410	3,000	790	4,200	
ES1925652	10-08-19	TP6@0.5	0.5	<5	<1	17	6	18		<0.1	3		8	<10					<50	<100	<100	<50	<10	<10					<50	<50	<100	<100	<50	
ES1925652	10-08-19	TP6@0.2	0.2	<5	<1	15	8	25		<0.1	4		27	<10					<50	<100	<100	<50	<10	<10					<50	<50	<100	<100	<50	
ES1925652	10-08-19	TP1@0.0-0.2	0.0-0.2	5	<1	18	28	56		<0.1	5		186	<10					<50	<100	<100	<50	<10	<10					<50	<50	120	<100	120	
ES1925652	10-08-19	TP1@0.6	0.6	6	<1	15	17	73		<0.1	6		278	<10					<50	<100	<100	<50	<10	<10					<50	<50	<100	<100	<50	
ES1925652	10-08-19	TP4@0.6	0.6	6	<1	20	9	20		<0.1	4		15	<10					<50	<100	<100	<50	<10	<10					<50	<50	<100	<100	<50	
ES1925652	10-08-19	TP8@0.0-0.2	0.0-0.2	6	<1	18	44	48		<0.1	6		71	<10					<50	<100	<100	<50	<10	<10					<50	<50	<100	<100	<50	
ES1925652	10-08-19	TP2@0.2	0.2	<5	<1	17	16	30		<0.1	9		78	<10					<50	<100	<100	<50	<10	<10					<50	<50	<100	<100	<50	
ES1925652	10-08-19	TP2@0.5	0.5	8	<1	28	16	21		<0.1	4		19	<10					<50	<100	<100	<50	<10	<10					<50	<50	<100	<100	<50	
ES1925652	10-08-19	TP8@0.2	0.2	7	<1	22	12	33		<0.1	5		36	<10					<50	<100	<100	<50	<10	<10					<50	<50	<100	<100	<50	
ES1925652	10-08-19	TP4@0.2	0.2	6	<1	17	20	112		<0.1	6		215	<10					<50	<100	<100	<50	<10	<10					<50	<50	<100	<100	<50	
ES1925652	10-08-19	TP3@0.4	0.4	<5	<1	23	6	18		<0.1	3		23	<10					<50	<100	<100	<50	<10	<10					<50	<50	<100	<100	<50	
ES1925652	10-08-19	TP3@0.2	0.2	<5	<1	16	8	32		<0.1	5		35	<10					<50	<100	<100	<50	<10	<10					<50	<50	<100	<100	<50	
ES1925652	10-08-19	TP7@0.6	0.6	6	<1	28	9	19		<0.1	5		12	<10					<50	<100	<100	<50	<10	<10					<50	<50	<100	<100	<50	
ES1925652	10-08-19	TP7@0.0-0.2	0.0-0.2	<5	<1	6	113	<5		<0.1	81		32	<10					<50	<100	<100	<50	<10	<10					<50	<50	<100	<100	<50	
ES1926663	10-08-19	TP4@0.2TCLP	0.2TCLP						100																										
ES1926663	10-08-19	TP7@0.0-0.2TCLP	0.0-0.2TCLP									<100																							
ES1932358	30-09-19	TP27@0.35-0.65	0.35-0.65											<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<50	<50	<100	<100	<50	<50	<100	<100	<50	
ES1932358	30-09-19	TP25@0.3-0.65	0.3-0.65																																
ES1932358	30-09-19	TP22 @0.0-0.15	0.0-0.15																																
ES1932358	30-09-19	TP28@0.1 -0.2	0.1 -0.2																																
ES1932358	01-10-19	TP05@0.0-0.2	0.0-0.2																																
ES1932358	01-10-19	TP26@0.15-0.3	0.15-0.3																																
ES1932358	02-10-19	TP14@0.1 -0.3	0.1 -0.3											<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<50	<50	<100	<100	<50	<50	<100	<100	<50	
ES1932358	02-10-19	TP10@0.1 -0.5	0.1 -0.5											<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<50	<50	<100	<100	<50	<50	<100	<100	<50	
ES1932358	02-10-19	TP11@0.7	0.7											<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<50	<50	<100	<100	<50	<50	<100	<100	<50	
ES1932358	02-10-19	TP11@0.1-0.3	0.1-0.3																																
ES1932358	02-10-19	GB3@0.0-0.3	0.0-0.3																																
Statistics																																			
Number of Results				27	27	27	27	27	1	27	27	1	27	31	4	4	4	4	31	31	31	20	31	31	4	4	4	4	31	31	31	31	31	
Number of Detects				18	0	27	27	26	1	0	27	0	27	0	0	0	0	0	3	3	3	0	0	0	0	0	0	0	3	3	5	3	5	
Minimum Concentration				4	<0.4	6	6	<5	100	<0.1	3	<100	8	<10	<50	<100	<100	<50	<50	<100	<100	<50	<10	<10	<50	<50	<100	<100	<50	<50	<100	<100	<50	
Minimum Detect				4	ND	6	6	18	100	ND	3	ND	8	ND	ND	ND	ND	ND	78	470	610	ND	ND	ND	ND	ND	ND	ND	150	150	120	330	120	
Maximum Concentration				11	<1	28	113	112	100	<0.1	81	<100	278	<25	<50	<100	<100	<50	210	1,600	1,800	<50	<25	<25	<50	<50	<100	<100	410	410	3,000	790	4,200	
Maximum Detect				11	ND	28	113	112	100	ND	81	ND	278	ND	ND	ND	ND	ND	210	1,600	1,800	ND	ND	ND	ND	ND	ND	ND	410	410	3,000	790	4,200	
Average Concentration *				5	0.38	17	20	34		0.05	8.4		66	7.7	25	50	50	25	35	133	148	25	7.7	7.7	25	25	50	50	49	49	214	93	267	
Median Concentration *				5	0.5	17	15	30	100	0.05	5	50	36	5	25	50	50	25	25	50	50	25	5	5	25	25	50	50	25	25	50	50	25	
% of Results at or above the Detect Limit				67	0	100	100	96	100	0	100	0	100	0	0	0	0	0	10	10	10	0	0	0	0	0	0	0	10	10	16	10	16	
% of Results below the Detect Limit				33	100	0	0	4	0	100	0	100	0	100	100	100	100	100	90	90	90	100	100	100	100	100	100	100	90	90	84	90	84	

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 Reported Analyte LOR is higher than Requested Analyte LOR

	BTEX												PAH																										
	Benzene		Toluene		Ethylbenzene		Xylene (m & p)		Xylene (o)		Xylene Total	Total BTEX	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(a)pyrene TEQ calc (zero)	Benzo(b)pyrene TEQ calc (half)	Benzo(k)pyrene TEQ (LOR)	Benzo(g,h,i)perylene	Benzo(b+j)fluoranthene	Benzo(k)fluoranthene	Benzo(b+j+k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	PAHs (Sum of total)	PAHs (Sum of positives)	PAHs (Vic EPA List)
	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.2	1	0.5	1	0.5	1	0.5	2	0.5	1	0.5	0.2	0.1	0.1	0.1	0.1	0.05	0.5	0.5	0.5	0.1	0.5	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.05	0.5
NSW 2014 General Solid Waste CT1 (No Leaching)	10		288		600						1,000						0.8																				
NSW 2014 General Solid Waste SCC1 (with leached)	18		518		1,080						1,800						10																				
NSW 2014 General Solid Waste TCLP1 (leached)		500		14,400		30,000																															
NSW 2014 Restricted Solid Waste CT2 (No Leaching)	40		1,152		2,400						4,000						3.2																				
NSW 2014 Restricted Solid Waste SCC2 (with leached)	72		2,073		4,320						7,200						23																				
NSW 2014 Restricted Solid Waste TCLP 2 (leached)		2,000		57,600		120,000																															
Lab Report Number	**Date**	**Field ID**	**Depth**																																				
196252	13-07-18	SB06	0.2	<0.2		<0.5		<1		<2		<1		<1		<0.1	<0.1	<0.1	<0.1	<0.05	<0.5	<0.5	<0.5	<0.1			<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.05	
196252	13-07-18	SB04	0.2	<0.2		<0.5		<1		<2		<1		<1		<0.1	<0.1	<0.1	<0.1	<0.05	<0.5	<0.5	<0.5	<0.1			<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.05	
196252	13-07-18	SB02	0.2	<0.2		<0.5		<1		<2		<1		<1		<0.1	<0.1	<0.1	<0.1	0.07	<0.5	<0.5	<0.5	<0.1			<0.2	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1		0.3	
196252	13-07-18	SB05	0.2	<0.2		<0.5		<1		<2		<1		<1		<0.1	<0.1	<0.1	0.2	0.2	<0.5	<0.5	<0.5	0.1			0.4	0.2	<0.1	0.4	<0.1	0.1	<0.1	0.1	0.4		2	
196252	13-07-18	SB07	0.2	<0.2		<0.5		<1		<2		<1		<1		<0.1	<0.1	<0.1	<0.1	0.07	<0.5	<0.5	<0.5	<0.1			<0.2	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1		0.4	
196252	13-07-18	SB01	0.2	<0.2		<0.5		<1		<2		<1		<1		<0.1	<0.1	<0.1	0.1	0.1	<0.5	<0.5	<0.5	0.1			0.3	0.2	<0.1	0.4	<0.1	<0.1	<0.1	0.1	0.3		1.6	
196252	13-07-18	SB08	0.2	<0.2		<0.5		<1		<2		<1		<1		<0.1	<0.1	<0.1	<0.1	<0.05	<0.5	<0.5	<0.5	<0.1			<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.05	
196252	13-07-18	SB03	0.2	<0.2		<0.5		<1		<2		<1		<1		<0.1	<0.1	<0.1	<0.1	0.4	<0.5	<0.5	0.6	<0.1			<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		0.4	
ES1925652	10-08-19	TP6@0.5	0.5	<0.2		<0.5		<0.5		<0.5		<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5
ES1925652	10-08-19	TP6@0.2	0.2	<0.2		<0.5		<0.5		<0.5		<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5
ES1925652	10-08-19	TP1@0.0-0.2	0.0-0.2	<0.2		<0.5		<0.5		<0.5		<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5
ES1925652	10-08-19	TP1@0.6	0.6	<0.2		<0.5		<0.5		<0.5		<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5
ES1925652	10-08-19	TP4@0.6	0.6	<0.2		<0.5		<0.5		<0.5		<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5
ES1925652	10-08-19	TP8@0.0-0.2	0.0-0.2	<0.2		<0.5		<0.5		<0.5		<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5
ES1925652	10-08-19	TP2@0.2	0.2	<0.2		<0.5		<0.5		<0.5		<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5
ES1925652	10-08-19	TP2@0.5	0.5	<0.2		<0.5		<0.5		<0.5		<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5
ES1925652	10-08-19	TP8@0.2	0.2	<0.2		<0.5		<0.5		<0.5		<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5
ES1925652	10-08-19	TP4@0.2	0.2	<0.2		<0.5		<0.5		<0.5		<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5
ES1925652	10-08-19	TP3@0.4	0.4	<0.2		<0.5		<0.5		<0.5		<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5
ES1925652	10-08-19	TP3@0.2	0.2	<0.2		<0.5		<0.5		<0.5		<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5
ES1925652	10-08-19	TP7@0.6	0.6	<0.2		<0.5		<0.5		<0.5		<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5
ES1925652	10-08-19	TP7@0.0-0.2	0.0-0.2	<0.2		<0.5		<0.5		<0.5		<0.5	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			<0.5
ES1926663	10-08-19	TP4@0.2TCLP	0.2TCLP																																				
ES1926663	10-08-19	TP7@0.0-0.2TCLP	0.0-0.2TCLP																																				
ES1932358	30-09-19	TP27@0.35-0.65	0.35-0.65	<0.2		<0.5		<0.5		<0.5		<0.5	<0.2																			<1							
ES1932358	30-09-19	TP25@0.3-0.65	0.3-0.65																																				
ES1932358	30-09-19	TP22 @0.0-0.15	0.0-0.15																																				
ES1932358	30-09-19	TP28@0.1 -0.2	0.1 -0.2																																				
ES1932358	01-10-19	TP05@0.0-0.2	0.0-0.2																																				
ES1932358	01-10-19	TP26@0.15-0.3	0.15-0.3																																				
ES1932358	02-10-19	TP14@0.1 -0.3	0.1 -0.3	<0.2		<0.5		<0.5		<0.5		<0.5	<0.2																			<1							
ES1932358	02-10-19	TP10@0.1 -0.5	0.1 -0.5	<0.2		<0.5		<0.5		<0.5		<0.5	<0.2																			<1							
ES1932358	02-10-19	TP11@0.7	0.7	<0.2		<0.5		<0.5		<0.5		<0.5	<0.2																			<1							
ES1932358	02-10-19	TP11@0.1-0.3	0.1-0.3																																				
ES1932358	02-10-19	GB3@0.0-0.3	0.0-0.3																																				
Statistics																																						
Number of Results				31	1	31	1	31	1	31	1	31	1	31	1	31	20	27	27	27	27	27	27	27	27	27	16	16	11	27	27	27	27	27	31	27	27	1	11	15
Number of Detects				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	8	0	16	17	3	0	0	3	3	0	6	0	1	0	3	6	1	8	0
Minimum Concentration				<0.2	<1	<0.5	<1	<0.5	<2	<0.5	<1	<0.5	<0.2	<0.1	<0.1	<0.1	0.1	<0.05	<0.5	<0.5	<0.5	0.1	<0.5	<0.5	<0.2	<0.1	<0.1	0.1	<0.1	0.1	<0.1	0.1	0.1	1.1	<0.05	<0.5
Minimum Detect				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1	0.07	ND	0.6	0.6	0.1	ND	ND	0.3	0.2	ND	0.1	ND	0.1	ND	0.1	ND	0.1	0.1	1.1	0.09	ND
Maximum Concentration				<0.2	<1	<0.5	<1	<1	<1	<2	<2	<1	<1	<3	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	0.4	<0.5	<0.5	0.6	<0.5	<0.5	<1	<0.5	0.5	1.1	2	<0.5
Maximum Detect				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2	0.4	ND	0.6	1.2	0.1	ND	ND	0.4	0.2	ND	0.6	ND	0.1	ND	0.1	0.5	1.1	2	ND
Average Concentration *				0.1		0.25		0.34		0.52		0.34		0.4	0.1	0.17	0.17	0.17	0.18	0.2	0.25	0.46	0.83	0.17	0.25	0.25	0.16	0.19	0.17	0.22	0.17	0.17	0.21	0.17	0.21		0.61	0.25
Median Concentration *				0.1	0.5	0.25	0.5	0.25	0.5	0.25	1	0.25	0.5	0.25	0.1	0.25	0.25	0.25	0.25	0.25	0.25	0.6	1.2	0.25	0.25	0.25	0.1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1.1	0.3	0.25
% of Results at or above the Detect Limit				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	30	0	59	63	11	0	0	27	11	0	22	0	4	0	11	22	100	73	0
% of Results below the Detect Limit				100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	89	70	100	41	37	89	100	100	73	89	100	78	100	96	100	89	78	0	27	100

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 Reported Analyte LOR is higher than Requested Analyte LOR

				Phenols	PCBs							Organochlorine Pesticides																									
				Picloram	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)	a-BHC	Aldrin	Dieldrin	Aldrin + Dieldrin	b-BHC	chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	4,4-DDE	DDT	DDT+DDE+DDD	Endosulfan	Endrin ketone	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				0.02	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1
NSW 2014 General Solid Waste CT1 (No Leaching)				60								50														60											
NSW 2014 General Solid Waste SCC1 (with leached)				110								50														3											
NSW 2014 General Solid Waste TCLP1 (leached)																																					
NSW 2014 Restricted Solid Waste CT2 (No Leaching)				240								50														240											
NSW 2014 Restricted Solid Waste SCC2 (with leached)				440								50														432											
NSW 2014 Restricted Solid Waste TCLP2 (leached)																																					
Lab Report Number	**Date**	**Field ID**	**Depth**																																		
196252	13-07-18	SB06	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
196252	13-07-18	SB04	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
196252	13-07-18	SB02	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
196252	13-07-18	SB05	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
196252	13-07-18	SB07	0.2		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1		<1	<1	<1	<1	<1	<1	<1			<1	<1	<1	<1	<1	<1	<1	<1	<1
196252	13-07-18	SB01	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
196252	13-07-18	SB08	0.2		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1		<1	<1	<1	<1	<1	<1	<1			<1	<1	<1	<1	<1	<1	<1	<1	<1
196252	13-07-18	SB03	0.2		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1		<1		<1	<1	<1	<1	<1	<1	<1			<1	<1	<1	<1	<1	<1	<1	<1	<1
ES1925652	10-08-19	TP6@0.5	0.5									<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
ES1925652	10-08-19	TP6@0.2	0.2									<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
ES1925652	10-08-19	TP1@0.0-0.2	0.0-0.2									<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
ES1925652	10-08-19	TP1@0.6	0.6									<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
ES1925652	10-08-19	TP4@0.6	0.6									<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
ES1925652	10-08-19	TP8@0.0-0.2	0.0-0.2									<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
ES1925652	10-08-19	TP2@0.2	0.2									<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
ES1925652	10-08-19	TP2@0.5	0.5									<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
ES1925652	10-08-19	TP8@0.2	0.2									<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
ES1925652	10-08-19	TP4@0.2	0.2									<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
ES1925652	10-08-19	TP3@0.4	0.4									<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
ES1925652	10-08-19	TP3@0.2	0.2									<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
ES1925652	10-08-19	TP7@0.6	0.6									<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
ES1925652	10-08-19	TP7@0.0-0.2	0.0-0.2									<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2
ES1926663	10-08-19	TP4@0.2TCLP	0.2TCLP																																		
ES1926663	10-08-19	TP7@0.0-0.2TCLP	0.0-0.2TCLP																																		
ES1932358	30-09-19	TP27@0.35-0.65	0.35-0.65																																		
ES1932358	30-09-19	TP25@0.3-0.65	0.3-0.65	<0.04#1																																	
ES1932358	30-09-19	TP22 @0.0-0.15	0.0-0.15	<0.02																																	
ES1932358	30-09-19	TP28@0.1 -0.2	0.1 -0.2																																		
ES1932358	01-10-19	TP05@0.0-0.2	0.0-0.2	<0.04#1																																	
ES1932358	01-10-19	TP26@0.15-0.3	0.15-0.3																																		
ES1932358	02-10-19	TP14@0.1 -0.3	0.1 -0.3																																		
ES1932358	02-10-19	TP10@0.1 -0.5	0.1 -0.5																																		
ES1932358	02-10-19	TP11@0.7	0.7																																		
ES1932358	02-10-19	TP11@0.1-0.3	0.1-0.3	<0.04#1																																	
ES1932358	02-10-19	GB3@0.0-0.3	0.0-0.3																																		
Statistics																																					
Number of Results				4	11	11	11	11	11	11	11	27	27	27	27	16	27	16	27	27	27	27	27	27	27	16	16	27	27	27	27	27	27	27	27	27
Number of Detects				0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration				<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1
Minimum Detect				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration				<0.04	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.05	<1	<0.05	<1	<1	<1	<1	<1	<1	<1	<0.05	<0.05	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Maximum Detect				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *				0.018	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.1	0.085	0.085	0.089	0.025	0.085	0.025	0.085	0.085	0.085	0.085	0.085	0.13	0.085	0.025	0.025	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.085	0.13
Median Concentration *				0.02	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.1	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.1
% of Results at or above the Detect Limit				0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results below the Detect Limit				100	100	100	100	100	100	100	100	100	100	100	93	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 Reported Analyte LOR is higher than Requested Analyte LOR

	Organophosphorous Pesticides																					Herbicides																
	Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Demeton-S-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenamiphos	Fenitrothion	Fenthion	Malathion	Methyl parathion	Monocrotophos	Parathion	Pirimphos-ethyl	Prothiofos	Ronnel	2,4,5-Trichlorophenoxy Acetic Acid	2,4,5-TP (Silvex)	2,4-D	2,4-Dichlorprop	4-(2,4-Dichlorophenoxy)butyric Acid (2,4-DB)	4-Chlorophenoxy acetic acid	Ametryn	Atrazine	Clopyralid	Cyanazine	Dicamba	Fluroxypyr	2-Methyl-4-chlorophenoxyacetic acid	2-Methyl-4-Chlorophenoxy Butanoic Acid	Mecoprop
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.2	0.2	0.1	0.05	0.05	0.1	0.02	0.02	0.02	0.02	0.02	0.02	0.002	0.002	0.02	0.005	0.02	0.02	0.02	0.02	0.02
NSW 2014 General Solid Waste CT1 (No Leaching)					4																			200									40				
NSW 2014 General Solid Waste SCC1 (with leached)					7.5																			10									75				
NSW 2014 General Solid Waste TCLP1 (leached)																																					
NSW 2014 Restricted Solid Waste CT2 (No Leaching)					16																			800									160				
NSW 2014 Restricted Solid Waste SCC2 (with leached)					30																			1,440									300				
NSW 2014 Restricted Solid Waste TCLP2 (leached)																																					
Lab Report Number	**Date**	**Field ID**	**Depth**																																			
196252	13-07-18	SB06	0.2	<0.1	<0.1			<0.1	<0.1		<0.1	<0.1	<0.1			<0.1			<0.1			<0.1																
196252	13-07-18	SB04	0.2	<0.1	<0.1			<0.1	<0.1		<0.1	<0.1	<0.1			<0.1			<0.1			<0.1																
196252	13-07-18	SB02	0.2	<0.1	<0.1			<0.1	<0.1		<0.1	<0.1	<0.1			<0.1			<0.1			<0.1																
196252	13-07-18	SB05	0.2	<0.1	<0.1			<0.1	<0.1		<0.1	<0.1	<0.1			<0.1			<0.1			<0.1																
196252	13-07-18	SB07	0.2	<1	<1			<1	<1		<1	<1	<1			<1			<1			<1																
196252	13-07-18	SB01	0.2	<0.1	<0.1			<0.1	<0.1		<0.1	<0.1	<0.1			<0.1			<0.1			<0.1																
196252	13-07-18	SB08	0.2	<1	<1			<1	<1		<1	<1	<1			<1			<1			<1																
196252	13-07-18	SB03	0.2	<1	<1			<1	<1		<1	<1	<1			<1			<1			<1																
ES1925652	10-08-19	TP6@0.5	0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05																
ES1925652	10-08-19	TP6@0.2	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05																
ES1925652	10-08-19	TP1@0.0-0.2	0.0-0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05																
ES1925652	10-08-19	TP1@0.6	0.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05																
ES1925652	10-08-19	TP4@0.6	0.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05																
ES1925652	10-08-19	TP8@0.0-0.2	0.0-0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05																
ES1925652	10-08-19	TP2@0.2	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05																
ES1925652	10-08-19	TP2@0.5	0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05																
ES1925652	10-08-19	TP8@0.2	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05																
ES1925652	10-08-19	TP4@0.2	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05																
ES1925652	10-08-19	TP3@0.4	0.4	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05																
ES1925652	10-08-19	TP3@0.2	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05																
ES1925652	10-08-19	TP7@0.6	0.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05																
ES1925652	10-08-19	TP7@0.0-0.2	0.0-0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	<0.05	<0.2	<0.2	<0.2	<0.05	<0.05																
ES1926663	10-08-19	TP4@0.2TCLP	0.2TCLP																																			
ES1926663	10-08-19	TP7@0.0-0.2TCLP	0.0-0.2TCLP																																			
ES1932358	30-09-19	TP27@0.35-0.65	0.35-0.65																																			
ES1932358	30-09-19	TP25@0.3-0.65	0.3-0.65																				<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.002	<0.002	<0.04[#1]	<0.005	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]
ES1932358	30-09-19	TP22 @0.0-0.15	0.0-0.15																				<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.002	<0.002	<0.02	<0.005	<0.02	<0.02	<0.02	<0.02	<0.02
ES1932358	30-09-19	TP28@0.1 -0.2	0.1 -0.2																																			
ES1932358	01-10-19	TP05@0.0-0.2	0.0-0.2																				<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.002	<0.002	<0.04[#1]	<0.005	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]
ES1932358	01-10-19	TP26@0.15-0.3	0.15-0.3																																			
ES1932358	02-10-19	TP14@0.1 -0.3	0.1 -0.3																																			
ES1932358	02-10-19	TP10@0.1 -0.5	0.1 -0.5																																			
ES1932358	02-10-19	TP11@0.7	0.7																																			
ES1932358	02-10-19	TP11@0.1-0.3	0.1-0.3																				<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.002	<0.002	<0.04[#1]	<0.005	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]	<0.04[#1]
ES1932358	02-10-19	GB3@0.0-0.3	0.0-0.3																																			
Statistics																																						
Number of Results				27	27	16	16	27	27	16	27	27	27	27	16	11	16	27	16	16	27	16	16	11	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Number of Detects				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration				<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.2	<0.2	<0.1	<0.05	<0.05	<0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.002	<0.002	<0.02	<0.005	<0.02	<0.02	<0.02	<0.02	<0.02
Minimum Detect				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration				<1	<1	<0.05	<0.05	<1	<1	<0.05	<1	<1	<1	<1	<0.05	<1	<0.05	<1	<0.2	<0.2	<1	<0.05	<0.05	<1	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.002	<0.002	<0.04	<0.005	<0.04	<0.04	<0.04	<0.04	<0.04
Maximum Detect				ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *				0.085	0.085	0.025	0.025	0.085	0.085	0.025	0.085	0.085	0.085	0.085	0.025	0.17	0.025	0.085	0.1	0.1	0.13	0.025	0.025	0.17	0.018	0.018	0.018	0.018	0.018	0.018	0.001	0.001	0.018	0.0025	0.018	0.018	0.018	0.018	0.018
Median Concentration *				0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.05	0.025	0.025	0.1	0.1	0.1	0.025	0.025	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.001	0.001	0.02	0.0025	0.02	0.02	0.02	0.02	0.02
% of Results at or above the Detect Limit				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results below the Detect Limit				100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 Reported Analyte LOR is higher than Requested Analyte LOR

								Halogenated Benzenes	Inorganics					MOISTURE %	NA	
								Hexachlorobenzene	Moisture Content	pH (Initial)	pH (Final)	pH (after HCL)	Fluoride	Moisture %	>C10 - C40 Fraction (sum) (SG)	TCLP Fluid
								µg/kg	%	pH_Units	pH Unit	pH_Units	mg/kg	% w/wet w	mg/kg	-
EQL								50	0.1	0.1	0.1	0.1	40	0.1	50	1
NSW 2014 General Solid Waste CT1 (No Leaching)													3,000			
NSW 2014 General Solid Waste SCC1 (with leached)													10,000			
NSW 2014 General Solid Waste TCLP1 (leached)													150			
NSW 2014 Restricted Solid Waste CT2 (No Leaching)													12,000			
NSW 2014 Restricted Solid Waste SCC2 (with leached)													40,000			
NSW 2014 Restricted Solid Waste TCLP2 (leached)													600			
Lab Report Number	Date	Field ID	Depth													
196252	13-07-18	SB06	0.2						<100	12						
196252	13-07-18	SB04	0.2						<100	14						
196252	13-07-18	SB02	0.2						<100	15						
196252	13-07-18	SB05	0.2						<100	16						
196252	13-07-18	SB07	0.2						<1,000	16						
196252	13-07-18	SB01	0.2						<100	18						
196252	13-07-18	SB08	0.2						<1,000	20						
196252	13-07-18	SB03	0.2						<1,000	29						
ES1925652	10-08-19	TP6@0.5	0.5						<50	12.4						
ES1925652	10-08-19	TP6@0.2	0.2						<50	13						
ES1925652	10-08-19	TP1@0.0-0.2	0.0-0.2						<50	13.2						
ES1925652	10-08-19	TP1@0.6	0.6						<50	13.4						
ES1925652	10-08-19	TP4@0.6	0.6						<50	13.4						
ES1925652	10-08-19	TP8@0.0-0.2	0.0-0.2						<50	14.9						
ES1925652	10-08-19	TP2@0.2	0.2						<50	15.5						
ES1925652	10-08-19	TP2@0.5	0.5						<50	16.1						
ES1925652	10-08-19	TP8@0.2	0.2						<50	16.2						
ES1925652	10-08-19	TP4@0.2	0.2						<50	16.6						
ES1925652	10-08-19	TP3@0.4	0.4						<50	16.9						
ES1925652	10-08-19	TP3@0.2	0.2						<50	18.9						
ES1925652	10-08-19	TP7@0.6	0.6						<50	22.2						
ES1925652	10-08-19	TP7@0.0-0.2	0.0-0.2						<50	4.7						
ES1926663	10-08-19	TP4@0.2TCLP	0.2TCLP								8.9	5.6	1.8				1
ES1926663	10-08-19	TP7@0.0-0.2TCLP	0.0-0.2TCLP								9.5	5.2	1.7				1
ES1932358	30-09-19	TP27@0.35-0.65	0.35-0.65							17.1						<50	
ES1932358	30-09-19	TP25@0.3-0.65	0.3-0.65	<0.002	<0.002	<0.005	<0.1	<0.002	<0.04[#]	17.2				130			
ES1932358	30-09-19	TP22 @0.0-0.15	0.0-0.15	<0.002	<0.002	<0.005	<0.1	<0.002	<0.02	9.7				220			
ES1932358	30-09-19	TP28@0.1 -0.2	0.1 -0.2											100			
ES1932358	01-10-19	TP05@0.0-0.2	0.0-0.2	<0.002	<0.002	<0.005	<0.1	<0.002	<0.04[#]	18.2				120			
ES1932358	01-10-19	TP26@0.15-0.3	0.15-0.3											80			
ES1932358	02-10-19	TP14@0.1 -0.3	0.1 -0.3							17.2						<50	
ES1932358	02-10-19	TP10@0.1 -0.5	0.1 -0.5							17.9						<50	
ES1932358	02-10-19	TP11@0.7	0.7							21.2						<50	
ES1932358	02-10-19	TP11@0.1-0.3	0.1-0.3	<0.002	<0.002	<0.005	<0.1	<0.002	<0.04[#]	22.2				150			
ES1932358	02-10-19	GB3@0.0-0.3	0.0-0.3											190			
Statistics																	
Number of Results				4	4	4	4	4	4	27	33	2	2	2	7	2	4	2
Number of Detects				0	0	0	0	0	0	0	33	2	2	2	7	2	0	2
Minimum Concentration				<0.002	<0.002	<0.005	<0.1	<0.002	<0.02	<50	4.7	8.9	5.2	1.7	80	14	<50	1
Minimum Detect				ND	ND	ND	ND	ND	ND	ND	4.7	8.9	5.2	1.7	80	14	ND	1
Maximum Concentration				<0.002	<0.002	<0.005	<0.1	<0.002	<0.04	<1,000	29	9.5	5.6	1.8	220	14	<50	1
Maximum Detect				ND	ND	ND	ND	ND	ND	ND	29	9.5	5.6	1.8	220	14	ND	1
Average Concentration *				0.001	0.001	0.0025	0.05	0.001	0.018	85	16	9.2	5.4	1.8	141	14	25	1
Median Concentration *				0.001	0.001	0.0025	0.05	0.001	0.02	25	16.2	9.2	5.4	1.75	130	14	25	1
% of Results at or above the Detect Limit				0	0	0	0	0	0	0	100	100	100	100	100	100	0	100
% of Results below the Detect Limit				100	100	100	100	100	100	100	0	0	0	0	0	0	100	0

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 Reported Analyte LOR is higher than Requested Analyte LOR

Field Duplicates (soil)
Filter: ALL

	SDG	ALSE-Sydney 13-Aug-19	ALSE-Sydney 13-Aug-19	
	Field ID	TP6@0.2	QA1	RPD
	Sampled Date/Time	10/08/2019 15:00	10/08/2019 15:00	
Method_T	ChemName	Units	EQL			
---	---	---	---	---	---	---
Moisture C	Moisture Content	%	1	13	13.3	2
ontent						
Total Merc	Mercury	mg/kg	0.1	<0.1	<0.1	0
ury by FIMS						
Total Meta	Arsenic	mg/kg	5 : 4 (Interlab)	<5	<5	0
	Cadmium	mg/kg	1 : 0.4 (Interlab)	<1	<1	0
	Chromium (III+VI)	mg/kg	2 : 1 (Interlab)	15	13	14
	Copper	mg/kg	5 : 1 (Interlab)	8	7	13
	Lead	mg/kg	5 : 1 (Interlab)	25	19	27
	Nickel	mg/kg	2 : 1 (Interlab)	4	4	0
	Zinc	mg/kg	5 : 1 (Interlab)	27	18	40
s by ICP-AES						
TRH - Sem	C10-C14	mg/kg	50	<50	<50	0
	C15-C28	mg/kg	100	<100	<100	0
	C29-C36	mg/kg	100	<100	<100	0
	C10-C36 (Sum of total)	mg/kg	50	<50	<50	0
ivolatile Fraction						
TRH Volati	C6-C9	mg/kg	10 : 25 (Interlab)	<10	<10	0
les/BTEX						
TRH - Sem	C10-C16	mg/kg	50	<50	<50	0
	>C10-C16 less Naphthalene (F2)	mg/kg	50	<50	<50	0
	C16-C34	mg/kg	100	<100	<100	0
	C34-C40	mg/kg	100	<100	<100	0
	>C10 - C40 (Sum of total)	mg/kg	50	<50	<50	0
ivolatile Fraction						
TRH Volati	C6-C10	mg/kg	10 : 25 (Interlab)	<10	<10	0
	>C6-C10 less BTEX (F1)	mg/kg	10 : 25 (Interlab)	<10	<10	0
	Benzene	mg/kg	0.2	<0.2	<0.2	0
	Toluene	mg/kg	0.5	<0.5	<0.5	0
	Ethylbenzene	mg/kg	0.5 : 1 (Interlab)	<0.5	<0.5	0
	Xylene (m & p)	mg/kg	0.5 : 2 (Interlab)	<0.5	<0.5	0
	Xylene (o)	mg/kg	0.5 : 1 (Interlab)	<0.5	<0.5	0
	Xylene Total	mg/kg	0.5 : 3 (Interlab)	<0.5	<0.5	0
	Total BTEX	mg/kg	0.2	<0.2	<0.2	0
les/BTEX						
PAH/Phen	Acenaphthene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0
	Acenaphthylene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0
	Anthracene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0
	Benz(a)anthracene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0
	Benzo(a) pyrene	mg/kg	0.5 : 0.05 (Interlab)	<0.5	<0.5	0
	Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5	<0.5	<0.5	0
	Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5	0.6	0.6	0
	Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5	1.2	1.2	0
	Benzo(g,h,i)perylene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0
	Benzo(b+j)fluoranthene	mg/kg	0.5	<0.5	<0.5	0
	Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0
	Chrysene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0
	Dibenz(a,h)anthracene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0
	Fluoranthene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0
	Fluorene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0
	Naphthalene	mg/kg	0.5 : 1 (Interlab)	<0.5	<0.5	0
	Phenanthrene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0
	Pyrene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0
	PAHs (Vic EPA List)	mg/kg	0.5	<0.5	<0.5	0
ols (SIM)						
TRH Volati	Naphthalene	mg/kg	1 : 0.1 (Interlab)	<1	<1	0
les/BTEX						
Polychlorin	PCBs (Sum of total)	mg/kg	0.1	<0.1	<0.1	0
ated Biphenyls (PCB)						
Pesticides	a-BHC	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Aldrin	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Dieldrin	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Aldrin + Dieldrin	mg/kg	0.05	<0.05	<0.05	0
	b-BHC	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	chlordane	mg/kg	0.05	<0.05	<0.05	0
	Chlordane (cis)	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Chlordane (trans)	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	d-BHC	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	DDD	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	4,4-DDE	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	DDT	mg/kg	0.2 : 0.1 (Interlab)	<0.2	<0.2	0
	DDT+DDE+DDD	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Endosulfan	mg/kg	0.05	<0.05	<0.05	0
	Endrin ketone	mg/kg	0.05	<0.05	<0.05	0
	Endosulfan I	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Endosulfan II	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Endosulfan sulphate	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Endrin	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Endrin aldehyde	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	g-BHC (Lindane)	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Heptachlor	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Heptachlor epoxide	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Methoxychlor	mg/kg	0.2 : 0.1 (Interlab)	<0.2	<0.2	0
	Azinophos methyl	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Bromophos-ethyl	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Carbophenothion	mg/kg	0.05	<0.05	<0.05	0
	Chlorfenvinphos	mg/kg	0.05	<0.05	<0.05	0
	Chlorpyrifos	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Chlorpyrifos-methyl	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Demeton-S-methyl	mg/kg	0.05	<0.05	<0.05	0
	Diazinon	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Dichlorvos	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Dimethoate	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Ethion	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Fenamiphos	mg/kg	0.05	<0.05	<0.05	0
	Fenthion	mg/kg	0.05	<0.05	<0.05	0
	Malathion	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0
	Methyl parathion	mg/kg	0.2	<0.2	<0.2	0
	Monocrotophos	mg/kg	0.2	<0.2	<0.2	0
	Parathion	mg/kg	0.2 : 0.1 (Interlab)	<0.2	<0.2	0
	Pirimphos-ethyl	mg/kg	0.05	<0.05	<0.05	0
	Prothiofos	mg/kg	0.05	<0.05	<0.05	0
	Hexachlorobenzene	µg/kg	50 : 100 (Interlab)	<50	<50	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

Field Duplicates (soil)
Filter: ALL

	SDG		ALSE-Sydney 13-Aug-19	ENVIROLAB 2019-08-14T00:00:00		
	Field ID		TP6@0.2	QA2		**RPD**
	Sampled Date/Time		10/08/2019 15:00	10/08/2019 15:00		
Method_T	**ChemName**	**Units**	**EQL**			
Moisture C	Moisture Content	%	1	13		
ontent						
Total Merc	Mercury	mg/kg	0.1	<0.1	<0.1	0
ury by FIMS						
Total Meta	Arsenic	mg/kg	5 : 4 (Interlab)	<5	5	0
	Cadmium	mg/kg	1 : 0.4 (Interlab)	<1	<0.4	0
	Chromium (III+VI)	mg/kg	2 : 1 (Interlab)	15	15	0
	Copper	mg/kg	5 : 1 (Interlab)	8	10	22
	Lead	mg/kg	5 : 1 (Interlab)	25	25	0
	Nickel	mg/kg	2 : 1 (Interlab)	4	4	0
	Zinc	mg/kg	5 : 1 (Interlab)	**27**	**69**	**88**
s by ICP-AES						
TRH - Sem	C10-C14	mg/kg	50	<50	<50	0
	C15-C28	mg/kg	100	<100	<100	0
	C29-C36	mg/kg	100	<100	<100	0
	C10-C36 (Sum of total)	mg/kg	50	<50		
ivolatile Fraction						
TRH Volati	C6-C9	mg/kg	10 : 25 (Interlab)	<10	<25	0
les/BTEX						
TRH - Sem	C10-C16	mg/kg	50	<50	<50	0
	>C10-C16 less Naphthalene (F2)	mg/kg	50	<50	<50	0
	C16-C34	mg/kg	100	<100	<100	0
	C34-C40	mg/kg	100	<100	<100	0
	>C10 - C40 (Sum of total)	mg/kg	50	<50	<50	0
ivolatile Fraction						
TRH Volati	C6-C10	mg/kg	10 : 25 (Interlab)	<10	<25	0
	>C6-C10 less BTEX (F1)	mg/kg	10 : 25 (Interlab)	<10	<25	0
	Benzene	mg/kg	0.2	<0.2	<0.2	0
	Toluene	mg/kg	0.5	<0.5	<0.5	0
	Ethylbenzene	mg/kg	0.5 : 1 (Interlab)	<0.5	<1	0
	Xylene (m & p)	mg/kg	0.5 : 2 (Interlab)	<0.5	<2	0
	Xylene (o)	mg/kg	0.5 : 1 (Interlab)	<0.5	<1	0
	Xylene Total	mg/kg	0.5 : 3 (Interlab)	<0.5	<3	0
	Total BTEX	mg/kg	0.2	<0.2		
les/BTEX						
PAH/Phen	Acenaphthene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.1	0
	Acenaphthylene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.1	0
	Anthracene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.1	0
	Benz(a)anthracene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.1	0
	Benzo(a) pyrene	mg/kg	0.5 : 0.05 (Interlab)	<0.5	0.09	0
	Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5	<0.5	<0.5	0
	Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5	0.6	<0.5	18
	Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5	**1.2**	**<0.5**	**82**
	Benzo(g,h,i)perylene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.1	0
	Benzo(b+j)fluoranthene	mg/kg	0.5	<0.5		
	Benzo(k)fluoranthene	mg/kg	0.5	<0.5		
	Chrysene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.1	0
	Dibenz(a,h)anthracene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.1	0
	Fluoranthene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.1	0
	Fluorene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.1	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.1	0
	Naphthalene	mg/kg	0.5 : 1 (Interlab)	<0.5	<0.1	0
	Phenanthrene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.1	0
	Pyrene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.1	0
	PAHs (Vic EPA List)	mg/kg	0.5	<0.5		
ols (SIM)						
TRH Volati	Naphthalene	mg/kg	1 : 0.1 (Interlab)	<1	<0.1	0
les/BTEX						
Polychlorin	PCBs (Sum of total)	mg/kg	0.1	<0.1	<0.1	0
ated Biphenyls (PCB)						
Pesticides	a-BHC	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Aldrin	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Dieldrin	mg/kg	0.05 : 0.1 (Interlab)	<0.05	0.1	67
	Aldrin + Dieldrin	mg/kg	0.05	<0.05		
	b-BHC	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	chlordane	mg/kg	0.05	<0.05		
	Chlordane (cis)	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Chlordane (trans)	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	d-BHC	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	DDD	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	4,4-DDE	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	DDT	mg/kg	0.2 : 0.1 (Interlab)	<0.2	<0.1	0
	DDT+DDE+DDD	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Endosulfan	mg/kg	0.05	<0.05		
	Endrin ketone	mg/kg	0.05	<0.05		
	Endosulfan I	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Endosulfan II	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Endosulfan sulphate	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Endrin	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Endrin aldehyde	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	g-BHC (Lindane)	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Heptachlor	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Heptachlor epoxide	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Methoxychlor	mg/kg	0.2 : 0.1 (Interlab)	<0.2	<0.1	0
	Azinophos methyl	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Bromophos-ethyl	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Carbophenothion	mg/kg	0.05	<0.05		
	Chlorfenvinphos	mg/kg	0.05	<0.05		
	Chlorpyrifos	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Chlorpyrifos-methyl	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Demeton-S-methyl	mg/kg	0.05	<0.05		
	Diazinon	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Dichlorvos	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Dimethoate	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Ethion	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Fenamiphos	mg/kg	0.05	<0.05		
	Fenthion	mg/kg	0.05	<0.05		
	Malathion	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.1	0
	Methyl parathion	mg/kg	0.2	<0.2		
	Monocrotophos	mg/kg	0.2	<0.2		
	Parathion	mg/kg	0.2 : 0.1 (Interlab)	<0.2	<0.1	0
	Pirimphos-ethyl	mg/kg	0.05	<0.05		
	Prothiofos	mg/kg	0.05	<0.05		
	Hexachlorobenzene	µg/kg	50 : 100 (Interlab)	<50	<100	0

*RPDs have only been considered where a concentration is greater than 1 times th
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 80 (
***Interlab Duplicates are matched on a per compound basis as methods vary bet used in the primary laboratory

Field Duplicates (soil)
Filter: ALL

			SDG	ENVIROLAB 2018-07-13T00:00:00	ENVIROLAB 2018-07-13T00:00:00	
			Field ID	SB01	DUP	**RPD**
			Sampled Date/Time	13/07/2018	13/07/2018	
Method_Typ	**ChemName**	**Units**	**EQL**			
Moisture	Moisture Content	%	0.1 : 1 (Interlab)	18	19	5
Moisture Cont	Moisture Content	%	1			
ontent						
Acid Extractat	Arsenic	mg/kg	4 : 5 (Interlab)	5	5	0
	Cadmium	mg/kg	0.4 : 1 (Interlab)	<0.4	<0.4	0
	Chromium (III+VI)	mg/kg	1 : 2 (Interlab)	15	15	0
	Copper	mg/kg	1 : 5 (Interlab)	12	15	22
	Lead	mg/kg	1 : 5 (Interlab)	42	44	5
	Mercury	mg/kg	0.1	<0.1	<0.1	0
	Nickel	mg/kg	1 : 2 (Interlab)	6	5	18
	Zinc	mg/kg	1 : 5 (Interlab)	34	35	3
s by ICP-AES						
svTRH (C10-C	C10-C14	mg/kg	50	<50	<50	0
	C15-C28	mg/kg	100	<100	<100	0
	C29-C36	mg/kg	100	<100	<100	0
les/BTEX						
vTRH(C6-C1(	C6-C9	mg/kg	25 : 10 (Interlab)	<25	<25	0
C10)/BTEXN in Soil						
svTRH (C10-C	C10-C16	mg/kg	50	<50	<50	0
	>C10-C16 less Naphthalene (F2)	mg/kg	50	<50	<50	0
	C16-C34	mg/kg	100	<100	<100	0
	C34-C40	mg/kg	100	<100	<100	0
	>C10 - C40 (Sum of total)	mg/kg	50	<50	<50	0
les/BTEX						
vTRH(C6-C1(	C6-C10	mg/kg	25 : 10 (Interlab)	<25	<25	0
	>C6-C10 less BTEX (F1)	mg/kg	25 : 10 (Interlab)	<25	<25	0
les/BTEX						
vTRH(C6-C1(	Benzene	mg/kg	0.2	<0.2	<0.2	0
	Toluene	mg/kg	0.5	<0.5	<0.5	0
	Ethylbenzene	mg/kg	1 : 0.5 (Interlab)	<1	<1	0
	Xylene (m & p)	mg/kg	2 : 0.5 (Interlab)	<2	<2	0
	Xylene (o)	mg/kg	1 : 0.5 (Interlab)	<1	<1	0
	Xylene Total	mg/kg	1 : 0.5 (Interlab)	<1	<1	0
ols (SIM)						
PAHs in Soil	Acenaphthene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.1	0
	Acenaphthylene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.1	0
	Anthracene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.1	0
	Benz(a)anthracene	mg/kg	0.1 : 0.5 (Interlab)	0.1	0.2	67
	Benzo(a) pyrene	mg/kg	0.05 : 0.5 (Interlab)	0.1	0.2	67
	Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5	<0.5	<0.5	0
	Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5	<0.5	<0.5	0
	Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5	<0.5	<0.5	0
	Benzo(g,h,i)perylene	mg/kg	0.1 : 0.5 (Interlab)	0.1	0.1	0
	Benzo(b+j+k)fluoranthene	mg/kg	0.2	0.3	0.3	0
	Chrysene	mg/kg	0.1 : 0.5 (Interlab)	0.2	0.2	0
	Dibenz(a,h)anthracene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.1	0
	Fluoranthene	mg/kg	0.1 : 0.5 (Interlab)	0.4	0.4	0
	Fluorene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.1	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.1	0
	Naphthalene	mg/kg	0.1 : 1 (Interlab)	<0.1	<0.1	0
	Phenanthrene	mg/kg	0.1 : 0.5 (Interlab)	0.1	0.1	0
	Pyrene	mg/kg	0.1 : 0.5 (Interlab)	0.3	0.3	0
	PAHs (Sum of positives)	mg/kg	0.05	1.6	1.8	12
les/BTEX						
vTRH(C6-C1(	Naphthalene	mg/kg	1 : 0.5 (Interlab)	<1	<1	0
C10)/BTEXN in Soil						
PCBs in Soil	Arochlor 1016	mg/kg	0.1	<0.1	<0.1	0
	Arochlor 1221	mg/kg	0.1	<0.1	<0.1	0
	Arochlor 1232	mg/kg	0.1	<0.1	<0.1	0
	Arochlor 1242	mg/kg	0.1	<0.1	<0.1	0
	Arochlor 1248	mg/kg	0.1	<0.1	<0.1	0
	Arochlor 1254	mg/kg	0.1	<0.1	<0.1	0
	Arochlor 1260	mg/kg	0.1	<0.1	<0.1	0
	PCBs (Sum of total)	mg/kg	0.1	<0.1	<0.1	0
ated Biphenyls (PCB)						
Organochlorin	a-BHC	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Aldrin	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Dieldrin	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	b-BHC	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Chlordane (cis)	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Chlordane (trans)	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	d-BHC	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	DDD	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	4,4-DDE	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	DDT	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.1	0
	DDT+DDE+DDD	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Endosulfan I	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Endosulfan II	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Endosulfan sulphate	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Endrin	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Endrin aldehyde	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	g-BHC (Lindane)	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Heptachlor	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Heptachlor epoxide	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Methoxychlor	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.1	0
by GCMS						
Organophosp	Azinophos methyl	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Bromophos-ethyl	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Chlorpyrifos	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Chlorpyrifos-methyl	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Diazinon	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Dichlorvos	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Dimethoate	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Ethion	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Fenitrothion	mg/kg	0.1	<0.1	<0.1	0
	Malathion	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0
	Parathion	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.1	0
	Ronnel	mg/kg	0.1	<0.1	<0.1	0
by GCMS						
Organochlorin	Hexachlorobenzene	µg/kg	100 : 50 (Interlab)	<100	<100	0
orine Pesticides in soil						
Pesticides by	Hexachlorobenzene	µg/kg	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 l

Field Duplicates (soil)
Filter: ALL

			SDG	ENVIROLAB 2018-07-13T00:00:00	ALSE-Sydney 16-Jul-18	
			Field ID	SB01	TRIP	**RPD**
			Sampled Date/Time	13/07/2018	13/07/2018	
Method_Type	**ChemName**	**Units**	**EQL**			
Moisture	Moisture Content	%	0.1 : 1 (Interlab)	18	18.3	2
Moisture Cont	Moisture Content	%	1			
ontent						
Acid Extractat	Arsenic	mg/kg	4 : 5 (Interlab)	5	<5	0
	Cadmium	mg/kg	0.4 : 1 (Interlab)	<0.4	<1	0
	Chromium (III+VI)	mg/kg	1 : 2 (Interlab)	15	12	22
	Copper	mg/kg	1 : 5 (Interlab)	12	11	9
	Lead	mg/kg	1 : 5 (Interlab)	42	42	0
	Mercury	mg/kg	0.1	<0.1	<0.1	0
	Nickel	mg/kg	1 : 2 (Interlab)	6	5	18
	Zinc	mg/kg	1 : 5 (Interlab)	34	31	9
s by ICP-AES						
svTRH (C10-C	C10-C14	mg/kg	50	<50	<50	0
	C15-C28	mg/kg	100	<100	<100	0
	C29-C36	mg/kg	100	<100	<100	0
les/BTEX						
vTRH(C6-C10	C6-C9	mg/kg	25 : 10 (Interlab)	<25	<10	0
C10)/BTEXN in Soil						
svTRH (C10-C	C10-C16	mg/kg	50	<50	<50	0
	>C10-C16 less Naphthalene (F2)	mg/kg	50	<50	<50	0
	C16-C34	mg/kg	100	<100	<100	0
	C34-C40	mg/kg	100	<100	<100	0
	>C10 - C40 (Sum of total)	mg/kg	50	<50	<50	0
les/BTEX						
vTRH(C6-C10	C6-C10	mg/kg	25 : 10 (Interlab)	<25	<10	0
	>C6-C10 less BTEX (F1)	mg/kg	25 : 10 (Interlab)	<25	<10	0
les/BTEX						
vTRH(C6-C10	Benzene	mg/kg	0.2	<0.2	<0.2	0
	Toluene	mg/kg	0.5	<0.5	<0.5	0
	Ethylbenzene	mg/kg	1 : 0.5 (Interlab)	<1	<0.5	0
	Xylene (m & p)	mg/kg	2 : 0.5 (Interlab)	<2	<0.5	0
	Xylene (o)	mg/kg	1 : 0.5 (Interlab)	<1	<0.5	0
	Xylene Total	mg/kg	1 : 0.5 (Interlab)	<1	<0.5	0
ols (SIM)						
PAHs in Soil	Acenaphthene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.5	0
	Acenaphthylene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.5	0
	Anthracene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.5	0
	Benz(a)anthracene	mg/kg	0.1 : 0.5 (Interlab)	0.1	<0.5	0
	Benzo(a) pyrene	mg/kg	0.05 : 0.5 (Interlab)	0.1	<0.5	0
	Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5	<0.5	<0.5	0
	Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5	<0.5	0.6	18
	Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5	**<0.5**	**1.2**	**82**
	Benzo(g,h,i)perylene	mg/kg	0.1 : 0.5 (Interlab)	0.1	<0.5	0
	Benzo(b+j+k)fluoranthene	mg/kg	0.2	0.3		
	Chrysene	mg/kg	0.1 : 0.5 (Interlab)	0.2	<0.5	0
	Dibenz(a,h)anthracene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.5	0
	Fluoranthene	mg/kg	0.1 : 0.5 (Interlab)	0.4	0.6	40
	Fluorene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.5	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.5	0
	Naphthalene	mg/kg	0.1 : 1 (Interlab)	<0.1	<0.5	0
	Phenanthrene	mg/kg	0.1 : 0.5 (Interlab)	0.1	<0.5	0
	Pyrene	mg/kg	0.1 : 0.5 (Interlab)	0.3	0.5	50
	PAHs (Sum of positives)	mg/kg	0.05	1.6		
les/BTEX						
vTRH(C6-C10	Naphthalene	mg/kg	1 : 0.5 (Interlab)	<1	<0.5	0
C10)/BTEXN in Soil						
PCBs in Soil	Arochlor 1016	mg/kg	0.1	<0.1		
	Arochlor 1221	mg/kg	0.1	<0.1		
	Arochlor 1232	mg/kg	0.1	<0.1		
	Arochlor 1242	mg/kg	0.1	<0.1		
	Arochlor 1248	mg/kg	0.1	<0.1		
	Arochlor 1254	mg/kg	0.1	<0.1		
	Arochlor 1260	mg/kg	0.1	<0.1		
	PCBs (Sum of total)	mg/kg	0.1	<0.1	<0.1	0
ated Biphenyls (PCB)						
Organochlorin	a-BHC	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Aldrin	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Dieldrin	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	b-BHC	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Chlordane (cis)	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Chlordane (trans)	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	d-BHC	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	DDD	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	4,4-DDE	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	DDT	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.2	0
	DDT+DDE+DDD	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Endosulfan I	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Endosulfan II	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Endosulfan sulphate	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Endrin	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Endrin aldehyde	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	g-BHC (Lindane)	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Heptachlor	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Heptachlor epoxide	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Methoxychlor	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.2	0
by GCMS						
Organophosp	Azinophos methyl	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Bromophos-ethyl	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Chlorpyrifos	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Chlorpyrifos-methyl	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Diazinon	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Dichlorvos	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Dimethoate	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Ethion	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Fenitrothion	mg/kg	0.1	<0.1		
	Malathion	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.05	0
	Parathion	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.2	0
	Ronnel	mg/kg	0.1	<0.1		
by GCMS						
Organochlorin	Hexachlorobenzene	µg/kg	100 : 50 (Interlab)	<100	<50	0
orine Pesticides in soil						
Pesticides by	Hexachlorobenzene	µg/kg	50			

*RPDs have only been considered where a concentration is greater than 1 times the
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 80 (1
***Interlab Duplicates are matched on a per compound basis as methods vary betweboratory

1	UCL Statistics for Uncensored Full Data Sets										
2											
3	User Selected Options										
4	Date/Time of Computation	ProUCL 5.116-Oct-19 9:41:49 AM									
5	From File	WorkSheet.xls									
6	Full Precision	OFF									
7	Confidence Coefficient	95%									
8	Number of Bootstrap Operations	2000									
9											
10											
11	C0										
12											
13	General Statistics										
14	Total Number of Observations	31				Number of Distinct Observations	4				
15						Number of Missing Observations	0				
16	Minimum	50				Mean	71.94				
17	Maximum	410				Median	50				
18	SD	75.96				Std. Error of Mean	13.64				
19	Coefficient of Variation	1.056				Skewness	3.788				
20											
21	Normal GOF Test										
22	Shapiro Wilk Test Statistic	0.335				Shapiro Wilk GOF Test					
23	5% Shapiro Wilk Critical Value	0.929				Data Not Normal at 5% Significance Level					
24	Lilliefors Test Statistic	0.517				Lilliefors GOF Test					
25	5% Lilliefors Critical Value	0.156				Data Not Normal at 5% Significance Level					
26	Data Not Normal at 5% Significance Level										
27											
28	Assuming Normal Distribution										
29	95% Normal UCL					95% UCLs (Adjusted for Skewness)					
30	95% Student's-t UCL	95.09				95% Adjusted-CLT UCL (Chen-1995)	104.3				
31						95% Modified-t UCL (Johnson-1978)	96.64				
32											
33	Gamma GOF Test										
34	A-D Test Statistic	9.891				Anderson-Darling Gamma GOF Test					
35	5% A-D Critical Value	0.755				Data Not Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic	0.535				Kolmogorov-Smirnov Gamma GOF Test					
37	5% K-S Critical Value	0.159				Data Not Gamma Distributed at 5% Significance Level					
38	Data Not Gamma Distributed at 5% Significance Level										
39											
40	Gamma Statistics										
41	k hat (MLE)	2.581				k star (bias corrected MLE)	2.353				
42	Theta hat (MLE)	27.87				Theta star (bias corrected MLE)	30.57				
43	nu hat (MLE)	160				nu star (bias corrected)	145.9				
44	MLE Mean (bias corrected)	71.94				MLE Sd (bias corrected)	46.9				
45						Approximate Chi Square Value (0.05)	119				
46	Adjusted Level of Significance	0.0413				Adjusted Chi Square Value	117.6				
47											
48	Assuming Gamma Distribution										
49	95% Approximate Gamma UCL (use when n>=50))	88.21				95% Adjusted Gamma UCL (use when n<50)	89.22				
50											
51	Lognormal GOF Test										
52	Shapiro Wilk Test Statistic	0.354				Shapiro Wilk Lognormal GOF Test					
53	5% Shapiro Wilk Critical Value	0.929				Data Not Lognormal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
54				Lilliefors Test Statistic		0.525	Lilliefors Lognormal GOF Test					
55				5% Lilliefors Critical Value		0.156	Data Not Lognormal at 5% Significance Level					
56	Data Not Lognormal at 5% Significance Level											
57												
58	Lognormal Statistics											
59				Minimum of Logged Data		3.912			Mean of logged Data			4.07
60				Maximum of Logged Data		6.016			SD of logged Data			0.507
61												
62	Assuming Lognormal Distribution											
63				95% H-UCL		79.61			90% Chebyshev (MVUE) UCL			85.18
64				95% Chebyshev (MVUE) UCL		93.75			97.5% Chebyshev (MVUE) UCL			105.6
65				99% Chebyshev (MVUE) UCL		129						
66												
67	Nonparametric Distribution Free UCL Statistics											
68	Data do not follow a Discernible Distribution (0.05)											
69												
70	Nonparametric Distribution Free UCLs											
71				95% CLT UCL		94.38			95% Jackknife UCL			95.09
72				95% Standard Bootstrap UCL		N/A			95% Bootstrap-t UCL			N/A
73				95% Hall's Bootstrap UCL		N/A			95% Percentile Bootstrap UCL			N/A
74				95% BCA Bootstrap UCL		N/A						
75				90% Chebyshev(Mean, Sd) UCL		112.9			95% Chebyshev(Mean, Sd) UCL			131.4
76				97.5% Chebyshev(Mean, Sd) UCL		157.1			99% Chebyshev(Mean, Sd) UCL			207.7
77												
78	Suggested UCL to Use											
79				95% Chebyshev (Mean, Sd) UCL		131.4						
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	Recommendations are based upon data size, data distribution, and skewness.											
83	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
84	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
85												

1	UCL Statistics for Uncensored Full Data Sets										
2											
3	User Selected Options										
4	Date/Time of Computation	ProUCL 5.116-Oct-19 9:51:59 AM									
5	From File	WorkSheet_a.xls									
6	Full Precision	OFF									
7	Confidence Coefficient	95%									
8	Number of Bootstrap Operations	2000									
9											
10											
11	C0										
12											
13	General Statistics										
14	Total Number of Observations	31				Number of Distinct Observations	4				
15						Number of Missing Observations	0				
16	Minimum	50				Mean	71.94				
17	Maximum	410				Median	50				
18	SD	75.96				Std. Error of Mean	13.64				
19	Coefficient of Variation	1.056				Skewness	3.788				
20											
21	Normal GOF Test										
22	Shapiro Wilk Test Statistic	0.335				Shapiro Wilk GOF Test					
23	5% Shapiro Wilk Critical Value	0.929				Data Not Normal at 5% Significance Level					
24	Lilliefors Test Statistic	0.517				Lilliefors GOF Test					
25	5% Lilliefors Critical Value	0.156				Data Not Normal at 5% Significance Level					
26	Data Not Normal at 5% Significance Level										
27											
28	Assuming Normal Distribution										
29	95% Normal UCL					95% UCLs (Adjusted for Skewness)					
30	95% Student's-t UCL	95.09				95% Adjusted-CLT UCL (Chen-1995)	104.3				
31						95% Modified-t UCL (Johnson-1978)	96.64				
32											
33	Gamma GOF Test										
34	A-D Test Statistic	9.891				Anderson-Darling Gamma GOF Test					
35	5% A-D Critical Value	0.755				Data Not Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic	0.535				Kolmogorov-Smirnov Gamma GOF Test					
37	5% K-S Critical Value	0.159				Data Not Gamma Distributed at 5% Significance Level					
38	Data Not Gamma Distributed at 5% Significance Level										
39											
40	Gamma Statistics										
41	k hat (MLE)	2.581				k star (bias corrected MLE)	2.353				
42	Theta hat (MLE)	27.87				Theta star (bias corrected MLE)	30.57				
43	nu hat (MLE)	160				nu star (bias corrected)	145.9				
44	MLE Mean (bias corrected)	71.94				MLE Sd (bias corrected)	46.9				
45						Approximate Chi Square Value (0.05)	119				
46	Adjusted Level of Significance	0.0413				Adjusted Chi Square Value	117.6				
47											
48	Assuming Gamma Distribution										
49	95% Approximate Gamma UCL (use when n>=50))	88.21				95% Adjusted Gamma UCL (use when n<50)	89.22				
50											
51	Lognormal GOF Test										
52	Shapiro Wilk Test Statistic	0.354				Shapiro Wilk Lognormal GOF Test					
53	5% Shapiro Wilk Critical Value	0.929				Data Not Lognormal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
54				Lilliefors Test Statistic		0.525	Lilliefors Lognormal GOF Test					
55				5% Lilliefors Critical Value		0.156	Data Not Lognormal at 5% Significance Level					
56	Data Not Lognormal at 5% Significance Level											
57												
58	Lognormal Statistics											
59				Minimum of Logged Data		3.912			Mean of logged Data			4.07
60				Maximum of Logged Data		6.016			SD of logged Data			0.507
61												
62	Assuming Lognormal Distribution											
63				95% H-UCL		79.61			90% Chebyshev (MVUE) UCL			85.18
64				95% Chebyshev (MVUE) UCL		93.75			97.5% Chebyshev (MVUE) UCL			105.6
65				99% Chebyshev (MVUE) UCL		129						
66												
67	Nonparametric Distribution Free UCL Statistics											
68	Data do not follow a Discernible Distribution (0.05)											
69												
70	Nonparametric Distribution Free UCLs											
71				95% CLT UCL		94.38			95% Jackknife UCL			95.09
72				95% Standard Bootstrap UCL		N/A			95% Bootstrap-t UCL			N/A
73				95% Hall's Bootstrap UCL		N/A			95% Percentile Bootstrap UCL			N/A
74				95% BCA Bootstrap UCL		N/A						
75				90% Chebyshev(Mean, Sd) UCL		112.9			95% Chebyshev(Mean, Sd) UCL			131.4
76				97.5% Chebyshev(Mean, Sd) UCL		157.1			99% Chebyshev(Mean, Sd) UCL			207.7
77												
78	Suggested UCL to Use											
79				95% Chebyshev (Mean, Sd) UCL		131.4						
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	Recommendations are based upon data size, data distribution, and skewness.											
83	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
84	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
85												

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Uncensored Full Data Sets											
2												
3	User Selected Options											
4	Date/Time of Computation	ProUCL 5.116-Oct-19 9:52:44 AM										
5	From File	WorkSheet_b.xls										
6	Full Precision	OFF										
7	Confidence Coefficient	95%										
8	Number of Bootstrap Operations	2000										
9												
10												
11	C0											
12												
13	General Statistics											
14	Total Number of Observations	31					Number of Distinct Observations	5				
15							Number of Missing Observations	0				
16	Minimum	100					Mean	255.5				
17	Maximum	3000					Median	100				
18	SD	560.8					Std. Error of Mean	100.7				
19	Coefficient of Variation	2.195					Skewness	4.354				
20												
21	Normal GOF Test											
22	Shapiro Wilk Test Statistic	0.322					Shapiro Wilk GOF Test					
23	5% Shapiro Wilk Critical Value	0.929					Data Not Normal at 5% Significance Level					
24	Lilliefors Test Statistic	0.499					Lilliefors GOF Test					
25	5% Lilliefors Critical Value	0.156					Data Not Normal at 5% Significance Level					
26	Data Not Normal at 5% Significance Level											
27												
28	Assuming Normal Distribution											
29	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
30	95% Student's-t UCL	426.4					95% Adjusted-CLT UCL (Chen-1995)	505.3				
31							95% Modified-t UCL (Johnson-1978)	439.6				
32												
33	Gamma GOF Test											
34	A-D Test Statistic	9.761					Anderson-Darling Gamma GOF Test					
35	5% A-D Critical Value	0.781					Data Not Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic	0.504					Kolmogorov-Smirnov Gamma GOF Test					
37	5% K-S Critical Value	0.163					Data Not Gamma Distributed at 5% Significance Level					
38	Data Not Gamma Distributed at 5% Significance Level											
39												
40	Gamma Statistics											
41	k hat (MLE)	0.881					k star (bias corrected MLE)	0.817				
42	Theta hat (MLE)	290.1					Theta star (bias corrected MLE)	312.7				
43	nu hat (MLE)	54.61					nu star (bias corrected)	50.66				
44	MLE Mean (bias corrected)	255.5					MLE Sd (bias corrected)	282.6				
45							Approximate Chi Square Value (0.05)	35.31				
46	Adjusted Level of Significance	0.0413					Adjusted Chi Square Value	34.6				
47												
48	Assuming Gamma Distribution											
49	95% Approximate Gamma UCL (use when n>=50))	366.5					95% Adjusted Gamma UCL (use when n<50)	374				
50												
51	Lognormal GOF Test											
52	Shapiro Wilk Test Statistic	0.379					Shapiro Wilk Lognormal GOF Test					
53	5% Shapiro Wilk Critical Value	0.929					Data Not Lognormal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
54				Lilliefors Test Statistic		0.468	Lilliefors Lognormal GOF Test					
55				5% Lilliefors Critical Value		0.156	Data Not Lognormal at 5% Significance Level					
56	Data Not Lognormal at 5% Significance Level											
57												
58	Lognormal Statistics											
59				Minimum of Logged Data		4.605			Mean of logged Data			4.878
60				Maximum of Logged Data		8.006			SD of logged Data			0.822
61												
62	Assuming Lognormal Distribution											
63				95% H-UCL		257.2			90% Chebyshev (MVUE) UCL			270.8
64				95% Chebyshev (MVUE) UCL		311.3			97.5% Chebyshev (MVUE) UCL			367.4
65				99% Chebyshev (MVUE) UCL		477.6						
66												
67	Nonparametric Distribution Free UCL Statistics											
68	Data do not follow a Discernible Distribution (0.05)											
69												
70	Nonparametric Distribution Free UCLs											
71				95% CLT UCL		421.2			95% Jackknife UCL			426.4
72				95% Standard Bootstrap UCL		417.6			95% Bootstrap-t UCL			706.5
73				95% Hall's Bootstrap UCL		806.9			95% Percentile Bootstrap UCL			438.1
74				95% BCA Bootstrap UCL		507.7						
75				90% Chebyshev(Mean, Sd) UCL		557.7			95% Chebyshev(Mean, Sd) UCL			694.5
76				97.5% Chebyshev(Mean, Sd) UCL		884.5			99% Chebyshev(Mean, Sd) UCL			1258
77												
78	Suggested UCL to Use											
79				95% Chebyshev (Mean, Sd) UCL		694.5						
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	Recommendations are based upon data size, data distribution, and skewness.											
83	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
84	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
85												

1	UCL Statistics for Uncensored Full Data Sets										
2											
3	User Selected Options										
4	Date/Time of Computation	ProUCL 5.122-Aug-19 11:48:58 AM									
5	From File	WorkSheet.xls									
6	Full Precision	OFF									
7	Confidence Coefficient	95%									
8	Number of Bootstrap Operations	2000									
9											
10											
11	C0										
12											
13	General Statistics										
14	Total Number of Observations	23				Number of Distinct Observations	18				
15						Number of Missing Observations	0				
16	Minimum	5				Mean	34.7				
17	Maximum	112				Median	30				
18	SD	22.39				Std. Error of Mean	4.668				
19	Coefficient of Variation	0.645				Skewness	2.128				
20											
21	Normal GOF Test										
22	Shapiro Wilk Test Statistic	0.8				Shapiro Wilk GOF Test					
23	5% Shapiro Wilk Critical Value	0.914				Data Not Normal at 5% Significance Level					
24	Lilliefors Test Statistic	0.226				Lilliefors GOF Test					
25	5% Lilliefors Critical Value	0.18				Data Not Normal at 5% Significance Level					
26	Data Not Normal at 5% Significance Level										
27											
28	Assuming Normal Distribution										
29	95% Normal UCL					95% UCLs (Adjusted for Skewness)					
30	95% Student's-t UCL	42.71				95% Adjusted-CLT UCL (Chen-1995)	44.59				
31						95% Modified-t UCL (Johnson-1978)	43.06				
32											
33	Gamma GOF Test										
34	A-D Test Statistic	0.576				Anderson-Darling Gamma GOF Test					
35	5% A-D Critical Value	0.75				Detected data appear Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic	0.155				Kolmogorov-Smirnov Gamma GOF Test					
37	5% K-S Critical Value	0.183				Detected data appear Gamma Distributed at 5% Significance Level					
38	Detected data appear Gamma Distributed at 5% Significance Level										
39											
40	Gamma Statistics										
41	k hat (MLE)	3.137				k star (bias corrected MLE)	2.757				
42	Theta hat (MLE)	11.06				Theta star (bias corrected MLE)	12.58				
43	nu hat (MLE)	144.3				nu star (bias corrected)	126.8				
44	MLE Mean (bias corrected)	34.7				MLE Sd (bias corrected)	20.9				
45						Approximate Chi Square Value (0.05)	101.8				
46	Adjusted Level of Significance	0.0389				Adjusted Chi Square Value	100.2				
47											
48	Assuming Gamma Distribution										
49	95% Approximate Gamma UCL (use when n>=50)	43.22				95% Adjusted Gamma UCL (use when n<50)	43.92				
50											
51	Lognormal GOF Test										
52	Shapiro Wilk Test Statistic	0.932				Shapiro Wilk Lognormal GOF Test					
53	5% Shapiro Wilk Critical Value	0.914				Data appear Lognormal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
54					Lilliefors Test Statistic	0.167			Lilliefors Lognormal GOF Test			
55					5% Lilliefors Critical Value	0.18			Data appear Lognormal at 5% Significance Level			
56					Data appear Lognormal at 5% Significance Level							
57												
58					Lognormal Statistics							
59					Minimum of Logged Data	1.609				Mean of logged Data		3.379
60					Maximum of Logged Data	4.718				SD of logged Data		0.607
61												
62					Assuming Lognormal Distribution							
63					95% H-UCL	46.13				90% Chebyshev (MVUE) UCL		48.97
64					95% Chebyshev (MVUE) UCL	55.32				97.5% Chebyshev (MVUE) UCL		64.14
65					99% Chebyshev (MVUE) UCL	81.45						
66												
67					Nonparametric Distribution Free UCL Statistics							
68					Data appear to follow a Discernible Distribution at 5% Significance Level							
69												
70					Nonparametric Distribution Free UCLs							
71					95% CLT UCL	42.37				95% Jackknife UCL		42.71
72					95% Standard Bootstrap UCL	42.11				95% Bootstrap-t UCL		47.52
73					95% Hall's Bootstrap UCL	78.12				95% Percentile Bootstrap UCL		42.7
74					95% BCA Bootstrap UCL	45.13						
75					90% Chebyshev(Mean, Sd) UCL	48.7				95% Chebyshev(Mean, Sd) UCL		55.04
76					97.5% Chebyshev(Mean, Sd) UCL	63.85				99% Chebyshev(Mean, Sd) UCL		81.14
77												
78					Suggested UCL to Use							
79					95% Adjusted Gamma UCL	43.92						
80												
81					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
82					Recommendations are based upon data size, data distribution, and skewness.							
83					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
84					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
85												

	A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Uncensored Full Data Sets											
2												
3	User Selected Options											
4	Date/Time of Computation	ProUCL 5.122-Aug-19 11:51:48 AM										
5	From File	WorkSheet_a.xls										
6	Full Precision	OFF										
7	Confidence Coefficient	95%										
8	Number of Bootstrap Operations	2000										
9												
10												
11	C0											
12												
13	General Statistics											
14	Total Number of Observations	23					Number of Distinct Observations	9				
15							Number of Missing Observations	0				
16	Minimum	3					Mean	9.043				
17	Maximum	81					Median	6				
18	SD	15.8					Std. Error of Mean	3.295				
19	Coefficient of Variation	1.748					Skewness	4.68				
20												
21	Normal GOF Test											
22	Shapiro Wilk Test Statistic	0.318					Shapiro Wilk GOF Test					
23	5% Shapiro Wilk Critical Value	0.914					Data Not Normal at 5% Significance Level					
24	Lilliefors Test Statistic	0.432					Lilliefors GOF Test					
25	5% Lilliefors Critical Value	0.18					Data Not Normal at 5% Significance Level					
26	Data Not Normal at 5% Significance Level											
27												
28	Assuming Normal Distribution											
29	95% Normal UCL						95% UCLs (Adjusted for Skewness)					
30	95% Student's-t UCL	14.7					95% Adjusted-CLT UCL (Chen-1995)	17.9				
31							95% Modified-t UCL (Johnson-1978)	15.24				
32												
33	Gamma GOF Test											
34	A-D Test Statistic	3.536					Anderson-Darling Gamma GOF Test					
35	5% A-D Critical Value	0.761					Data Not Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic	0.304					Kolmogorov-Smirnov Gamma GOF Test					
37	5% K-S Critical Value	0.185					Data Not Gamma Distributed at 5% Significance Level					
38	Data Not Gamma Distributed at 5% Significance Level											
39												
40	Gamma Statistics											
41	k hat (MLE)	1.435					k star (bias corrected MLE)	1.277				
42	Theta hat (MLE)	6.301					Theta star (bias corrected MLE)	7.081				
43	nu hat (MLE)	66.02					nu star (bias corrected)	58.75				
44	MLE Mean (bias corrected)	9.043					MLE Sd (bias corrected)	8.003				
45							Approximate Chi Square Value (0.05)	42.12				
46	Adjusted Level of Significance	0.0389					Adjusted Chi Square Value	41.1				
47												
48	Assuming Gamma Distribution											
49	95% Approximate Gamma UCL (use when n>=50))	12.61					95% Adjusted Gamma UCL (use when n<50)	12.93				
50												
51	Lognormal GOF Test											
52	Shapiro Wilk Test Statistic	0.709					Shapiro Wilk Lognormal GOF Test					
53	5% Shapiro Wilk Critical Value	0.914					Data Not Lognormal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
54				Lilliefors Test Statistic		0.203	Lilliefors Lognormal GOF Test					
55				5% Lilliefors Critical Value		0.18	Data Not Lognormal at 5% Significance Level					
56	Data Not Lognormal at 5% Significance Level											
57												
58	Lognormal Statistics											
59				Minimum of Logged Data		1.099				Mean of logged Data		1.815
60				Maximum of Logged Data		4.394				SD of logged Data		0.654
61												
62	Assuming Lognormal Distribution											
63				95% H-UCL		10.22				90% Chebyshev (MVUE) UCL		10.8
64				95% Chebyshev (MVUE) UCL		12.29				97.5% Chebyshev (MVUE) UCL		14.35
65				99% Chebyshev (MVUE) UCL		18.4						
66												
67	Nonparametric Distribution Free UCL Statistics											
68	Data do not follow a Discernible Distribution (0.05)											
69												
70	Nonparametric Distribution Free UCLs											
71				95% CLT UCL		14.46				95% Jackknife UCL		14.7
72				95% Standard Bootstrap UCL		14.47				95% Bootstrap-t UCL		42.84
73				95% Hall's Bootstrap UCL		37.57				95% Percentile Bootstrap UCL		15.43
74				95% BCA Bootstrap UCL		18.78						
75				90% Chebyshev(Mean, Sd) UCL		18.93				95% Chebyshev(Mean, Sd) UCL		23.41
76				97.5% Chebyshev(Mean, Sd) UCL		29.62				99% Chebyshev(Mean, Sd) UCL		41.83
77												
78	Suggested UCL to Use											
79				95% Chebyshev (Mean, Sd) UCL		23.41						
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	Recommendations are based upon data size, data distribution, and skewness.											
83	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
84	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
85												

APPENDIX F LABORATORY RESULTS

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5500 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 6/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Arcadis Australia Pacific Pty Ltd	**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)** Custody Seal Intact? Yes / No / N/A
OFFICE: [illegible]		☐ Non Standard or urgent TAT (List due date):	Free ice / frozen ice bricks present upon receipt? Yes / No / N/A
PROJECT: 10034229.01 -Kent Road	**ALS QUOTE NO.:** ALS (EN-096-16)	**COC SEQUENCE NUMBER (Circle)** COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: [illegible] °C
ORDER NUMBER:		OF: 1 2 3 4 5 6 7	Other comments:
PROJECT MANAGER: Emma Bradbeer	**CONTACT PH:**		
SAMPLER: Colin Biggs	**SAMPLER MOBILE:** 0423369098		
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):** ESDAT		
Email Reports to (will default to PM if no other addresses are listed):			
Email Invoice to (will default to PM if no other addresses are listed):			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME: 12-8-19	DATE/TIME: 13/8/19 1415	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)	S - 16	EA200F	Asbestos ID	Hold		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	TP1@0.0-0.2	10/09/2019	S	Soil Jar	X					
2	TP1@0.6	10/09/2019	S	Soil Jar	X					
3	TP1@0.75	10/09/2019	S	Soil Jar				X		
4	TP1	10/09/2019	S	Soil Bag		X				
5	TP1A	10/09/2019	ACM	ACM Bag			X			
6	TP2@0.2	10/09/2019	S	Soil Jar	X					
7	TP2@0.5	10/09/2019	S	Soil Jar	X					
8	TP2	10/09/2019	S	Soil Bag		X				
9	TP3@0.2	10/09/2019	S	Soil Jar	X					
10	TP3@0.4	10/09/2019	S	Soil Jar	X					
11	TP3	10/09/2019	S	Soil Bag		X				
12	TP3A	10/09/2019	ACM	ACM Bag			X			
				TOTAL	6	3	2	1		

Subcon / Onward Lab / Split WO
Lab / Analysis: Asbestos → Newcastle
Transferred By / Date: QA2 → Envirolab
Received By / Date: _____
Courier / Courier: _____
WO No: _____
Attach by PM / Internal Sheet

Environmental Division Sydney
Work Order Reference
ES1925652

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 Unpres
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; ved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Arcadis Australia Pacific Pty Ltd	TURNAROUND REQUIREMENTS : ☐ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Level 15, 201 George Street, Sydney NSW 2000	(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: 10034229.01 -Kent Road	ALS QUOTE NO.: ALS (EN-096-16)	Free ice / frozen coolants 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: °C
PROJECT MANAGER: Emma Bradbeer CONTACT PH:	OF: 1 2 3 4 5 6 7	Other comments:
SAMPLER: Colin Biggs SAMPLER MOBILE: 0423369098	RELINQUISHED BY:	RECEIVED BY:
COC emailed to ALS? (YES / NO) EDD FORMAT (or default): ESDAT	DATE/TIME: 12.8.19	DATE/TIME: 13/8/19 14:15
Email Reports to (will default to PM if no other addresses are listed):	RELINQUISHED BY:	RECEIVED BY:
Email Invoice to (will default to PM if no other addresses are listed):	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	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)	S - 16	EA200F	Asbestos ID	Hold					Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
13	TP4@0.2	10/09/2019	S	Soil Jar	X								
14	TP4@0.6	10/09/2019	S	Soil Jar	X								
15	TP4	10/09/2019	S	Soil Bag		X							
16	TP4A	10/09/2019	ACM	ACM Bag			X						
17	TP6@0.2	10/09/2019	S	Soil Jar	X								
18	TP6@0.5	10/09/2019	S	Soil Jar	X								
19	QA1	10/09/2019	S	Soil Jar	X								
—	QA2	10/09/2019	S	Soil Bag	X								Please Send to Envirolab
20	TP6	10/09/2019	S	Soil Bag		X							
21	TP7@0.0-0.2	10/09/2019	S	Soil Jar	X								
22	TP7@0.3 TP7@0.1	10/09/2019	S	Soil Jar				X					
23	TP7@0.6	10/09/2019	S	Soil Jar	X								
				TOTAL	8	2	1	1					

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Arcadis Australia Pacific Pty Ltd	**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:		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes / No / N/A
PROJECT: 10034229.01 -Kent Road	**ALS QUOTE NO.:** ALS (EN-096-16)	**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: Emma Bradbeer	**CONTACT PH:**	OF: 1 2 3 4 5 6 7	Other comment:
SAMPLER: Colin Biggs	**SAMPLER MOBILE:** 0423369098	**RELINQUISHED BY:**	**RECEIVED BY:** Sophie/Mo ALS
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):** ESDAT	DATE/TIME: 12/8/19	DATE/TIME: 13/8/19 1415
Email Reports to (will default to PM if no other addresses are listed):		**RELINQUISHED BY:**	**RECEIVED BY:**
Email Invoice to (will default to PM if no other addresses are listed):		DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	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)	S - 16	EA200F	Asbestos ID	Hold						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
24	TP7@0.8	10/09/2019	S	Soil Jar				X						
25	TP7@1.1	10/09/2019	S	Soil Jar				X						
26	TP8@0.0-0.2 TP8@0.0-0.1	10/09/2019	S	Soil Jar	X									
27	TP8@0.2	10/09/2019	S	Soil Jar	X									
28	TP8@0.5	10/09/2019	S	Soil Jar				X						
29	TP8	11/09/2019	S	Soil Bag		X								
														Please Send to Envirolba
				TOTAL	2	1	0	3						

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	: **ES1925652**	Page	: 1 of 25
Client	: **ARCADIS AUSTRALIA PACIFIC PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: EMMA BRADBEER	Contact	: Larissa Burns
Address	: LEVEL 16, 580 GEORGE STREET SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +6138549 9644
Project	: 10034229.01 -Kent Road	Date Samples Received	: 13-Aug-2019 14:15
Order number	:	Date Analysis Commenced	: 14-Aug-2019
C-O-C number	: ----	Issue Date	: 19-Aug-2019 16:36
Sampler	: Colin Biggs		
Site	: ----		
Quote number	: EN-091-18 (Primary Work Only)		
No. of samples received	: 29		
No. of samples analysed	: 24		

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.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Evie Sidarta	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

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

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

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

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- **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.
- EA200N: Asbestos weights and percentages are not covered under the Scope of NATA Accreditation.
  Weights of Asbestos are based on extracted bulk asbestos, fibre bundles, and/or ACM and do not include respirable fibres (if present)
  The Asbestos (Fines and Fibrous) weight is calculated from the extracted Fibrous Asbestos and Asbestos Fines as an equivalent weight of 100% Asbestos
  Percentages for Asbestos content in ACM are based on the 2013 NEPM default values.
  All calculations of percentage Asbestos under this method are approximate and should be used as a guide only.
- 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
- EA200N: ALS laboratory procedures and methods used for the identification and quantitation of asbestos are consistent with AS4964-2004 and the requirements of the 2013 NEPM for Assessment of Site Contamination
- 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)			Client sample ID	TP1@0.0-0.2	TP1@0.6	TP1	TP2@0.2	TP2@0.5
			Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit	ES1925652-001	ES1925652-002	ES1925652-004	ES1925652-006	ES1925652-007
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	13.2	13.4	----	15.5	16.1
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	No	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	----	----	No	----	----
Asbestos Type	1332-21-4	-	--	----	----	-	----	----
Sample weight (dry)	----	0.01	g	----	----	484	----	----
Synthetic Mineral Fibre	----	0.1	g/kg	----	----	No	----	----
Organic Fibre	----	0.1	g/kg	----	----	No	----	----
APPROVED IDENTIFIER:	----	-	--	----	----	A. SMYLIE	----	----
EA200N: Asbestos Quantification (non-NATA)								
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g	----	----	<0.0004	----	----
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	----	----	<0.001	----	----
ø Weight Used for % Calculation	----	0.0001	kg	----	----	0.484	----	----
ø Fibrous Asbestos >7mm	----	0.0004	g	----	----	<0.0004	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	5	6	----	<5	8
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	<1	<1
Chromium	7440-47-3	2	mg/kg	18	15	----	17	28
Copper	7440-50-8	5	mg/kg	28	17	----	16	16
Lead	7439-92-1	5	mg/kg	56	73	----	30	21
Nickel	7440-02-0	2	mg/kg	5	6	----	9	4
Zinc	7440-66-6	5	mg/kg	186	278	----	78	19
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<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
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP1@0.0-0.2	TP1@0.6	TP1	TP2@0.2	TP2@0.5
				Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit		ES1925652-001	ES1925652-002	ES1925652-004	ES1925652-006	ES1925652-007
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	----	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<0.2	----	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	<0.2	----	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	<0.2	----	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	<0.2	----	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP1@0.0-0.2	TP1@0.6	TP1	TP2@0.2	TP2@0.5
				Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit		ES1925652-001	ES1925652-002	ES1925652-004	ES1925652-006	ES1925652-007
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	<0.05	----	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	----	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	----	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	----	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	----	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	----	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	----	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	----	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP1@0.0-0.2	TP1@0.6	TP1	TP2@0.2	TP2@0.5
			Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit	ES1925652-001	ES1925652-002	ES1925652-004	ES1925652-006	ES1925652-007
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	----	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	----	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	120	<100	----	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	----	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	120	<50	----	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	----	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	----	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	----	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	----	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	<1	<1
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	125	108	----	108	110
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	89.6	105	----	79.5	99.4
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	128	116	----	106	123
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	83.7	84.9	----	80.8	84.9
2-Chlorophenol-D4	93951-73-6	0.5	%	89.8	90.1	----	87.2	91.8
2.4.6-Tribromophenol	118-79-6	0.5	%	75.3	72.2	----	70.1	64.3
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	97.8	97.6	----	94.1	99.2
Anthracene-d10	1719-06-8	0.5	%	97.6	99.8	----	95.7	102
4-Terphenyl-d14	1718-51-0	0.5	%	106	106	----	103	108
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	110	124	----	115	114
Toluene-D8	2037-26-5	0.2	%	96.5	109	----	102	100

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP1@0.0-0.2	TP1@0.6	TP1	TP2@0.2	TP2@0.5
				Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit		ES1925652-001	ES1925652-002	ES1925652-004	ES1925652-006	ES1925652-007
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		**98.8**	**109**	**----**	**101**	**102**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP2	TP3@0.2	TP3@0.4	TP3	TP4@0.2
			Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit	ES1925652-008	ES1925652-009	ES1925652-010	ES1925652-011	ES1925652-013
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	18.9	16.9	----	16.6
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	423	----	----	486	----
Synthetic Mineral Fibre	----	0.1	g/kg	No	----	----	No	----
Organic Fibre	----	0.1	g/kg	No	----	----	No	----
APPROVED IDENTIFIER:	----	-	--	A. SMYLIE	----	----	A. SMYLIE	----
EA200N: Asbestos Quantification (non-NATA)								
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g	<0.0004	----	----	<0.0004	----
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	<0.001	----	----	<0.001	----
ø Weight Used for % Calculation	----	0.0001	kg	0.423	----	----	0.486	----
ø Fibrous Asbestos >7mm	----	0.0004	g	<0.0004	----	----	<0.0004	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	<5	<5	----	6
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	----	<1
Chromium	7440-47-3	2	mg/kg	----	16	23	----	17
Copper	7440-50-8	5	mg/kg	----	8	6	----	20
Lead	7439-92-1	5	mg/kg	----	32	18	----	112
Nickel	7440-02-0	2	mg/kg	----	5	3	----	6
Zinc	7440-66-6	5	mg/kg	----	35	23	----	215
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	----	<0.1
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	<0.1	<0.1	----	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	<0.05	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	<0.05	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP2	TP3@0.2	TP3@0.4	TP3	TP4@0.2
				Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit		ES1925652-008	ES1925652-009	ES1925652-010	ES1925652-011	ES1925652-013
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Aldrin	309-00-2	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Endrin	72-20-8	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		----	<0.2	<0.2	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		----	<0.2	<0.2	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		----	<0.2	<0.2	----	<0.2
Dimethoate	60-51-5	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Diazinon	333-41-5	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		----	<0.2	<0.2	----	<0.2
Malathion	121-75-5	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Fenthion	55-38-9	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Parathion	56-38-2	0.2	mg/kg		----	<0.2	<0.2	----	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	<0.05	<0.05	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP2	TP3@0.2	TP3@0.4	TP3	TP4@0.2
				Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit		ES1925652-008	ES1925652-009	ES1925652-010	ES1925652-011	ES1925652-013
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Fenamiphos	22224-92-6	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	<0.05
Ethion	563-12-2	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	----	<0.05	<0.05	<0.05	----	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	<0.5	<0.5	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	**0.6**	**0.6**	**0.6**	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	**1.2**	**1.2**	**1.2**	----	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	----	<10	<10	<10	----	<10
C10 - C14 Fraction	----	50	mg/kg	----	<50	<50	<50	----	<50
C15 - C28 Fraction	----	100	mg/kg	----	<100	<100	<100	----	<100
C29 - C36 Fraction	----	100	mg/kg	----	<100	<100	<100	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	<50	<50	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	<10	<10	----	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP2	TP3@0.2	TP3@0.4	TP3	TP4@0.2
			Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit	ES1925652-008	ES1925652-009	ES1925652-010	ES1925652-011	ES1925652-013
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	<10	----	<10
>C10 - C16 Fraction	----	50	mg/kg	----	<50	<50	----	<50
>C16 - C34 Fraction	----	100	mg/kg	----	<100	<100	----	<100
>C34 - C40 Fraction	----	100	mg/kg	----	<100	<100	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	<50	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	<50	----	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	<0.2	----	<0.2
Toluene	108-88-3	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	<0.2	----	<0.2
^ Total Xylenes	----	0.5	mg/kg	----	<0.5	<0.5	----	<0.5
Naphthalene	91-20-3	1	mg/kg	----	<1	<1	----	<1
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	**107**	**119**	----	**120**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	**92.9**	**113**	----	**94.5**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	**93.6**	**80.8**	----	**121**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	**84.6**	**85.0**	----	**81.4**
2-Chlorophenol-D4	93951-73-6	0.5	%	----	**89.5**	**90.2**	----	**86.5**
2.4.6-Tribromophenol	118-79-6	0.5	%	----	**68.1**	**64.5**	----	**64.0**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	**96.6**	**97.2**	----	**93.5**
Anthracene-d10	1719-06-8	0.5	%	----	**98.3**	**101**	----	**96.2**
4-Terphenyl-d14	1718-51-0	0.5	%	----	**105**	**106**	----	**100**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	**106**	**111**	----	**119**
Toluene-D8	2037-26-5	0.2	%	----	**90.8**	**95.6**	----	**106**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP2	TP3@0.2	TP3@0.4	TP3	TP4@0.2
				Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit		ES1925652-008	ES1925652-009	ES1925652-010	ES1925652-011	ES1925652-013
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		----	**94.1**	**99.3**	----	**104**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP4@0.6	TP4	TP6@0.2	TP6@0.5	QA1
			Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit	ES1925652-014	ES1925652-015	ES1925652-017	ES1925652-018	ES1925652-019
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	13.4	----	13.0	12.4	13.3
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	No	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	----	No	----	----	----
Asbestos Type	1332-21-4	-	--	----	-	----	----	----
Sample weight (dry)	----	0.01	g	----	543	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg	----	No	----	----	----
Organic Fibre	----	0.1	g/kg	----	No	----	----	----
APPROVED IDENTIFIER:	----	-	--	----	A. SMYLIE	----	----	----
EA200N: Asbestos Quantification (non-NATA)								
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g	----	<0.0004	----	----	----
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	----	<0.001	----	----	----
ø Weight Used for % Calculation	----	0.0001	kg	----	0.543	----	----	----
ø Fibrous Asbestos >7mm	----	0.0004	g	----	<0.0004	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	6	----	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	----	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	20	----	15	17	13
Copper	7440-50-8	5	mg/kg	9	----	8	6	7
Lead	7439-92-1	5	mg/kg	20	----	25	18	19
Nickel	7440-02-0	2	mg/kg	4	----	4	3	4
Zinc	7440-66-6	5	mg/kg	15	----	27	8	18
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<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
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP4@0.6	TP4	TP6@0.2	TP6@0.5	QA1
				Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit		ES1925652-014	ES1925652-015	ES1925652-017	ES1925652-018	ES1925652-019
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP4@0.6	TP4	TP6@0.2	TP6@0.5	QA1
				Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit		ES1925652-014	ES1925652-015	ES1925652-017	ES1925652-018	ES1925652-019
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	----	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	----	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	----	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	<10	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP4@0.6	TP4	TP6@0.2	TP6@0.5	QA1
			Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit	ES1925652-014	ES1925652-015	ES1925652-017	ES1925652-018	ES1925652-019
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	----	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	----	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	----	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	----	<1	<1	<1
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	**113**	----	**123**	**108**	**118**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**97.2**	----	**128**	**111**	**109**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**88.1**	----	**100**	**90.3**	**102**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**81.4**	----	**96.6**	**83.9**	**82.4**
2-Chlorophenol-D4	93951-73-6	0.5	%	**86.7**	----	**103**	**89.8**	**88.0**
2.4.6-Tribromophenol	118-79-6	0.5	%	**58.5**	----	**73.8**	**58.8**	**59.1**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**93.9**	----	**110**	**95.7**	**94.5**
Anthracene-d10	1719-06-8	0.5	%	**96.1**	----	**113**	**99.1**	**97.2**
4-Terphenyl-d14	1718-51-0	0.5	%	**102**	----	**122**	**106**	**104**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**98.6**	----	**115**	**112**	**112**
Toluene-D8	2037-26-5	0.2	%	**79.2**	----	**100**	**101**	**94.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP4@0.6	TP4	TP6@0.2	TP6@0.5	QA1
				Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit		ES1925652-014	ES1925652-015	ES1925652-017	ES1925652-018	ES1925652-019
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		**86.0**	**----**	**102**	**106**	**98.5**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP6	TP7@0.0-0.2	TP7@0.6	TP8@0.0-0.2 TP8@0.0-0.1	TP8@0.2
			Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit	ES1925652-020	ES1925652-021	ES1925652-023	ES1925652-026	ES1925652-027
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	4.7	22.2	14.9	16.2
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	No	----	----	----	----
Asbestos Type	1332-21-4	-	--	-	----	----	----	----
Sample weight (dry)	----	0.01	g	611	----	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg	No	----	----	----	----
Organic Fibre	----	0.1	g/kg	No	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	A. SMYLIE	----	----	----	----
EA200N: Asbestos Quantification (non-NATA)								
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g	<0.0004	----	----	----	----
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	<0.001	----	----	----	----
ø Weight Used for % Calculation	----	0.0001	kg	0.611	----	----	----	----
ø Fibrous Asbestos >7mm	----	0.0004	g	<0.0004	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	<5	6	6	7
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	----	6	28	18	22
Copper	7440-50-8	5	mg/kg	----	113	9	44	12
Lead	7439-92-1	5	mg/kg	----	<5	19	48	33
Nickel	7440-02-0	2	mg/kg	----	81	5	6	5
Zinc	7440-66-6	5	mg/kg	----	32	12	71	36
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<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
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP6	TP7@0.0-0.2	TP7@0.6	TP8@0.0-0.2 TP8@0.0-0.1	TP8@0.2
				Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit		ES1925652-020	ES1925652-021	ES1925652-023	ES1925652-026	ES1925652-027
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Aldrin	309-00-2	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP6	TP7@0.0-0.2	TP7@0.6	TP8@0.0-0.2 TP8@0.0-0.1	TP8@0.2
				Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit		ES1925652-020	ES1925652-021	ES1925652-023	ES1925652-026	ES1925652-027
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	----	<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	<0.5	<0.5	<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									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP6	TP7@0.0-0.2	TP7@0.6	TP8@0.0-0.2 TP8@0.0-0.1	TP8@0.2
				Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit		ES1925652-020	ES1925652-021	ES1925652-023	ES1925652-026	ES1925652-027
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		----	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		----	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		----	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		----	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		----	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		----	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		----	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		----	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		----	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	**108**	**110**	**106**	**107**
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	**104**	**92.8**	**91.5**	**113**
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	**74.4**	**71.6**	**76.1**	**84.8**
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	**80.1**	**79.6**	**83.1**	**75.6**
2-Chlorophenol-D4	93951-73-6	0.5	%		----	**86.3**	**85.8**	**88.1**	**81.9**
2.4.6-Tribromophenol	118-79-6	0.5	%		----	**53.2**	**53.0**	**59.1**	**56.9**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	**94.1**	**93.0**	**94.2**	**88.8**
Anthracene-d10	1719-06-8	0.5	%		----	**97.5**	**96.5**	**97.8**	**92.2**
4-Terphenyl-d14	1718-51-0	0.5	%		----	**102**	**103**	**104**	**97.4**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	**123**	**77.4**	**106**	**110**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP6	TP7@0.0-0.2	TP7@0.6	TP8@0.0-0.2 TP8@0.0-0.1	TP8@0.2
				Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00
Compound	CAS Number	LOR	Unit		ES1925652-020	ES1925652-021	ES1925652-023	ES1925652-026	ES1925652-027
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	0.2	%		**----**	**106**	**85.4**	**91.0**	**98.1**
4-Bromofluorobenzene	460-00-4	0.2	%		**----**	**108**	**95.2**	**94.4**	**99.8**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP8	----	----	----	----
			Client sampling date / time	10-Aug-2019 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1925652-029	--------	--------	--------	--------
				Result	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	----	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	**No**	----	----	----	----
Asbestos Type	1332-21-4	-	--	**-**	----	----	----	----
Sample weight (dry)	----	0.01	g	**500**	----	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg	**No**	----	----	----	----
Organic Fibre	----	0.1	g/kg	**No**	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	**A. SMYLIE**	----	----	----	----
EA200N: Asbestos Quantification (non-NATA)								
ø **Asbestos (Fines and Fibrous <7mm)**	1332-21-4	0.0004	g	<0.0004	----	----	----	----
ø **Asbestos (Fines and Fibrous FA+AF)**	----	0.001	% (w/w)	<0.001	----	----	----	----
ø **Weight Used for % Calculation**	----	0.0001	kg	**0.500**	----	----	----	----
ø **Fibrous Asbestos >7mm**	----	0.0004	g	<0.0004	----	----	----	----

Analytical Results

Sub-Matrix: SOLID (Matrix: SOLID)				Client sample ID	TP1A	TP3A	TP4A	----	----
				Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	10-Aug-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		ES1925652-005	ES1925652-012	ES1925652-016	--------	--------
					Result	Result	Result	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos Detected	1332-21-4	0.1	g/kg		**Yes**	**Yes**	**Yes**	**----**	**----**
Asbestos Type	1332-21-4	-	--		**Ch + Cr**	**Ch**	**Ch + Am + Cr**	**----**	**----**
Asbestos (Trace)	1332-21-4	5	Fibres		**N/A**	**N/A**	**N/A**	**----**	**----**
Sample weight (dry)	----	0.01	g		**66.5**	**8.38**	**23.3**	**----**	**----**
Synthetic Mineral Fibre	----	0.1	g/kg		**No**	**No**	**No**	**----**	**----**
Organic Fibre	----	0.1	g/kg		**No**	**No**	**Yes**	**----**	**----**
APPROVED IDENTIFIER:	----	-	--		**A .SMYLIE**	**A .SMYLIE**	**A .SMYLIE**	**----**	**----**

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	TP1 - 10-Aug-2019 00:00	Mid brown soil.
EA200: Description	TP2 - 10-Aug-2019 00:00	Mid brown soil.
EA200: Description	TP3 - 10-Aug-2019 00:00	Mid brown soil.
EA200: Description	TP4 - 10-Aug-2019 00:00	Mid brown soil.
EA200: Description	TP6 - 10-Aug-2019 00:00	Mid brown soil.
EA200: Description	TP8 - 10-Aug-2019 00:00	Mid brown soil.

Sub-Matrix: **SOLID**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	TP1A - 10-Aug-2019 00:00	Several pieces of asbestos cement sheeting approximately 125x70x5mm.
EA200: Description	TP3A - 10-Aug-2019 00:00	One piece of asbestos cement sheeting approximately 70x30x5mm.
EA200: Description	TP4A - 10-Aug-2019 00:00	Three pieces of asbestos cement sheeting approximately 40x25x5mm.

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1925652**	Page	: 1 of 12
Client	: **ARCADIS AUSTRALIA PACIFIC PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: EMMA BRADBEER	Contact	: Larissa Burns
Address	: LEVEL 16, 580 GEORGE STREET SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +6138549 9644
Project	: 10034229.01 -Kent Road	Date Samples Received	: 13-Aug-2019
Order number	:	Date Analysis Commenced	: 14-Aug-2019
C-O-C number	: ----	Issue Date	: 19-Aug-2019
Sampler	: Colin Biggs		
Site	: ----		
Quote number	: EN-091-18 (Primary Work Only)		
No. of samples received	: 29		
No. of samples analysed	: 24		

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Evie Sidarta	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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: 2524114)									
ES1925373-001	Anonymous	EG005T: Chromium	7440-47-3	2	mg/kg	102	100	2.09	0% - 20%
ES1925373-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	6	6	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	11	13	17.5	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	14	14	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	40	42	4.72	No Limit
ES1925652-007	TP2@0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	28	28	0.00	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	4	3	32.9	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	7	13.3	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	16	15	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	21	21	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	19	13	37.3	No Limit
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2524116)									
ES1925652-026	TP8@0.0-0.2 TP8@0.0-0.1	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	20	7.94	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	6	6	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	6	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	44	58	28.5	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	48	47	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	71	68	3.40	0% - 50%
EW1903534-009	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	17	13	26.6	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	3	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: 2524116) - continued									
EW1903534-009	Anonymous	EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	33	20	47.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	5	26.5	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	146	154	5.26	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2524118)									
ES1925373-003	Anonymous	EA055: Moisture Content	----	0.1	%	6.3	6.9	9.49	No Limit
ES1925652-013	TP4@0.2	EA055: Moisture Content	----	0.1	%	16.6	15.4	7.56	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2524119)									
EW1903534-001	Anonymous	EA055: Moisture Content	----	0.1	%	5.3	5.0	5.13	No Limit
EW1903534-012	Anonymous	EA055: Moisture Content	----	0.1	%	9.3	8.5	8.60	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2524115)									
ES1925373-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1925652-007	TP2@0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2524117)									
ES1925652-026	TP8@0.0-0.2 TP8@0.0-0.1	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EW1903534-009	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 2523166)									
ES1925652-001	TP1@0.0-0.2	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1925652-019	QA1	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2523165)									
ES1925652-001	TP1@0.0-0.2	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

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 (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2523165) - continued									
ES1925652-001	TP1@0.0-0.2	EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
ES1925652-019	QA1	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 2523165)									
ES1925652-001	TP1@0.0-0.2	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

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 (%)*
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 2523165) - continued									
ES1925652-001	TP1@0.0-0.2	EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
ES1925652-019	QA1	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2523164)									
ES1925652-001	TP1@0.0-0.2	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

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: 2523164) - continued									
ES1925652-001	TP1@0.0-0.2	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
ES1925652-019	QA1	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2523163)									
ES1925652-001	TP1@0.0-0.2	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
ES1925652-019	QA1	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: 2523518)									
ES1925652-001	TP1@0.0-0.2	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1925652-018	TP6@0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2523163)									
ES1925652-001	TP1@0.0-0.2	EP071: >C16 - C34 Fraction	----	100	mg/kg	120	120	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
ES1925652-019	QA1	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

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 (%)*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2523518)									
ES1925652-001	TP1@0.0-0.2	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1925652-018	TP6@0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 2523518)									
ES1925652-001	TP1@0.0-0.2	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
ES1925652-018	TP6@0.5	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2524114)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	95.1	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	98.0	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	89.3	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	95.3	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	96.7	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	100	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	103	80	122
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2524116)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	96.5	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	97.7	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	89.1	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	95.2	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	97.2	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	100	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	104	80	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2524115)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	82.4	70	105
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2524117)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	79.3	70	105
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2523166)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	105	62	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 2523165)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	90.8	69	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	95.4	65	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	95.5	67	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	93.3	68	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	102	65	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	89.5	67	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	96.5	69	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	101	62	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	94.6	63	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	97.1	66	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	96.2	64	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	82.9	66	116

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
EP068A: Organochlorine Pesticides (OC) (QCLot: 2523165) - continued								
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	96.7	67	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	85.2	67	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	89.9	69	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	90.0	69	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	82.5	56	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.8	62	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	91.4	66	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	93.2	64	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	80.8	54	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 2523165)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	92.5	59	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	78.1	62	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	80.7	54	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	82.6	67	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	95.4	70	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	90.2	72	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	79.0	68	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	82.8	68	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.5	69	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	90.9	76	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	80.7	64	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	91.9	70	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	77.4	69	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	91.7	66	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	76.4	68	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	94.1	62	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	80.7	68	120
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	84.5	65	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	61.9	41	123
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2523164)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	102	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	104	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	101	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	100	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	102	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	104	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	104	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	103	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	94.5	69	123

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2523164) - continued								
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	96.2	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	92.3	68	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	102	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	98.8	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	92.2	61	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	91.6	62	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	86.7	63	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2523163)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	101	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	103	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	93.4	71	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2523518)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	87.6	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2523163)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	98.5	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	102	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	85.2	63	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2523518)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	88.1	68	128
EP080: BTEXN (QCLot: 2523518)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	96.1	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	92.6	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	89.6	65	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	91.3	66	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	90.8	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	93.8	63	119

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2524114)							
ES1925373-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	80.6	70	130

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: 2524114) - continued							
ES1925373-001	Anonymous	EG005T: Cadmium	7440-43-9	50 mg/kg	96.1	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	114	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	96.3	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	94.6	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	98.2	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	100	70	130
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2524116)							
ES1925652-026	TP8@0.0-0.2 TP8@0.0-0.1	EG005T: Arsenic	7440-38-2	50 mg/kg	87.0	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.6	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	98.3	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	87.8	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	95.3	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	97.4	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	97.9	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2524115)							
ES1925373-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	105	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2524117)							
ES1925652-026	TP8@0.0-0.2 TP8@0.0-0.1	EG035T: Mercury	7439-97-6	5 mg/kg	99.5	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2523166)							
ES1925652-001	TP1@0.0-0.2	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	117	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 2523165)							
ES1925652-001	TP1@0.0-0.2	EP068: gamma-BHC	58-89-9	0.5 mg/kg	86.3	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	87.1	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	114	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	105	70	130
		EP068: Endrin	72-20-8	2 mg/kg	92.0	70	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	89.5	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 2523165)							
ES1925652-001	TP1@0.0-0.2	EP068: Diazinon	333-41-5	0.5 mg/kg	100	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	103	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	88.2	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	95.4	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	78.6	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2523164)							
ES1925652-001	TP1@0.0-0.2	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	100	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	105	70	130

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: 2523163)							
ES1925652-001	TP1@0.0-0.2	EP071: C10 - C14 Fraction	----	523 mg/kg	97.3	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	96.9	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	112	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2523518)							
ES1925652-001	TP1@0.0-0.2	EP080: C6 - C9 Fraction	----	32.5 mg/kg	79.6	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2523163)							
ES1925652-001	TP1@0.0-0.2	EP071: >C10 - C16 Fraction	----	860 mg/kg	107	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	121	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	105	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2523518)							
ES1925652-001	TP1@0.0-0.2	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	79.1	70	130
EP080: BTEXN (QCLot: 2523518)							
ES1925652-001	TP1@0.0-0.2	EP080: Benzene	71-43-2	2.5 mg/kg	77.8	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	79.4	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	81.5	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	81.8	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	83.1	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	79.7	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1925652**	Page	: 1 of 8
Client	: **ARCADIS AUSTRALIA PACIFIC PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: EMMA BRADBEER	Telephone	: +6138549 9644
Project	: 10034229.01 -Kent Road	Date Samples Received	: 13-Aug-2019
Site	: ----	Issue Date	: 19-Aug-2019
Sampler	: Colin Biggs	No. of samples received	: 29
Order number	:	No. of samples analysed	: 24

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055)								
TP1@0.0-0.2,	TP1@0.6,	**10-Aug-2019**	**----**	----	----	**14-Aug-2019**	24-Aug-2019	✓
TP2@0.2,	TP2@0.5,							
TP3@0.2,	TP3@0.4,							
TP4@0.2,	TP4@0.6,							
TP6@0.2,	TP6@0.5,							
QA1,	TP7@0.0-0.2,							
TP7@0.6,	TP8@0.0-0.2 - TP8@0.0-0.1,							
TP8@0.2								
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag: Separate bag received (EA200)								
TP1,	TP2,	**10-Aug-2019**	**----**	----	----	**15-Aug-2019**	06-Feb-2020	✓
TP3,	TP4,							
TP6,	TP8							
EA200N: Asbestos Quantification (non-NATA)								
Snap Lock Bag: Separate bag received (EA200N)								
TP1,	TP2,	**10-Aug-2019**	**----**	----	----	**15-Aug-2019**	06-Feb-2020	✓
TP3,	TP4,							
TP6,	TP8							
EG005(ED093)T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
TP1@0.0-0.2,	TP1@0.6,	**10-Aug-2019**	**14-Aug-2019**	06-Feb-2020	✓	**14-Aug-2019**	06-Feb-2020	✓
TP2@0.2,	TP2@0.5,							
TP3@0.2,	TP3@0.4,							
TP4@0.2,	TP4@0.6,							
TP6@0.2,	TP6@0.5,							
QA1,	TP7@0.0-0.2,							
TP7@0.6,	TP8@0.0-0.2 - TP8@0.0-0.1,							
TP8@0.2								

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
TP1@0.0-0.2, TP1@0.6, TP2@0.2, TP2@0.5, TP3@0.2, TP3@0.4, TP4@0.2, TP4@0.6, TP6@0.2, TP6@0.5, QA1, TP7@0.0-0.2, TP7@0.6, TP8@0.0-0.2 - TP8@0.0-0.1, TP8@0.2	**10-Aug-2019**	**14-Aug-2019**	07-Sep-2019	✓	**15-Aug-2019**	07-Sep-2019	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066)							
TP1@0.0-0.2, TP1@0.6, TP2@0.2, TP2@0.5, TP3@0.2, TP3@0.4, TP4@0.2, TP4@0.6, TP6@0.2, TP6@0.5, QA1, TP7@0.0-0.2, TP7@0.6, TP8@0.0-0.2 - TP8@0.0-0.1, TP8@0.2	**10-Aug-2019**	**14-Aug-2019**	24-Aug-2019	✓	**16-Aug-2019**	23-Sep-2019	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
TP1@0.0-0.2, TP1@0.6, TP2@0.2, TP2@0.5, TP3@0.2, TP3@0.4, TP4@0.2, TP4@0.6, TP6@0.2, TP6@0.5, QA1, TP7@0.0-0.2, TP7@0.6, TP8@0.0-0.2 - TP8@0.0-0.1, TP8@0.2	**10-Aug-2019**	**14-Aug-2019**	24-Aug-2019	✓	**16-Aug-2019**	23-Sep-2019	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068)							
TP1@0.0-0.2, TP1@0.6, TP2@0.2, TP2@0.5, TP3@0.2, TP3@0.4, TP4@0.2, TP4@0.6, TP6@0.2, TP6@0.5, QA1, TP7@0.0-0.2, TP7@0.6, TP8@0.0-0.2 - TP8@0.0-0.1, TP8@0.2	**10-Aug-2019**	**14-Aug-2019**	24-Aug-2019	✓	**16-Aug-2019**	23-Sep-2019	✓

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))								
TP1@0.0-0.2,	TP1@0.6,	**10-Aug-2019**	**14-Aug-2019**	24-Aug-2019	✓	**16-Aug-2019**	23-Sep-2019	✓
TP2@0.2,	TP2@0.5,							
TP3@0.2,	TP3@0.4,							
TP4@0.2,	TP4@0.6,							
TP6@0.2,	TP6@0.5,							
QA1,	TP7@0.0-0.2,							
TP7@0.6,	TP8@0.0-0.2 - TP8@0.0-0.1,							
TP8@0.2								
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
TP1@0.0-0.2,	TP1@0.6,	**10-Aug-2019**	**14-Aug-2019**	24-Aug-2019	✓	**15-Aug-2019**	24-Aug-2019	✓
TP2@0.2,	TP2@0.5,							
TP3@0.2,	TP3@0.4,							
TP4@0.2,	TP4@0.6,							
TP6@0.2,	TP6@0.5,							
QA1,	TP7@0.0-0.2,							
TP7@0.6,	TP8@0.0-0.2 - TP8@0.0-0.1,							
TP8@0.2								
Soil Glass Jar - Unpreserved (EP071)								
TP1@0.0-0.2,	TP1@0.6,	**10-Aug-2019**	**14-Aug-2019**	24-Aug-2019	✓	**16-Aug-2019**	23-Sep-2019	✓
TP2@0.2,	TP2@0.5,							
TP3@0.2,	TP3@0.4,							
TP4@0.2,	TP4@0.6,							
TP6@0.2,	TP6@0.5,							
QA1,	TP7@0.0-0.2,							
TP7@0.6,	TP8@0.0-0.2 - TP8@0.0-0.1,							
TP8@0.2								

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)							
TP1@0.0-0.2, TP1@0.6, TP2@0.2, TP2@0.5, TP3@0.2, TP3@0.4, TP4@0.2, TP4@0.6, TP6@0.2, TP6@0.5, QA1, TP7@0.0-0.2, TP7@0.6, TP8@0.0-0.2 - TP8@0.0-0.1, TP8@0.2	**10-Aug-2019**	**14-Aug-2019**	24-Aug-2019	✓	**15-Aug-2019**	24-Aug-2019	✓
Soil Glass Jar - Unpreserved (EP071)							
TP1@0.0-0.2, TP1@0.6, TP2@0.2, TP2@0.5, TP3@0.2, TP3@0.4, TP4@0.2, TP4@0.6, TP6@0.2, TP6@0.5, QA1, TP7@0.0-0.2, TP7@0.6, TP8@0.0-0.2 - TP8@0.0-0.1, TP8@0.2	**10-Aug-2019**	**14-Aug-2019**	24-Aug-2019	✓	**16-Aug-2019**	23-Sep-2019	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
TP1@0.0-0.2, TP1@0.6, TP2@0.2, TP2@0.5, TP3@0.2, TP3@0.4, TP4@0.2, TP4@0.6, TP6@0.2, TP6@0.5, QA1, TP7@0.0-0.2, TP7@0.6, TP8@0.0-0.2 - TP8@0.0-0.1, TP8@0.2	**10-Aug-2019**	**14-Aug-2019**	24-Aug-2019	✓	**15-Aug-2019**	24-Aug-2019	✓

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)							
TP1A, TP3A, TP4A	**10-Aug-2019**	**----**	----	----	**15-Aug-2019**	06-Feb-2020	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	5	40	**12.50**	**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	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	17	**5.88**	**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)							
PAH/Phenols (SIM)	EP075(SIM)	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	17	**5.88**	**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)							
PAH/Phenols (SIM)	EP075(SIM)	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	17	**5.88**	**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 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Asbestos Classification and Quantitation per NEPM 2013	* EA200N	SOIL	Asbestos Classification and Quantitation per NEPM 2013 with Confirmation of Identification by AS 4964 - 2004 Gravimetric determination of Asbestos Containing Material, Fibrous Asbestos, Asbestos Fines and sample weight and calculation of percentage concentrations per NEPM protocols. Asbestos (Fines and Fibrous FA+AF) is reported as the equivalent weight in the sample received after accounting for sub-sampling (where applicable for the <7mm and/or <2mm fractions).
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 (2013) 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 (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.
Asbestos Identification in Bulk Solids	EA200	SOLID	In house: Referenced to AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining

Preparation Methods	Method	Matrix	Method Descriptions

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)
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.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **ES1926663**		
Client	: **ARCADIS AUSTRALIA PACIFIC PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: EMMA BRADBEER	Contact	: Larissa Burns
Address	: LEVEL 16, 580 GEORGE STREET SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: emma.bradbeer@arcadis.com	E-mail	: Larissa.burns@alsglobal.com
Telephone	: ----	Telephone	: +6138549 9644
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 10034229.01 -Kent Road	Page	: 1 of 2
Order number	: ----	Quote number	: EM2018HYDCON0011 (EN-091-18 (Primary Work Only))
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: Colin Biggs		

Dates

Date Samples Received	: 21-Aug-2019 12:40	Issue Date	: 21-Aug-2019
Client Requested Due Date	: 27-Aug-2019	Scheduled Reporting Date	: **27-Aug-2019**

Delivery Details

Mode of Delivery	: Samples On Hand	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 4.1'C
Receipt Detail	:	No. of samples received / analysed	: 2 / 2

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Rebatch of ES1925652.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

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

Matrix: **SOIL**

Laboratory sample ID	*Client sampling date / time*	*Client sample ID*	SOIL - EG005C Leachable Metals by ICPAES	SOIL - EN33a TCLP Leachate
ES1926663-001	10-Aug-2019 00:00	TP4@0.2	✓	✓
ES1926663-002	10-Aug-2019 00:00	TP7@0.0-0.2	✓	✓

Proactive Holding Time Report

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

Requested Deliverables

Arcadis Account Payable		
- A4 - AU Tax Invoice (INV)	Email	AU.Accounts.Payable@arcadis.com
COLIN BIGGS		
- *AU Certificate of Analysis - NATA (COA)	Email	colin.biggs@arcadis.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	colin.biggs@arcadis.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	colin.biggs@arcadis.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	colin.biggs@arcadis.com
- A4 - AU Tax Invoice (INV)	Email	colin.biggs@arcadis.com
- Chain of Custody (CoC) (COC)	Email	colin.biggs@arcadis.com
- EDI Format - ENMRG (ENMRG)	Email	colin.biggs@arcadis.com
- EDI Format - ESDAT (ESDAT)	Email	colin.biggs@arcadis.com
EMMA BRADBEER		
- *AU Certificate of Analysis - NATA (COA)	Email	emma.bradbeer@arcadis.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	emma.bradbeer@arcadis.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	emma.bradbeer@arcadis.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	emma.bradbeer@arcadis.com
- A4 - AU Tax Invoice (INV)	Email	emma.bradbeer@arcadis.com
- Chain of Custody (CoC) (COC)	Email	emma.bradbeer@arcadis.com
- EDI Format - ENMRG (ENMRG)	Email	emma.bradbeer@arcadis.com
- EDI Format - ESDAT (ESDAT)	Email	emma.bradbeer@arcadis.com

Vishal
21/08/19
1240PM

Vishal Patel

From: Alice Carney
Sent: Wednesday, 21 August 2019 12:39 PM
To: Vishal Patel
Subject: rebatch ES1925652

Hey Vishal,

Could you arrange this rebatch?

Sample #13 TCLP for lead and samples #21 TCLP for nickel on a standard TAT.
(1) (2)
Please send work order number when complete.

Best regards,

Alice Carney

Client Services Officer, Environmental Sydney

T +61 2 8784 8555
D +61 2 8784 8504
F +61 2 8784 8500
Alice.carney@alsglobal.com
277-289 Woodpark Road
Smithfield NSW 2164 AUSTRALIA

Environmental Division Sydney
Work Order Reference
ES1926663

Telephone : +61-2-8784 8555

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From: Biggs, Colin [mailto:Colin.Biggs@arcadis.com]
Sent: Wednesday, 21 August 2019 12:34 PM
To: ALSEnviro Sydney <ALSEnviro.Sydney@ALSGlobal.com>; ALSEnviro Australia <alsenviro.australia@ALSGlobal.com>
Cc: Bradbeer, Emma <Emma.Bradbeer@arcadis.com>; Mathema, Pragya <Pragya.Mathema@arcadis.com>
Subject: [EXTERNAL] - TCLP Sampling required ES1925652

CHAIN OF CUSTODY

ALS Environmental — ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Arcadis Australia Pacific Pty Ltd	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):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Level 19, 580 George Street, Sydney NSW 2000		Custody Seal Intact? Yes / No / N/A
PROJECT: 10034229.01 -Kent Road	ALS QUOTE NO.: ALS (EN-096-16)	Free ice / frozen ice bricks present upon receipt? Yes / No / N/A
ORDER NUMBER:		Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Emma Bradbeer	CONTACT PH:	Other comment:
SAMPLER: Colin Biggs	SAMPLER MOBILE: 0423369098	
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default): ESDAT	
Email Reports to (will default to PM if no other addresses are listed):		
Email Invoice to (will default to PM if no other addresses are listed):		

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

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME: 12.8.19	DATE/TIME: 13/8/19 14:57	DATE/TIME:	DATE/TIME: 140819 14:40

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)	S - 16	EA200F	Asbestos ID	Hold		
13	TP4@0.2	10/09/2019	S	Soil Jar	X					
14	TP4@0.6	10/09/2019	S	Soil Jar	X					
15	TP4	10/09/2019	S	Soil Bag		X				
16	TP4A	10/09/2019	ACM	ACM Bag			X			
17	TP6@0.2	10/09/2019	S	Soil Jar	X					
18	TP6@0.5	10/09/2019	S	Soil Jar	X					
19	QA1	10/09/2019	S	Soil Jar	X					
10	QA2	10/09/2019	S	Soil Bag	X					Please Send to Envirolba
20	TP6	10/09/2019	S	Soil Bag		X				
21	TP7@0.0-0.2	10/09/2019	S	Soil Jar	X					
22	TP7@0.3	10/09/2019	S	Soil Jar				X		
23	TP7@0.6	10/09/2019	S	Soil Jar	X					
				TOTAL	8	2	1	1		

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

Job No: 223884

Date Received: 140819
Time Received: 1440
Received by: EMS
Temp: (Cool)/Ambient
Cooling: (Ice)/Icepack
Security: Intact/Broken/None

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.

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

CERTIFICATE OF ANALYSIS 223884

Client Details

Client	Arcadis Australia Pacific Pty Ltd
Attention	Colin Biggs, Emma Bradbeer
Address	Level 16, 580 George St, Sydney, NSW, 2000

Sample Details

Your Reference	**10034229.01, Kent Road**
Number of Samples	1 Soil
Date samples received	14/08/2019
Date completed instructions received	14/08/2019

Analysis Details

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

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

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

Report Details

Date results requested by	21/08/2019
Date of Issue	21/08/2019

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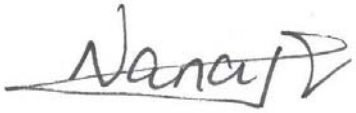
Results Approved By
Jaimie Loa-Kum-Cheung, Metals Supervisor
Steven Luong, Organics Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		223884-1
Your Reference	UNITS	QA2
Date Sampled		10/08/2019
Type of sample		Soil
Date extracted	-	16/08/2019
Date analysed	-	17/08/2019
TRH C_6 - C_9	mg/kg	<25
TRH C_6 - C_{10}	mg/kg	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<3
Surrogate aaa-Trifluorotoluene	%	124

svTRH (C10-C40) in Soil		
Our Reference	UNITS	223884-1
Your Reference		QA2
Date Sampled		10/08/2019
Type of sample		Soil
Date extracted	-	16/08/2019
Date analysed	-	16/08/2019
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	<100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	86

PAHs in Soil		
Our Reference	UNITS	223884-1
Your Reference		QA2
Date Sampled		10/08/2019
Type of sample		Soil
Date extracted	-	16/08/2019
Date analysed	-	18/08/2019
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	0.09
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	0.09
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d14	%	99

Organochlorine Pesticides in soil		
Our Reference	UNITS	223884-1
Your Reference		QA2
Date Sampled		10/08/2019
Type of sample		Soil
Date extracted	-	16/08/2019
Date analysed	-	18/08/2019
HCB	mg/kg	<0.1
alpha-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	0.1
Endrin	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Surrogate TCMX	%	100

Organophosphorus Pesticides		
Our Reference		223884-1
Your Reference	UNITS	QA2
Date Sampled		10/08/2019
Type of sample		Soil
Date extracted	-	16/08/2019
Date analysed	-	18/08/2019
Azinphos-methyl (Guthion)	mg/kg	<0.1
Bromophos-ethyl	mg/kg	<0.1
Chlorpyriphos	mg/kg	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1
Diazinon	mg/kg	<0.1
Dichlorvos	mg/kg	<0.1
Dimethoate	mg/kg	<0.1
Ethion	mg/kg	<0.1
Fenitrothion	mg/kg	<0.1
Malathion	mg/kg	<0.1
Parathion	mg/kg	<0.1
Ronnel	mg/kg	<0.1
Surrogate TCMX	%	100

PCBs in Soil		
Our Reference		223884-1
Your Reference	UNITS	QA2
Date Sampled		10/08/2019
Type of sample		Soil
Date extracted	-	16/08/2019
Date analysed	-	18/08/2019
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate TCMX	%	100

Acid Extractable metals in soil		
Our Reference		223884-1
Your Reference	UNITS	QA2
Date Sampled		10/08/2019
Type of sample		Soil
Date prepared	-	16/08/2019
Date analysed	-	16/08/2019
Arsenic	mg/kg	5
Cadmium	mg/kg	<0.4
Chromium	mg/kg	15
Copper	mg/kg	10
Lead	mg/kg	25
Mercury	mg/kg	<0.1
Nickel	mg/kg	4
Zinc	mg/kg	69

Moisture		
Our Reference		223884-1
Your Reference	UNITS	QA2
Date Sampled		10/08/2019
Type of sample		Soil
Date prepared	-	16/08/2019
Date analysed	-	19/08/2019
Moisture	%	14

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.

Method ID	Methodology Summary
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			16/08/2019	[NT]	[NT]	[NT]	[NT]	16/08/2019	[NT]
Date analysed	-			17/08/2019	[NT]	[NT]	[NT]	[NT]	17/08/2019	[NT]
TRH C_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	82	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	82	[NT]
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	[NT]	[NT]	87	[NT]
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	[NT]	[NT]	90	[NT]
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	74	[NT]
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	89	[NT]
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	91	[NT]	[NT]	[NT]	[NT]	109	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			16/08/2019	[NT]	[NT]	[NT]	[NT]	16/08/2019	[NT]
Date analysed	-			16/08/2019	[NT]	[NT]	[NT]	[NT]	16/08/2019	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	90	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	75	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	90	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	75	[NT]
Surrogate o-Terphenyl	%		Org-003	88	[NT]	[NT]	[NT]	[NT]	110	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			16/08/2019	[NT]	[NT]	[NT]	[NT]	16/08/2019	[NT]
Date analysed	-			18/08/2019	[NT]	[NT]	[NT]	[NT]	18/08/2019	[NT]
Naphthalene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Phenanthrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	[NT]	[NT]	[NT]	[NT]	96	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	108	[NT]	[NT]	[NT]	[NT]	88	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			16/08/2019	[NT]	[NT]	[NT]	[NT]	16/08/2019	[NT]
Date analysed	-			18/08/2019	[NT]	[NT]	[NT]	[NT]	18/08/2019	[NT]
HCB	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	114	[NT]
gamma-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	113	[NT]
delta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-005	101	[NT]	[NT]	[NT]	[NT]	112	[NT]

QUALITY CONTROL: Organophosphorus Pesticides						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			16/08/2019	[NT]	[NT]	[NT]	[NT]	16/08/2019	[NT]
Date analysed	-			18/08/2019	[NT]	[NT]	[NT]	[NT]	18/08/2019	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	112	[NT]
Dimethoate	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Malathion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Parathion	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	113	[NT]
Ronnel	mg/kg	0.1	Org-008	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Surrogate TCMX	%		Org-008	101	[NT]	[NT]	[NT]	[NT]	112	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			16/08/2019	[NT]	[NT]	[NT]	[NT]	16/08/2019	[NT]
Date analysed	-			18/08/2019	[NT]	[NT]	[NT]	[NT]	18/08/2019	[NT]
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-006	101	[NT]	[NT]	[NT]	[NT]	112	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date prepared	-			16/08/2019	[NT]	[NT]	[NT]	[NT]	16/08/2019	[NT]
Date analysed	-			16/08/2019	[NT]	[NT]	[NT]	[NT]	16/08/2019	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	97	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	96	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	83	[NT]

Result Definitions

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

Quality Control Definitions

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

Vishal
21/08/19
1240PM

Vishal Patel

From: Alice Carney
Sent: Wednesday, 21 August 2019 12:39 PM
To: Vishal Patel
Subject: rebatch ES1925652

Hey Vishal,

Could you arrange this rebatch?

Sample #13 TCLP for lead and samples #21 TCLP for nickel on a standard TAT.
(1) (2)
Please send work order number when complete.

Best regards,

Alice Carney

Client Services Officer, Environmental Sydney

T +61 2 8784 8555
D +61 2 8784 8504
F +61 2 8784 8500
Alice.carney@alsglobal.com
277-289 Woodpark Road
Smithfield NSW 2164 AUSTRALIA

Environmental Division Sydney
Work Order Reference
ES1926663

Telephone : +61-2-8784 8555

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From: Biggs, Colin [mailto:Colin.Biggs@arcadis.com]
Sent: Wednesday, 21 August 2019 12:34 PM
To: ALSEnviro Sydney <ALSEnviro.Sydney@ALSGlobal.com>; ALSEnviro Australia <alsenviro.australia@ALSGlobal.com>
Cc: Bradbeer, Emma <Emma.Bradbeer@arcadis.com>; Mathema, Pragya <Pragya.Mathema@arcadis.com>
Subject: [EXTERNAL] - TCLP Sampling required ES1925652

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1926663**	Page	: 1 of 4
Client	: **ARCADIS AUSTRALIA PACIFIC PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: EMMA BRADBEER	Contact	: Larissa Burns
Address	: LEVEL 16, 580 GEORGE STREET SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +6138549 9644
Project	: 10034229.01 -Kent Road	Date Samples Received	: 21-Aug-2019 12:40
Order number	: ----	Date Analysis Commenced	: 23-Aug-2019
C-O-C number	: ----	Issue Date	: 27-Aug-2019 15:12
Sampler	: Colin Biggs		
Site	: ----		
Quote number	: EN-091-18 (Primary Work Only)		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

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*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

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

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

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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP4@0.2	TP7@0.0-0.2	----	----	----
			Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1926663-001	ES1926663-002	--------	--------	--------
				Result	Result	----	----	----
EN33: TCLP Leach								
Initial pH	----	0.1	pH Unit	**8.9**	**9.5**	----	----	----
After HCl pH	----	0.1	pH Unit	**1.8**	**1.7**	----	----	----
Extraction Fluid Number	----	1	-	**1**	**1**	----	----	----
Final pH	----	0.1	pH Unit	**5.6**	**5.2**	----	----	----

Analytical Results

Sub-Matrix: **TCLP LEACHATE** (Matrix: **WATER**)				Client sample ID	**TP4@0.2**	**TP7@0.0-0.2**	-----	-----	-----
				Client sampling date / time	10-Aug-2019 00:00	10-Aug-2019 00:00	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1926663-001**	**ES1926663-002**	--------	--------	--------
					Result	Result	----	----	----
EG005(ED093)C: Leachable Metals by ICPAES									
Lead	7439-92-1	0.1	mg/L		**0.1**	----	----	----	----
Nickel	7440-02-0	0.1	mg/L		----	<0.1	----	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1926663**	Page	: 1 of 3
Client	: **ARCADIS AUSTRALIA PACIFIC PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: EMMA BRADBEER	Contact	: Larissa Burns
Address	: LEVEL 16, 580 GEORGE STREET SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +6138549 9644
Project	: 10034229.01 -Kent Road	Date Samples Received	: 21-Aug-2019
Order number	: ----	Date Analysis Commenced	: 23-Aug-2019
C-O-C number	: ----	Issue Date	: 27-Aug-2019
Sampler	: Colin Biggs		
Site	: ----		
Quote number	: EN-091-18 (Primary Work Only)		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

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*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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 (%)*
EG005(ED093)C: Leachable Metals by ICPAES (QC Lot: 2547034)									
EM1913575-027	Anonymous	EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	<0.1	0.00	No Limit
		EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	<0.1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EN33: TCLP Leach (QCLot: 2542014)								
EN33a: Initial pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: After HCl pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: Final pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33: TCLP Leach (QCLot: 2542015)								
EN33a: Initial pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: After HCl pH	----	0.1	pH Unit	1.0	----	----	----	----
EN33a: Final pH	----	0.1	pH Unit	1.0	----	----	----	----

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
EG005(ED093)C: Leachable Metals by ICPAES (QCLot: 2547034)								
EG005C: Lead	7439-92-1	0.1	mg/L	<0.1	0.1 mg/L	97.8	80	118
EG005C: Nickel	7440-02-0	0.1	mg/L	<0.1	0.1 mg/L	97.4	83	115

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**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)C: Leachable Metals by ICPAES (QCLot: 2547034)							
ES1926663-001	TP4@0.2	EG005C: Lead	7439-92-1	1 mg/L	117	70	130
		EG005C: Nickel	7440-02-0	1 mg/L	118	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1926663**	Page	: 1 of 4
Client	: **ARCADIS AUSTRALIA PACIFIC PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: EMMA BRADBEER	Telephone	: +6138549 9644
Project	: 10034229.01 -Kent Road	Date Samples Received	: 21-Aug-2019
Site	: ----	Issue Date	: 27-Aug-2019
Sampler	: Colin Biggs	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL** Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EN33: TCLP Leach							
Non-Volatile Leach: 180 day HT (e.g. PFAS, metals ex.Hg) (EN33a)							
TP4@0.2, TP7@0.0-0.2	**10-Aug-2019**	**23-Aug-2019**	06-Feb-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
EG005(ED093)C: Leachable Metals by ICPAES							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG005C)							
TP4@0.2, TP7@0.0-0.2	**23-Aug-2019**	**27-Aug-2019**	19-Feb-2020	✓	**27-Aug-2019**	19-Feb-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*	
Method Blanks (MB)							
TCLP for Non & Semivolatile Analytes	EN33a	2	12	**16.67**	**9.09**	✓	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)							
Leachable Metals by ICPAES	EG005C	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Leachable Metals by ICPAES	EG005C	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Leachable Metals by ICPAES	EG005C	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Leachable Metals by ICPAES	EG005C	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Leachable Metals by ICPAES	EG005C	SOIL	In house: referenced to APHA 3120; USEPA SW 846 - 6010: The ICPAES technique ionises leachate sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals in TCLP Leachate	EN25C	SOIL	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)
TCLP for Non & Semivolatile Analytes	EN33a	SOIL	In house QWI-EN/33 referenced to USEPA SW846-1311: The TCLP procedure is designed to determine the mobility of both organic and inorganic analytes present in wastes. The standard TCLP leach is for non-volatile and Semivolatile test parameters.

Subco... / ...
Lab / Analysis: .....
Organised By / Date: .....
Relinquished By / Date: .....
Connote / Courier: .....
WO No: .....
Attach By PC: .....

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NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com

Environmental Division Sydney

Work Order Reference

ES1932358

Telephone : +61-2-8784 8555

CLIENT: Arcadis Australia Pacific Pty Ltd	TURNAROUND REQUIREMENTS: ☑ Standard TAT (List due date): 5 DAY TAT	FOR LABORA	
OFFICE: Level 16, 580 George Street, Sydney, NSW 2000	(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):	Custody Seal Int	
PROJECT: P100373073 / 10035770	ALS QUOTE NO.: ALS (EN-096-16)	COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7	Free Ice /Frozen receipt
ORDER NUMBER:		OF: 1 2 3 4 5 6 7	Random Sample
PROJECT MANAGER: Emma Bradbeer	CONTACT PH: 0405 335 212		Other comments:
SAMPLER: Colin Biggs	SAMPLER MOBILE: 0423 369 098	RELINQUISHED BY:	RECEIVED BY:
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default): ESDAT	DATE/TIME: 03/10/2019 5:10pm	DATE/TIME: 3/10/19 1:45pm
Email Reports to (will default to PM if no other addresses are listed): Emma.Bradbeer@arcadis.com		RELINQUISHED BY	
Email Invoice to (will default to PM if no other addresses are listed): Emma.Bradbeer@arcadis.com		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)	EA200F	Asbestos ID EP200	Bulk Density EA051	Fluoride (Total) EK040T	Phenoxy Acid Herbicides EP202	H Triazine Herbicides EP234H	Triazine posticides (Atrazine)EP068C	TRH & Silica Gel Clean up	HOLD	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	TP05@0.0-0.2	1/10/2019	S	1 x Bag, 2 x Soil Jars	X			X	X	X	X			Please Send 1 x soil Jar for Bulk Bensity Sampling
2	TP05@0.2-0.4	1/10/2019	S	1 x Bag, 2 x Soil Jars	X									
3	TP09@0.0-0.1	2/10/2019	S	1X Bag	X									
4	TP09@0.1-0.4	2/10/2019	S	1 X Bag	X		X							Please Send 1 x soil Jar for Bulk Bensity Sampling
5	TP10@0.0-0.10	2/10/2019	S	1 X Bag, 2 x Soil Jars	X									
6	TP10@0.1-0.5 TP10@0.1-0.25	2/10/2019	S	1 x Bag, 1 x Soil Jar	X							X		
7	TP11@0.1-0.3 TP11@0.0-0.3	2/10/2019	S	1 x Bag, 2 x Soil Jars	X			X	X	X	X			
8	TP11@0.5	2/10/2019	S	1 x Soil Jar									X	
x 9	TP11@0.7	2/10/2019	S	1 x Soil Jar								X		
10	TP12 @0.0-0.1	1/10/2019	S	1 X Soil Bag. 1 x ID Bag 2 x Jar	X	X								
11	TP13 @0.0-0.15	2/10/2019	S	1 x Bag, 2 x Soil Jars	X		X							Please Send 1 x soil Jar for Bulk Bensity Sampling
12	TP14 @0.0-0.1	2/10/2019	S	1 x Bag, 2 x Soil Jars	X									
				TOTAL	10	1	2	2	2	2	2	2	1	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = 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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☐NOWRA 4/15 Geary Place Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com

☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com

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☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: Arcadis Australia Pacific Pty Ltd	TURNAROUND REQUIREMENTS: ☐ Standard TAT (List due date): 5 Day TAT	FOR LABORATORY USE ONLY (Circle)
OFFICE: Level 16, 580 George Street, Sydney NSW 2000	(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: P100373073	ALS QUOTE NO.: ALS (EN-096-16)	Free ice / 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: °C
PROJECT MANAGER: Emma Bradbeer CONTACT PH: 0405 335 212	OF: 1 2 3 4 5 6 7	Other comment:

SAMPLER: Colin Biggs	SAMPLER MOBILE: 0423 369 098	RELINQUISHED BY:	RECEIVED BY: TAD
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default): ESDAT		
Email Reports to (will default to PM if no other addresses are listed): Emma.Bradbeer@arcadis.com		DATE/TIME: 02/10/19 5:10pm	DATE/TIME: 3/10/19 1:45pm
Email Invoice to (will default to PM if no other addresses are listed): Emma.Bradbeer@arcadis.com		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)	EA200F	Asbestos ID EP200	Bulk Density EA051	Fluoride (Total) EK040T	Phenoxy Acid Herbicides EP202	H Triazine Herbicides EP234H	Triazine pesticides (Atrazine)EP068C	TRH & Silica Gel Clean up	HOLD	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
13	TP14 @0.1-0.3	2/10/2014	S	1 x Soil Jar								X		Please Send 1 x soil Jar for Bulk Bensity Sampling
14	TP14 @0.3	2/10/2019	S	1 x Soil Jar									X	
15	TP15 @0.0-0.2 TP15@0.0-0.1	30/09/2019	S	1 X Soil Bag, 2 Soil Jars	X									
16	TP16 @0.0-0.3	30/09/2019	S	1 X Bag, 1 x ID Bag 2 X soil jars 56	X	X								
17	TP17@0.0-0.2	30/09/2019	S	1 X Bag	X									
18	TP18@0.0-0.2	1/10/2019	S	1 Soil Bag, 2 x Soil Jar	X									
19	TP18@0.2-0.35	1/10/2019	S	1 Bag, 1 x Soil Jar	X		X							Please Send 1 x soil Jar for Bulk Bensity Sampling
20	TP19@0.0-0.2	30/09/2019	S	1 X Bag	X									
x 21	TP20@0.0-0.1	30/09/2019	S	1 x Bag, 1 X ID Bag 57	X	X								
22	TP20@0.1-0.2	30/09/2019	S	1 x Bag	X									
23	TP21@0.0-0.15	30/09/2019	S	1 x Bag	X									
24	TP22 @0.0-0.15 TP22@0.0-0.15	30/09/2019	S	1 x Bag, 1 x Soil Jar	X			X	X	X	X			
				TOTAL	10	2	1	1	1	1	1	1	1	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - 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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CLIENT: Arcadis Australia Pacific Pty Ltd	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☐ Standard TAT (List due date): 5 Day TAT	FOR LABORATORY USE ONLY (Circle)
OFFICE: Level 16, 580 George Street, Sydney NSW 2000		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes / No / N/A
PROJECT: P100373073	ALS QUOTE NO.: ALS (EN-096-16)	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: Emma Bradbeer	CONTACT PH: 0405 335 212		Other comment:

SAMPLER: Colin Biggs	SAMPLER MOBILE: 0423 369 098	RELINQUISHED BY:	RECEIVED BY: TAS	RELINQUISHED BY:	RECEIVED BY:
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default): ESDAT				
Email Reports to (will default to PM if no other addresses are listed): Emma.Bradbeer@arcadis.com		DATE/TIME:	DATE/TIME:	DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed): Emma.Bradbeer@arcadis.com		07/1019 5:10pm	3/10/19 1:45pm		

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)	EA200F	Asbestos ID EP200	Bulk Density EA051	Fluoride (Total) EK040T	Phenoxy Acid Herbicides EP202	H Triazine Herbicides EP234H	Triazine pesticides (Atrazine)EP068C	TRH & Silica Gel Clean up	HOLD	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
25	TP23@0.0-0.35	30/09/2019	S	1 x Bag	X									
26	TP23@0.0-0.2 SNR	1/10/2019	S	1 x Bag, 2 x Soil Jar	X		X							Please Send 1 x soil Jar for Bulk Bensity Sampling
27	TP25@0.0-0.15	30/09/2019	S	1 x Bag	X									
28	TP25@0.3-0.65	30/09/2019	S	2 X Soil Jars	X			X	X	X	X			
29	TP26@0.0-0.15	1/10/2019	S	1 x Bag, 1 x ID Bag	X	X								
30	TP26@0.15-0.3	1/10/2019	S	1 x Bag, 2 x Soil Jars	X			X						
31	TP26@0.3-0.6	1/10/2019	S	1 x Bag								X		
32	TP27@0.0-0.15 TP27@0.0-0.100	30/09/2019	S	1 x Bag	X									
x 33	TP27@2.5 SNR	30/10/2019	S	1 x Bag	X									
34	TP27@0.35-0.65	30/10/2019	S	1 x Bag, 2 x Soil Jars								X		
35	TP28@0.0-0.10	30/09/2019	S	1 x Bag	X									
36	TP28@0.1-0.2	30/09/2019	S	1 x Bag, 2 x Soil Jars				X						
				TOTAL	9	1	1	3	1	1	1	2		

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com

BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com

MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melb...@alsglobal.com

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ORANGE 44-46 Gerry Place Orange NSW 2800 Ph: 02 6393 2000 E: orange@alsglobal.com

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WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: Arcadis Australia Pacific Pty Ltd	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☐ Standard TAT (List due date):	5 Day TAT
OFFICE: Level 4/2, 141 George Street, Sydney NSW 2000		☐ Non Standard or urgent TAT (List due date):	
PROJECT: P100373073	**ALS QUOTE NO.:** ALS (EN-096-16)	**COC SEQUENCE NUMBER (Circle)**	
ORDER NUMBER:		COC: 1 2 3 **4** 5 6 7	
PROJECT MANAGER: Emma Bradbeer	**CONTACT PH:** 0405 335 212	OF: 1 2 3 **4** 5 6 7	
SAMPLER: Colin Biggs	**SAMPLER MOBILE:** 0423 369 098		
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):** ESDAT		
Email Reports to (will default to PM if no other addresses are listed): Emma.Bradbeer@arcadis.com			
Email Invoice to (will default to PM if no other addresses are listed): Emma.Bradbeer@arcadis.com			

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice (frozen ice blocks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt		°C	
Other comment:			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME: 03/10/19 5:10pm	DATE/TIME: 3/10/19 1:45pm	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)	EA200F	Asbestos ID EP200	Bulk Density EA051	Fluoride (Total) EK040T	Phenoxy Acid Herbicides EP202	H Triazine Herbicides EP234H	Triazine pesticides (Atrazine)EP068C	TRH & Silica Gel Clean up	HOLD	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
37	TP29@0.0-0.2	2/10/2019	S	1 x Bag, 2 x Soil Jras	X									
~~38~~	TP29@0.2-0.4	2/10/2019	S	1 X Bag	X									
39	TP30@0.0-0.1	2/10/2019	S	1 x Bag	X									
40	GB2@0.0-0.3	2/10/2019	S	1 x Bag, 1 x ID Bag, 1 x Soli Jar	X	X								
41	GB2@ 0.3-0.5	2/10/2019	S	1 x Bag									X	
42	GB3@0.0-0.2 GB3@0.0-0.3	2/10/2019	S	1 x Bag	X									
43	GB3@0.2-0.5	2/10/2019	S	1 x Bag									X	
44	GB3@0.0-0.3	2/10/2019	S	1 x Soil Jar				X						
× 45	Sample 1 to 10	1/10/2019	A	10X Sample ID Bags		X								Sample 1 X representative Sample Only
60	TP13@0.2-0.55													
61	TP24@0.0-0.2													
				TOTAL	5	2		1					2	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium 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.

Fadi Soro

From: Biggs, Colin <Colin.Biggs@arcadis.com>
Sent: Thursday, 3 October 2019 1:11 PM
To: Samples Sydney
Cc: Bradbeer, Emma
Subject: [EXTERNAL] - CoC for sample received Yesterday
Attachments: PACM CoC.pdf

CAUTION: This email originated from outside of ALS. Do not click links or open attachments unless you recognize the sender and are sure content is relevant to you.

Hello

I dropped two eskies of sample yesterday at 5:10pm, Please attached a chain if custody for the samples.
Samples were Id as P100373073. Can we please have the report and works (Analysis) conducted under 10035770 job code
Regard

Colin

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ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1932358**	Page	: 1 of 21
Client	: **ARCADIS AUSTRALIA PACIFIC PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: EMMA BRADBEER	Contact	: Larissa Burns
Address	: LEVEL 16, 580 GEORGE STREET SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +6138549 9644
Project	: P100373073/10035770	Date Samples Received	: 02-Oct-2019 16:50
Order number	: ----	Date Analysis Commenced	: 05-Oct-2019
C-O-C number	: ----	Issue Date	: 14-Oct-2019 16:37
Sampler	: COLIN BIGGS		
Site	: ----		
Quote number	: EN-091-18 (Primary Work Only)		
No. of samples received	: 59		
No. of samples analysed	: 46		

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.

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
Alison Graham	Supervisor - Inorganic	Newcastle - Inorganics, Mayfield West, NSW
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Christopher Owler	Team Leader - Asbestos	Newcastle - Asbestos, Mayfield West, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

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

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

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

- EP234: Poor matrix spike recovery for particular compounds due to matrix interferences.
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- **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.
- EA200N: Asbestos weights and percentages are not covered under the Scope of NATA Accreditation.
  Weights of Asbestos are based on extracted bulk asbestos, fibre bundles, and/or ACM and do not include respirable fibres (if present)
  The Asbestos (Fines and Fibrous) weight is calculated from the extracted Fibrous Asbestos and Asbestos Fines as an equivalent weight of 100% Asbestos
  Percentages for Asbestos content in ACM are based on the 2013 NEPM default values.
  All calculations of percentage Asbestos under this method are approximate and should be used as a guide only.
- 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
- EA200N: ALS laboratory procedures and methods used for the identification and quantitation of asbestos are consistent with AS4964-2004 and the requirements of the 2013 NEPM for Assessment of Site Contamination
- 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.
- ALS is not NATA accredited for the analysis of bulk density in a soil matrix.
- EA200: N/A - Not Applicable

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP05@0.0-0.2	TP05@0.2-0.4	TP09@0.0-0.1	TP09@0.1-0.4	TP10@0.0-0.10
			Client sampling date / time	01-Oct-2019 00:00	01-Oct-2019 00:00	02-Oct-2019 00:00	02-Oct-2019 00:00	02-Oct-2019 00:00
Compound	CAS Number	LOR	Unit	ES1932358-001	ES1932358-002	ES1932358-003	ES1932358-004	ES1932358-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	18.2	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No
Asbestos Type	1332-21-4	-	--	-	-	-	-	-
Sample weight (dry)	----	0.01	g	340	406	417	397	494
APPROVED IDENTIFIER:	----	-	--	C.OWLER	C.OWLER	C.OWLER	C.OWLER	C.OWLER
EA200N: Asbestos Quantification (non-NATA)								
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	<0.001	<0.001	<0.001	<0.001	<0.001
ø Weight Used for % Calculation	----	0.0001	kg	0.340	0.406	0.417	0.397	0.494
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	120	----	----	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.04	----	----	----	----
2.4-DB	94-82-6	0.02	mg/kg	<0.04	----	----	----	----
Dicamba	1918-00-9	0.02	mg/kg	<0.04	----	----	----	----
Mecoprop	93-65-2	0.02	mg/kg	<0.04	----	----	----	----
MCPA	94-74-6	0.02	mg/kg	<0.04	----	----	----	----
2.4-DP	120-36-5	0.02	mg/kg	<0.04	----	----	----	----
2.4-D	94-75-7	0.02	mg/kg	<0.04	----	----	----	----
Triclopyr	55335-06-3	0.02	mg/kg	<0.04	----	----	----	----
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.04	----	----	----	----
2.4.5-T	93-76-5	0.02	mg/kg	<0.04	----	----	----	----
MCPB	94-81-5	0.02	mg/kg	<0.04	----	----	----	----
Picloram	1918-02-1	0.02	mg/kg	<0.04	----	----	----	----
Clopyralid	1702-17-6	0.02	mg/kg	<0.04	----	----	----	----
Fluroxypyr	69377-81-7	0.02	mg/kg	<0.04	----	----	----	----
EP234H: Triazine Herbicides								
Ametryn	834-12-8	0.002	mg/kg	<0.002	----	----	----	----
Atrazine	1912-24-9	0.002	mg/kg	<0.002	----	----	----	----
Cyanazine	21725-46-2	0.005	mg/kg	<0.005	----	----	----	----
Prometryn	7287-19-6	0.002	mg/kg	<0.002	----	----	----	----
Propazine	139-40-2	0.002	mg/kg	<0.002	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP05@0.0-0.2	TP05@0.2-0.4	TP09@0.0-0.1	TP09@0.1-0.4	TP10@0.0-0.10
				Client sampling date / time	01-Oct-2019 00:00	01-Oct-2019 00:00	02-Oct-2019 00:00	02-Oct-2019 00:00	02-Oct-2019 00:00
Compound	CAS Number	LOR	Unit		ES1932358-001	ES1932358-002	ES1932358-003	ES1932358-004	ES1932358-005
					Result	Result	Result	Result	Result
EP234H: Triazine Herbicides - Continued									
Simazine	122-34-9	0.005	mg/kg		<0.005	----	----	----	----
Terbuthylazine	5915-41-3	0.002	mg/kg		<0.002	----	----	----	----
Terbutryn	886-50-0	0.1	mg/kg		<0.1	----	----	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%		**86.7**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP10@0.1 -0.5 TP10@0.1-0.25	TP11@0.1-0.3 TP11@0.1-0.3	TP11@0.7	TP12 @0.0-0.1	TP13@0.0-0.1 5
			Client sampling date / time	02-Oct-2019 00:00	02-Oct-2019 00:00	02-Oct-2019 00:00	02-Oct-2019 00:00	02-Oct-2019 00:00
Compound	CAS Number	LOR	Unit	ES1932358-006	ES1932358-007	ES1932358-009	ES1932358-010	ES1932358-011
				Result	Result	Result	Result	Result
EA051 : Bulk Density								
ø Bulk Density	BULK_DENSITY	1	kg/m3	----	----	----	----	2000
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	----	22.2	----	----	----
Moisture Content	----	1.0	%	17.9	----	21.2	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	----	No	No
Asbestos Type	1332-21-4	-	--	-	-	----	-	-
Sample weight (dry)	----	0.01	g	427	332	----	416	425
APPROVED IDENTIFIER:	----	-	--	C.OWLER	C.OWLER	----	C.OWLER	C.OWLER
EA200N: Asbestos Quantification (non-NATA)								
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g	<0.0004	<0.0004	----	<0.0004	<0.0004
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	<0.001	<0.001	----	<0.001	<0.001
ø Weight Used for % Calculation	----	0.0001	kg	0.427	0.332	----	0.416	0.425
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	----	150	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>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	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	<50	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
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 Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<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	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP10@0.1 -0.5 TP10@0.1-0.25	TP11@0.1-0.3 TP11@0.1-0.3	TP11@0.7	TP12 @0.0-0.1	TP13@0.0-0.1 5
				Client sampling date / time	02-Oct-2019 00:00	02-Oct-2019 00:00	02-Oct-2019 00:00	02-Oct-2019 00:00	02-Oct-2019 00:00
Compound	CAS Number	LOR	Unit		ES1932358-006	ES1932358-007	ES1932358-009	ES1932358-010	ES1932358-011
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	<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	----	----
^ >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	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	<1	----	----
EP202A: Phenoxyacetic Acid Herbicides by LCMS									
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg		----	<0.04	----	----	----
2.4-DB	94-82-6	0.02	mg/kg		----	<0.04	----	----	----
Dicamba	1918-00-9	0.02	mg/kg		----	<0.04	----	----	----
Mecoprop	93-65-2	0.02	mg/kg		----	<0.04	----	----	----
MCPA	94-74-6	0.02	mg/kg		----	<0.04	----	----	----
2.4-DP	120-36-5	0.02	mg/kg		----	<0.04	----	----	----
2.4-D	94-75-7	0.02	mg/kg		----	<0.04	----	----	----
Triclopyr	55335-06-3	0.02	mg/kg		----	<0.04	----	----	----
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg		----	<0.04	----	----	----
2.4.5-T	93-76-5	0.02	mg/kg		----	<0.04	----	----	----
MCPB	94-81-5	0.02	mg/kg		----	<0.04	----	----	----
Picloram	1918-02-1	0.02	mg/kg		----	<0.04	----	----	----
Clopyralid	1702-17-6	0.02	mg/kg		----	<0.04	----	----	----
Fluroxypyr	69377-81-7	0.02	mg/kg		----	<0.04	----	----	----
EP234H: Triazine Herbicides									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP10@0.1 -0.5 TP10@0.1-0.25	TP11@0.1-0.3 TP11@0.1-0.3	TP11@0.7	TP12 @0.0-0.1	TP13@0.0-0.1 5
				Client sampling date / time	02-Oct-2019 00:00	02-Oct-2019 00:00	02-Oct-2019 00:00	02-Oct-2019 00:00	02-Oct-2019 00:00
Compound	CAS Number	LOR	Unit		ES1932358-006	ES1932358-007	ES1932358-009	ES1932358-010	ES1932358-011
					Result	Result	Result	Result	Result
EP234H: Triazine Herbicides - Continued									
Ametryn	834-12-8	0.002	mg/kg		----	<0.002	----	----	----
Atrazine	1912-24-9	0.002	mg/kg		----	<0.002	----	----	----
Cyanazine	21725-46-2	0.005	mg/kg		----	<0.005	----	----	----
Prometryn	7287-19-6	0.002	mg/kg		----	<0.002	----	----	----
Propazine	139-40-2	0.002	mg/kg		----	<0.002	----	----	----
Simazine	122-34-9	0.005	mg/kg		----	<0.005	----	----	----
Terbuthylazine	5915-41-3	0.002	mg/kg		----	<0.002	----	----	----
Terbutryn	886-50-0	0.1	mg/kg		----	<0.1	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**104**	----	**98.5**	----	----
Toluene-D8	2037-26-5	0.2	%		**102**	----	**106**	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**108**	----	**109**	----	----
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%		----	**107**	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP14@0.0-0.1	TP14@0.1 -0.3	TP15@0.0-0.2 TP15@0.0-0.1	TP16@0.0-0.3	TP17@0.0-0.2
			Client sampling date / time	02-Oct-2019 00:00	02-Oct-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	ES1932358-012	ES1932358-013	ES1932358-015	ES1932358-016	ES1932358-017
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	17.2	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	No	No	No
Asbestos Type	1332-21-4	-	--	-	----	-	-	-
Sample weight (dry)	----	0.01	g	448	----	408	404	448
APPROVED IDENTIFIER:	----	-	--	C.OWLER	----	C.OWLER	C.OWLER	C.OWLER
EA200N: Asbestos Quantification (non-NATA)								
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g	<0.0004	----	<0.0004	<0.0004	<0.0004
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	<0.001	----	<0.001	<0.001	<0.001
ø Weight Used for % Calculation	----	0.0001	kg	0.448	----	0.408	0.404	0.448
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	<10	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	<10	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	<50	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP14@0.0-0.1	TP14@0.1 -0.3	TP15@0.0-0.2 TP15@0.0-0.1	TP16@0.0-0.3	TP17@0.0-0.2
			Client sampling date / time	02-Oct-2019 00:00	02-Oct-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	ES1932358-012	ES1932358-013	ES1932358-015	ES1932358-016	ES1932358-017
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
>C16 - C34 Fraction	----	100	mg/kg	----	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	<50	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	<0.5	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	<0.5	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	<0.5	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	<0.5	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	<0.2	----	----	----
^ Total Xylenes	----	0.5	mg/kg	----	<0.5	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	<1	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	93.1	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	105	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	105	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP18@0.0-0.2	TP18@0.2-0.35	TP19@0.0-0.2	TP20@0.0-0.1	TP20@0.1-0.2
			Client sampling date / time	01-Oct-2019 00:00	01-Oct-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	ES1932358-018	ES1932358-019	ES1932358-020	ES1932358-021	ES1932358-022
				Result	Result	Result	Result	Result
EA051 : Bulk Density								
ø **Bulk Density**	BULK_DENSITY	1	kg/m3	**2060**	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	**No**	**No**	**No**	**No**
Asbestos Type	1332-21-4	-	--	**-**	**-**	**-**	**-**	**-**
Sample weight (dry)	----	0.01	g	**402**	**406**	**465**	**443**	**411**
APPROVED IDENTIFIER:	----	-	--	**C.OWLER**	**C.OWLER**	**C.OWLER**	**C.OWLER**	**C.OWLER**
EA200N: Asbestos Quantification (non-NATA)								
ø **Asbestos (Fines and Fibrous <7mm)**	1332-21-4	0.0004	g	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
ø **Asbestos (Fines and Fibrous FA+AF)**	----	0.001	% (w/w)	<0.001	<0.001	<0.001	<0.001	<0.001
ø **Weight Used for % Calculation**	----	0.0001	kg	**0.402**	**0.406**	**0.465**	**0.443**	**0.411**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP21@0.0-0.1 5	TP22 @0.0-0.15	TP23@0.0-0.35	TP25@0.0-0.15	TP25@0.3-0.65
			Client sampling date / time	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	ES1932358-023	ES1932358-024	ES1932358-025	ES1932358-027	ES1932358-028
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	----	9.7	----	----	17.2
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No
Asbestos Type	1332-21-4	-	--	-	-	-	-	-
Sample weight (dry)	----	0.01	g	410	339	427	367	224
APPROVED IDENTIFIER:	----	-	--	C.OWLER	C.OWLER	C.OWLER	C.OWLER	C.OWLER
EA200N: Asbestos Quantification (non-NATA)								
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	<0.001	<0.001	<0.001	<0.001	<0.001
ø Weight Used for % Calculation	----	0.0001	kg	0.410	0.339	0.427	0.367	0.224
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	----	220	----	----	130
EP202A: Phenoxyacetic Acid Herbicides by LCMS								
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	----	<0.02	----	----	<0.04
2.4-DB	94-82-6	0.02	mg/kg	----	<0.02	----	----	<0.04
Dicamba	1918-00-9	0.02	mg/kg	----	<0.02	----	----	<0.04
Mecoprop	93-65-2	0.02	mg/kg	----	<0.02	----	----	<0.04
MCPA	94-74-6	0.02	mg/kg	----	<0.02	----	----	<0.04
2.4-DP	120-36-5	0.02	mg/kg	----	<0.02	----	----	<0.04
2.4-D	94-75-7	0.02	mg/kg	----	<0.02	----	----	<0.04
Triclopyr	55335-06-3	0.02	mg/kg	----	<0.02	----	----	<0.04
2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	----	<0.02	----	----	<0.04
2.4.5-T	93-76-5	0.02	mg/kg	----	<0.02	----	----	<0.04
MCPB	94-81-5	0.02	mg/kg	----	<0.02	----	----	<0.04
Picloram	1918-02-1	0.02	mg/kg	----	<0.02	----	----	<0.04
Clopyralid	1702-17-6	0.02	mg/kg	----	<0.02	----	----	<0.04
Fluroxypyr	69377-81-7	0.02	mg/kg	----	<0.02	----	----	<0.04
EP234H: Triazine Herbicides								
Ametryn	834-12-8	0.002	mg/kg	----	<0.002	----	----	<0.002
Atrazine	1912-24-9	0.002	mg/kg	----	<0.002	----	----	<0.002
Cyanazine	21725-46-2	0.005	mg/kg	----	<0.005	----	----	<0.005
Prometryn	7287-19-6	0.002	mg/kg	----	<0.002	----	----	<0.002
Propazine	139-40-2	0.002	mg/kg	----	<0.002	----	----	<0.002

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP21@0.0-0.1 5	TP22 @0.0-0.15	TP23@0.0-0.35	TP25@0.0-0.15	TP25@0.3-0.65
			Client sampling date / time	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	ES1932358-023	ES1932358-024	ES1932358-025	ES1932358-027	ES1932358-028
				Result	Result	Result	Result	Result
EP234H: Triazine Herbicides - Continued								
Simazine	122-34-9	0.005	mg/kg	----	<0.005	----	----	<0.005
Terbuthylazine	5915-41-3	0.002	mg/kg	----	<0.002	----	----	<0.002
Terbutryn	886-50-0	0.1	mg/kg	----	<0.1	----	----	<0.1
EP202S: Phenoxyacetic Acid Herbicide Surrogate								
2.4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%	----	**98.6**	----	----	**98.6**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP26@0.0-0.15	TP26@0.15-0.3	TP27@0.0-0.15 TP27@0.0-0.100	TP27@0.35-0.65	TP28@0.0-0.10
			Client sampling date / time	01-Oct-2019 00:00	01-Oct-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	ES1932358-029	ES1932358-030	ES1932358-032	ES1932358-034	ES1932358-035
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	----	----	----	17.1	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	----	No
Asbestos Type	1332-21-4	-	--	-	-	-	----	-
Sample weight (dry)	----	0.01	g	415	357	398	----	365
APPROVED IDENTIFIER:	----	-	--	C.OWLER	C.OWLER	C.OWLER	----	C.OWLER
EA200N: Asbestos Quantification (non-NATA)								
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g	<0.0004	<0.0004	<0.0004	----	<0.0004
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	<0.001	<0.001	<0.001	----	<0.001
ø Weight Used for % Calculation	----	0.0001	kg	0.415	0.357	0.398	----	0.365
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	----	80	----	----	----
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup								
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	<10	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	<10	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP26@0.0-0.15	TP26@0.15-0.3	TP27@0.0-0.15 TP27@0.0-0.100	TP27@0.35-0.65	TP28@0.0-0.10
			Client sampling date / time	01-Oct-2019 00:00	01-Oct-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00	30-Sep-2019 00:00
Compound	CAS Number	LOR	Unit	ES1932358-029	ES1932358-030	ES1932358-032	ES1932358-034	ES1932358-035
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	<50	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	<0.2	----
^ Total Xylenes	----	0.5	mg/kg	----	----	----	<0.5	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	<1	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	**91.7**	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	**98.0**	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	**103**	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP28@0.1 -0.2	TP29@0.0-0.2	TP29@0.2-0.4	TP30@0.0-0 .1	GB2@0.0-0.3
			Client sampling date / time	30-Sep-2019 00:00	02-Oct-2019 00:00	02-Oct-2019 00:00	02-Oct-2019 00:00	02-Oct-2019 00:00
Compound	CAS Number	LOR	Unit	ES1932358-036	ES1932358-037	ES1932358-038	ES1932358-039	ES1932358-040
				Result	Result	Result	Result	Result
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	No	No	No	No
Asbestos Type	1332-21-4	-	--	----	-	-	-	-
Sample weight (dry)	----	0.01	g	----	418	414	448	461
APPROVED IDENTIFIER:	----	-	--	----	C.OWLER	C.OWLER	C.OWLER	C.OWLER
EA200N: Asbestos Quantification (non-NATA)								
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g	----	<0.0004	<0.0004	<0.0004	<0.0004
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	----	<0.001	<0.001	<0.001	<0.001
ø Weight Used for % Calculation	----	0.0001	kg	----	0.418	0.414	0.448	0.461
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	100	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	GB3@0.0-0.2	GB3@0.0-0.3	TP24@0.0-0.2	----	----
			Client sampling date / time	02-Oct-2019 00:00	02-Oct-2019 00:00	02-Oct-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	ES1932358-042	ES1932358-044	ES1932358-061	--------	--------
				Result	Result	Result	----	----
EA051 : Bulk Density								
ø **Bulk Density**	BULK_DENSITY	1	kg/m3	----	----	**1890**	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	----	**No**	----	----
Asbestos Type	1332-21-4	-	--	**-**	----	**-**	----	----
Sample weight (dry)	----	0.01	g	**461**	----	**414**	----	----
APPROVED IDENTIFIER:	----	-	--	**C.OWLER**	----	**C.OWLER**	----	----
EA200N: Asbestos Quantification (non-NATA)								
ø **Asbestos (Fines and Fibrous <7mm)**	1332-21-4	0.0004	g	<0.0004	----	<0.0004	----	----
ø **Asbestos (Fines and Fibrous FA+AF)**	----	0.001	% (w/w)	<0.001	----	<0.001	----	----
ø **Weight Used for % Calculation**	----	0.0001	kg	**0.461**	----	**0.414**	----	----
EK040T: Fluoride Total								
Fluoride	16984-48-8	40	mg/kg	----	**190**	----	----	----

Analytical Results

Sub-Matrix: SOLID (Matrix: SOLID)				Client sample ID	Sample 1	Sample 4	Sample 8	TP12@0.0-0.1	TP16@0.0-0.3
				Client sampling date / time	01-Oct-2019 00:00	01-Oct-2019 00:00	01-Oct-2019 00:00	01-Oct-2019 00:00	30-Sep-2019 00:00
Compound	CAS Number	LOR	Unit		ES1932358-045	ES1932358-048	ES1932358-052	ES1932358-055	ES1932358-056
					Result	Result	Result	Result	Result
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos Detected	1332-21-4	0.1	g/kg		**Yes**	**Yes**	**Yes**	**Yes**	**No**
Asbestos Type	1332-21-4	-	--		**Ch + Am + Cr**	**Ch**	**Ch + Am**	**Ch**	**-**
Asbestos (Trace)	1332-21-4	5	Fibres		**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
Sample weight (dry)	----	0.01	g		**15.4**	**7.78**	**12.8**	**15.2**	**0.66**
Synthetic Mineral Fibre	----	0.1	g/kg		**No**	**No**	**No**	**No**	**No**
Organic Fibre	----	0.1	g/kg		**No**	**No**	**No**	**No**	**Yes**
APPROVED IDENTIFIER:	----	-	--		**A. RISTOSKI**	**A. RISTOSKI**	**A. RISTOSKI**	**A. RISTOSKI**	**A. RISTOSKI**

Analytical Results

Sub-Matrix: SOLID (Matrix: SOLID)			Client sample ID	TP20@0.0-0.1	TP26@0.0-0.15	GB2@0.0-0.3	----	----
			Client sampling date / time	30-Sep-2019 00:00	01-Oct-2019 00:00	02-Oct-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	ES1932358-057	ES1932358-058	ES1932358-059	--------	--------
				Result	Result	Result	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	**No**	**Yes**	**----**	**----**
Asbestos Type	1332-21-4	-	--	**-**	**-**	**Ch + Am**	**----**	**----**
Asbestos (Trace)	1332-21-4	5	Fibres	**N/A**	**N/A**	**N/A**	**----**	**----**
Sample weight (dry)	----	0.01	g	**4.79**	**3.69**	**5.11**	**----**	**----**
Synthetic Mineral Fibre	----	0.1	g/kg	**No**	**No**	**No**	**----**	**----**
Organic Fibre	----	0.1	g/kg	**No**	**No**	**No**	**----**	**----**
APPROVED IDENTIFIER:	----	-	--	**A. RISTOSKI**	**A. RISTOSKI**	**A. RISTOSKI**	**----**	**----**

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	TP05@0.0-0.2 - 01-Oct-2019 00:00	Mid brown soil.
EA200: Description	TP05@0.2-0.4 - 01-Oct-2019 00:00	Mid brown soil.
EA200: Description	TP09@0.0-0.1 - 02-Oct-2019 00:00	Mid brown soil.
EA200: Description	TP09@0.1-0.4 - 02-Oct-2019 00:00	Mid brown soil.
EA200: Description	TP10@0.0-0.10 - 02-Oct-2019 00:00	Mid brown soil.
EA200: Description	TP10@0.1 -0.5TP10@0.1-0.25 - 02-Oct-2019 00:00	Mid brown soil.
EA200: Description	TP11@0.1-0.3TP11@0.1-0.3 - 02-Oct-2019 00:00	Mid brown soil.
EA200: Description	TP12 @0.0-0.1 - 02-Oct-2019 00:00	Mid brown soil.
EA200: Description	TP13@0.0-0.1 5 - 02-Oct-2019 00:00	Mid brown soil.
EA200: Description	TP14@0.0-0.1 - 02-Oct-2019 00:00	Mid brown soil.
EA200: Description	TP15@0.0-0.2TP15@0.0-0.1 - 30-Sep-2019 00:00	Mid brown soil.
EA200: Description	TP16@0.0-0.3 - 30-Sep-2019 00:00	Mid brown soil.
EA200: Description	TP17@0.0-0.2 - 30-Sep-2019 00:00	Mid brown soil.
EA200: Description	TP18@0.0-0.2 - 01-Oct-2019 00:00	Mid brown soil.
EA200: Description	TP18@0.2-0.35 - 01-Oct-2019 00:00	Mid brown soil.
EA200: Description	TP19@0.0-0.2 - 30-Sep-2019 00:00	Mid brown soil.
EA200: Description	TP20@0.0-0.1 - 30-Sep-2019 00:00	Mid brown soil.
EA200: Description	TP20@0.1-0.2 - 30-Sep-2019 00:00	Mid brown soil.
EA200: Description	TP21@0.0-0.1 5 - 30-Sep-2019 00:00	Mid brown soil.
EA200: Description	TP22 @0.0-0.15 - 30-Sep-2019 00:00	Mid brown soil.
EA200: Description	TP23@0.0-0.35 - 30-Sep-2019 00:00	Mid brown soil.
EA200: Description	TP25@0.0-0.15 - 30-Sep-2019 00:00	Mid brown soil.
EA200: Description	TP25@0.3-0.65 - 30-Sep-2019 00:00	Mid brown soil.
EA200: Description	TP26@0.0-0.15 - 01-Oct-2019 00:00	Mid brown soil.
EA200: Description	TP26@0.15-0.3 - 01-Oct-2019 00:00	Mid brown soil.
EA200: Description	TP27@0.0-0.15TP27@0.0-0.100 - 30-Sep-2019 00:00	Mid brown soil.
EA200: Description	TP28@0.0-0.10 - 30-Sep-2019 00:00	Mid brown soil.
EA200: Description	TP29@0.0-0.2 - 02-Oct-2019 00:00	Mid brown soil.
EA200: Description	TP29@0.2-0.4 - 02-Oct-2019 00:00	Mid brown soil.
EA200: Description	TP30@0.0-0 .1 - 02-Oct-2019 00:00	Mid brown soil.
EA200: Description	GB2@0.0-0.3 - 02-Oct-2019 00:00	Mid brown soil.
EA200: Description	GB3@0.0-0.2 - 02-Oct-2019 00:00	Mid brown soil.
EA200: Description	TP24@0.0-0.2 - 02-Oct-2019 00:00	Mid brown soil.

Sub-Matrix: **SOLID**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		

Sub-Matrix: **SOLID**

Method: Compound	*Client sample ID - Client sampling date / time*	*Analytical Results*
EA200: Description	Sample 1 - 01-Oct-2019 00:00	One piece of asbestos cement sheeting approximately 50x45x5mm.
EA200: Description	Sample 4 - 01-Oct-2019 00:00	One piece of asbestos cement sheeting approximately 55x35x5mm.
EA200: Description	Sample 8 - 01-Oct-2019 00:00	Two pieces of asbestos cement sheeting approximately 45x25x5mm.
EA200: Description	TP12@0.0-0.1 - 01-Oct-2019 00:00	One piece of asbestos cement sheeting approximately 80x40x5mm.
EA200: Description	TP16@0.0-0.3 - 30-Sep-2019 00:00	Two pieces of cement sheeting.
EA200: Description	TP20@0.0-0.1 - 30-Sep-2019 00:00	One piece of cement sheeting.
EA200: Description	TP26@0.0-0.15 - 01-Oct-2019 00:00	Two pieces of plastic.
EA200: Description	GB2@0.0-0.3 - 02-Oct-2019 00:00	One piece of asbestos cement sheeting approximately 30x25x5mm.

Surrogate Control Limits

Sub-Matrix: **SOIL**		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
EP202S: Phenoxyacetic Acid Herbicide Surrogate			
2.4-Dichlorophenyl Acetic Acid	19719-28-9	45	139

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1932358**	Page	: 1 of 8
Client	: **ARCADIS AUSTRALIA PACIFIC PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: EMMA BRADBEER	Contact	: Larissa Burns
Address	: LEVEL 16, 580 GEORGE STREET SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +6138549 9644
Project	: P100373073/10035770	Date Samples Received	: 02-Oct-2019
Order number	: ----	Date Analysis Commenced	: 05-Oct-2019
C-O-C number	: ----	Issue Date	: 14-Oct-2019
Sampler	: COLIN BIGGS		
Site	: ----		
Quote number	: EN-091-18 (Primary Work Only)		
No. of samples received	: 59		
No. of samples analysed	: 46		

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

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
Alison Graham	Supervisor - Inorganic	Newcastle - Inorganics, Mayfield West, NSW
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Christopher Owler	Team Leader - Asbestos	Newcastle - Asbestos, Mayfield West, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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 (%)*
EA051: Bulk Density (QC Lot: 2631593)									
ES1932358-011	TP13@0.0-0.1 5	EA051: Bulk Density	BULK_DENSITY	1	kg/m3	2000	1920	4.08	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2627814)									
ES1932109-003	Anonymous	EA055: Moisture Content	----	0.1	%	22.7	22.5	0.708	0% - 20%
ES1932358-001	TP05@0.0-0.2	EA055: Moisture Content	----	0.1	%	18.2	19.6	7.00	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2627815)									
ES1932422-002	Anonymous	EA055: Moisture Content	----	0.1	%	21.0	20.9	0.00	0% - 20%
ES1932477-003	Anonymous	EA055: Moisture Content	----	0.1	%	6.0	6.5	8.56	0% - 20%
EK040T: Fluoride Total (QC Lot: 2631690)									
ES1932358-001	TP05@0.0-0.2	EK040T: Fluoride	16984-48-8	40	mg/kg	120	120	0.00	No Limit
ES1931875-020	Anonymous	EK040T: Fluoride	16984-48-8	40	mg/kg	160	190	15.7	No Limit
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QC Lot: 2625642)									
ES1932358-006	TP10@0.1 -0.5 TP10@0.1-0.25	EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071SG-S: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QC Lot: 2625642)									
ES1932358-006	TP10@0.1 -0.5 TP10@0.1-0.25	EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2624438)									
ES1931493-006	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1932297-002	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	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 (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2625641)									
ES1932358-006	TP10@0.1 -0.5 TP10@0.1-0.25	EP071: C15 - C28 Fraction	---	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	---	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	---	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2624438)									
ES1931493-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1932297-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2625641)									
ES1932358-006	TP10@0.1 -0.5 TP10@0.1-0.25	EP071: >C16 - C34 Fraction	---	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	---	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	---	50	mg/kg	<50	<50	0.00	No Limit
EP080: BTEXN (QC Lot: 2624438)									
ES1931493-006	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
ES1932297-002	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
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QC Lot: 2624664)									
EB1926160-033	Anonymous	EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.04	<0.04	0.00	No Limit
		EP202: 2.4-DB	94-82-6	0.02	mg/kg	<0.04	<0.04	0.00	No Limit
		EP202: Dicamba	1918-00-9	0.02	mg/kg	<0.04	<0.04	0.00	No Limit
		EP202: Mecoprop	93-65-2	0.02	mg/kg	<0.04	<0.04	0.00	No Limit
		EP202: MCPA	94-74-6	0.02	mg/kg	<0.04	<0.04	0.00	No Limit
		EP202: 2.4-DP	120-36-5	0.02	mg/kg	<0.04	<0.04	0.00	No Limit
		EP202: 2.4-D	94-75-7	0.02	mg/kg	0.49	0.56	13.8	0% - 50%
		EP202: Triclopyr	55335-06-3	0.02	mg/kg	<0.04	<0.04	0.00	No Limit
		EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.04	<0.04	0.00	No Limit
		EP202: 2.4.5-T	93-76-5	0.02	mg/kg	<0.04	<0.04	0.00	No Limit
		EP202: MCPB	94-81-5	0.02	mg/kg	<0.04	<0.04	0.00	No Limit
		EP202: Picloram	1918-02-1	0.02	mg/kg	<0.04	<0.04	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 (%)*
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QC Lot: 2624664) - continued									
EB1926160-033	Anonymous	EP202: Clopyralid	1702-17-6	0.02	mg/kg	<0.04	<0.04	0.00	No Limit
		EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	<0.04	<0.04	0.00	No Limit
ES1932358-024	TP22 @0.0-0.15	EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: 2.4-DB	94-82-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: Dicamba	1918-00-9	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: Mecoprop	93-65-2	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: MCPA	94-74-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: 2.4-DP	120-36-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: 2.4-D	94-75-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: Triclopyr	55335-06-3	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: 2.4.5-T	93-76-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: MCPB	94-81-5	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: Picloram	1918-02-1	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: Clopyralid	1702-17-6	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
		EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	<0.02	0.00	No Limit
EP234H: Triazine Herbicides (QC Lot: 2624668)									
ES1932358-001	TP05@0.0-0.2	EP234: Ametryn	834-12-8	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Atrazine	1912-24-9	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Prometryn	7287-19-6	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Propazine	139-40-2	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Terbuthylazine	5915-41-3	0.002	mg/kg	<0.002	<0.002	0.00	No Limit
		EP234: Cyanazine	21725-46-2	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
		EP234: Simazine	122-34-9	0.005	mg/kg	<0.005	<0.005	0.00	No Limit
		EP234: Terbutryn	886-50-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EK040T: Fluoride Total (QCLot: 2631690)								
EK040T: Fluoride	16984-48-8	40	mg/kg	<40	400 mg/kg	79.5	67.2	96.3
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 2625642)								
EP071SG-S: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	93.8	80.0	116
EP071SG-S: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	105	85.0	115
EP071SG-S: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	99.9	75.0	123
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 2625642)								
EP071SG-S: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	95.6	89.0	109
EP071SG-S: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	95.8	84.0	112
EP071SG-S: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	98.9	71.0	119
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2624438)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	89.6	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2625641)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	88.4	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	90.4	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	89.0	71.0	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2624438)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	90.3	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2625641)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	89.7	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	90.3	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	88.6	63.0	131
EP080: BTEXN (QCLot: 2624438)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	98.3	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	104	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	103	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	103	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	110	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	102	63.0	119
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 2624664)								
EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	0.1 mg/kg	71.9	54.4	128
EP202: 2.4-DB	94-82-6	0.02	mg/kg	<0.02	0.1 mg/kg	60.6	45.5	130
EP202: Dicamba	1918-00-9	0.02	mg/kg	<0.02	0.1 mg/kg	70.8	51.7	135

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
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 2624664) - continued								
EP202: Mecoprop	93-65-2	0.02	mg/kg	<0.02	0.1 mg/kg	83.7	60.0	130
EP202: MCPA	94-74-6	0.02	mg/kg	<0.02	0.1 mg/kg	82.6	56.8	131
EP202: 2.4-DP	120-36-5	0.02	mg/kg	<0.02	0.1 mg/kg	92.2	50.0	141
EP202: 2.4-D	94-75-7	0.02	mg/kg	<0.02	0.1 mg/kg	122	68.5	131
EP202: Triclopyr	55335-06-3	0.02	mg/kg	<0.02	0.1 mg/kg	100	50.8	141
EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	0.1 mg/kg	93.2	40.8	126
EP202: 2.4.5-T	93-76-5	0.02	mg/kg	<0.02	0.1 mg/kg	106	57.4	139
EP202: MCPB	94-81-5	0.02	mg/kg	<0.02	0.1 mg/kg	104	38.9	137
EP202: Picloram	1918-02-1	0.02	mg/kg	<0.02	0.1 mg/kg	98.0	48.7	129
EP202: Clopyralid	1702-17-6	0.02	mg/kg	<0.02	0.1 mg/kg	80.4	49.4	106
EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	0.1 mg/kg	75.5	53.2	128
EP234H: Triazine Herbicides (QCLot: 2624668)								
EP234: Ametryn	834-12-8	0.002	mg/kg	<0.002	0.02 mg/kg	81.6	70.0	130
EP234: Atrazine	1912-24-9	0.002	mg/kg	<0.002	0.02 mg/kg	89.6	62.0	120
EP234: Cyanazine	21725-46-2	0.005	mg/kg	<0.005	0.04 mg/kg	102	70.0	130
EP234: Prometryn	7287-19-6	0.002	mg/kg	<0.002	0.02 mg/kg	71.2	58.0	130
EP234: Propazine	139-40-2	0.002	mg/kg	<0.002	0.02 mg/kg	92.0	61.0	127
EP234: Simazine	122-34-9	0.005	mg/kg	<0.005	0.04 mg/kg	85.2	70.0	130
EP234: Terbuthylazine	5915-41-3	0.002	mg/kg	<0.002	0.02 mg/kg	79.2	63.0	117
EP234: Terbutryn	886-50-0	0.1	mg/kg	<0.1	0.02 mg/kg	73.6	59.0	115

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	SpikeRecovery(%)	Recovery Limits (%)	
				Concentration	MS	Low	High
EK040T: Fluoride Total (QCLot: 2631690)							
ES1932358-001	TP05@0.0-0.2	EK040T: Fluoride	16984-48-8	400 mg/kg	111	70.0	130
EP071 SG: Total Petroleum Hydrocarbons - Silica gel cleanup (QCLot: 2625642)							
ES1932358-006	TP10@0.1 -0.5 TP10@0.1-0.25	EP071SG-S: C10 - C14 Fraction	----	523 mg/kg	81.6	43.0	139
		EP071SG-S: C15 - C28 Fraction	----	2319 mg/kg	96.4	49.0	131
		EP071SG-S: C29 - C36 Fraction	----	1714 mg/kg	98.8	64.0	158
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup (QCLot: 2625642)							
ES1932358-006	TP10@0.1 -0.5 TP10@0.1-0.25	EP071SG-S: >C10 - C16 Fraction	----	860 mg/kg	95.3	33.0	137
		EP071SG-S: >C16 - C34 Fraction	----	3223 mg/kg	97.9	40.0	137
		EP071SG-S: >C34 - C40 Fraction	----	1058 mg/kg	102	30.0	190

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: 2624438)							
ES1931493-006	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	94.6	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2625641)							
ES1932358-006	TP10@0.1 -0.5 TP10@0.1-0.25	EP071: C10 - C14 Fraction	----	523 mg/kg	76.6	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	92.0	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	92.8	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2624438)							
ES1931493-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	93.1	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2625641)							
ES1932358-006	TP10@0.1 -0.5 TP10@0.1-0.25	EP071: >C10 - C16 Fraction	----	860 mg/kg	83.0	73.0	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	88.1	53.0	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	93.5	52.0	132
EP080: BTEXN (QCLot: 2624438)							
ES1931493-006	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	98.1	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	103	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	105	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	105	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	107	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	98.0	70.0	130
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 2624664)							
EB1926160-033	Anonymous	EP202: Mecoprop	93-65-2	0.1 mg/kg	84.4	60.0	140
		EP202: MCPA	94-74-6	0.1 mg/kg	84.5	57.0	143
		EP202: 2.4-D	94-75-7	0.1 mg/kg	# Not Determined	68.0	139
		EP202: Triclopyr	55335-06-3	0.1 mg/kg	98.2	51.0	145
		EP202: 2.4.5-T	93-76-5	0.1 mg/kg	111	57.0	142
		EP202: Picloram	1918-02-1	0.1 mg/kg	83.2	49.0	138
		EP202: Clopyralid	1702-17-6	0.1 mg/kg	76.2	49.0	149
EP234H: Triazine Herbicides (QCLot: 2624668)							
ES1932358-001	TP05@0.0-0.2	EP234: Ametryn	834-12-8	0.02 mg/kg	116	70.0	130
		EP234: Atrazine	1912-24-9	0.02 mg/kg	# 40.0	70.0	130
		EP234: Cyanazine	21725-46-2	0.04 mg/kg	# 0.00	70.0	130
		EP234: Prometryn	7287-19-6	0.02 mg/kg	92.0	70.0	130
		EP234: Propazine	139-40-2	0.02 mg/kg	# 34.4	70.0	130
		EP234: Simazine	122-34-9	0.04 mg/kg	# 45.6	70.0	130
		EP234: Terbuthylazine	5915-41-3	0.02 mg/kg	# 52.8	70.0	130
		EP234: Terbutryn	886-50-0	0.02 mg/kg	116	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1932358**	Page	: 1 of 9
Client	: **ARCADIS AUSTRALIA PACIFIC PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: EMMA BRADBEER	Telephone	: +6138549 9644
Project	: P100373073/10035770	Date Samples Received	: 02-Oct-2019
Site	: ----	Issue Date	: 14-Oct-2019
Sampler	: COLIN BIGGS	No. of samples received	: 59
Order number	: ----	No. of samples analysed	: 46

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP202A: Phenoxyacetic Acid Herbicides by LCMS	EB1926160--033	Anonymous	**2.4-D**	94-75-7	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP234H: Triazine Herbicides	ES1932358--001	TP05@0.0-0.2	**Atrazine**	1912-24-9	40.0 %	70.0-130%	**Recovery less than lower data quality objective**
EP234H: Triazine Herbicides	ES1932358--001	TP05@0.0-0.2	**Cyanazine**	21725-46-2	0.00 %	70.0-130%	**Recovery less than lower data quality objective**
EP234H: Triazine Herbicides	ES1932358--001	TP05@0.0-0.2	**Propazine**	139-40-2	34.4 %	70.0-130%	**Recovery less than lower data quality objective**
EP234H: Triazine Herbicides	ES1932358--001	TP05@0.0-0.2	**Simazine**	122-34-9	45.6 %	70.0-130%	**Recovery less than lower data quality objective**
EP234H: Triazine Herbicides	ES1932358--001	TP05@0.0-0.2	**Terbuthylazine**	5915-41-3	52.8 %	70.0-130%	**Recovery less than lower data quality objective**

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
EA051 : Bulk Density							
Soil Glass Jar - Unpreserved (EA051) TP18@0.0-0.2	**01-Oct-2019**	**----**	----	----	**10-Oct-2019**	29-Mar-2020	✓
Soil Glass Jar - Unpreserved (EA051) TP13@0.0-0.1 5, TP24@0.0-0.2	**02-Oct-2019**	**----**	----	----	**10-Oct-2019**	30-Mar-2020	✓
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) TP05@0.0-0.2	**01-Oct-2019**	**----**	----	----	**08-Oct-2019**	15-Oct-2019	✓
Soil Glass Jar - Unpreserved (EA055) TP10@0.1 -0.5 - TP10@0.1-0.25, TP11@0.7, TP11@0.1-0.3 - TP11@0.1-0.3, TP14@0.1 -0.3	**02-Oct-2019**	**----**	----	----	**08-Oct-2019**	16-Oct-2019	✓
Soil Glass Jar - Unpreserved (EA055) TP22 @0.0-0.15, TP25@0.3-0.65, TP27@0.35-0.65	**30-Sep-2019**	**----**	----	----	**08-Oct-2019**	14-Oct-2019	✓

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
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag: Separate bag received (EA200)							
TP05@0.0-0.2, TP05@0.2-0.4, TP18@0.0-0.2, TP18@0.2-0.35, TP26@0.0-0.15, TP26@0.15-0.3	**01-Oct-2019**	**----**	----	----	**08-Oct-2019**	29-Mar-2020	✓
Snap Lock Bag: Separate bag received (EA200)							
TP09@0.0-0.1, TP09@0.1-0.4, TP10@0.0-0.10, TP10@0.1 -0.5 - TP10@0.1-0.25, TP11@0.1-0.3 - TP11@0.1-0.3, TP12 @0.0-0.1, TP13@0.0-0.1 5, TP14@0.0-0.1, TP29@0.0-0.2, TP29@0.2-0.4, TP30@0.0-0 .1, GB2@0.0-0.3, GB3@0.0-0.2	**02-Oct-2019**	**----**	----	----	**08-Oct-2019**	30-Mar-2020	✓
Snap Lock Bag: Separate bag received (EA200)							
TP24@0.0-0.2	**02-Oct-2019**	**----**	----	----	**10-Oct-2019**	30-Mar-2020	✓
Snap Lock Bag: Separate bag received (EA200)							
TP15@0.0-0.2 - TP15@0.0-0.1, TP16@0.0-0.3, TP17@0.0-0.2, TP19@0.0-0.2, TP20@0.0-0.1, TP20@0.1-0.2, TP21@0.0-0.1 5, TP22 @0.0-0.15, TP23@0.0-0.35, TP25@0.0-0.15, TP27@0.0-0.15 - TP27@0.0-0.100, TP28@0.0-0.10	**30-Sep-2019**	**----**	----	----	**08-Oct-2019**	28-Mar-2020	✓
Soil Glass Jar - Unpreserved (EA200)							
TP25@0.3-0.65	**30-Sep-2019**	**----**	----	----	**08-Oct-2019**	28-Mar-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
EA200N: Asbestos Quantification (non-NATA)								
Snap Lock Bag: Separate bag received (EA200N)								
TP05@0.0-0.2,	TP05@0.2-0.4,	**01-Oct-2019**	**----**	----	----	**08-Oct-2019**	29-Mar-2020	✓
TP18@0.0-0.2,	TP18@0.2-0.35,							
TP26@0.0-0.15,	TP26@0.15-0.3							
Snap Lock Bag: Separate bag received (EA200N)								
TP09@0.0-0.1,	TP09@0.1-0.4,	**02-Oct-2019**	**----**	----	----	**08-Oct-2019**	30-Mar-2020	✓
TP10@0.0-0.10,	TP10@0.1 -0.5 - TP10@0.1-0.25,							
TP11@0.1-0.3 - TP11@0.1-0.3,	TP12 @0.0-0.1,							
TP13@0.0-0.1 5,	TP14@0.0-0.1,							
TP29@0.0-0.2,	TP29@0.2-0.4,							
TP30@0.0-0 .1,	GB2@0.0-0.3,							
GB3@0.0-0.2								
Snap Lock Bag: Separate bag received (EA200N)								
TP24@0.0-0.2		**02-Oct-2019**	**----**	----	----	**10-Oct-2019**	30-Mar-2020	✓
Snap Lock Bag: Separate bag received (EA200N)								
TP15@0.0-0.2 - TP15@0.0-0.1,	TP16@0.0-0.3,	**30-Sep-2019**	**----**	----	----	**08-Oct-2019**	28-Mar-2020	✓
TP17@0.0-0.2,	TP19@0.0-0.2,							
TP20@0.0-0.1,	TP20@0.1-0.2,							
TP21@0.0-0.1 5,	TP22 @0.0-0.15,							
TP23@0.0-0.35,	TP25@0.0-0.15,							
TP27@0.0-0.15 - TP27@0.0-0.100,	TP28@0.0-0.10							
Soil Glass Jar - Unpreserved (EA200N)								
TP25@0.3-0.65		**30-Sep-2019**	**----**	----	----	**08-Oct-2019**	28-Mar-2020	✓
EK040T: Fluoride Total								
Snap Lock Bag (EK040T)								
TP05@0.0-0.2,	TP26@0.15-0.3	**01-Oct-2019**	**08-Oct-2019**	29-Oct-2019	✓	**11-Oct-2019**	29-Oct-2019	✓
Snap Lock Bag (EK040T)								
TP11@0.1-0.3 - TP11@0.1-0.3,	GB3@0.0-0.3	**02-Oct-2019**	**08-Oct-2019**	30-Oct-2019	✓	**11-Oct-2019**	30-Oct-2019	✓
Snap Lock Bag (EK040T)								
TP22 @0.0-0.15,	TP25@0.3-0.65,	**30-Sep-2019**	**08-Oct-2019**	28-Oct-2019	✓	**11-Oct-2019**	28-Oct-2019	✓
TP28@0.1 -0.2								
EP071 SG: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Silica gel cleanup								
Soil Glass Jar - Unpreserved (EP071SG-S)								
TP10@0.1 -0.5 - TP10@0.1-0.25,	TP11@0.7,	**02-Oct-2019**	**09-Oct-2019**	16-Oct-2019	✓	**10-Oct-2019**	18-Nov-2019	✓
TP14@0.1 -0.3								
Soil Glass Jar - Unpreserved (EP071SG-S)								
TP27@0.35-0.65		**30-Sep-2019**	**09-Oct-2019**	14-Oct-2019	✓	**10-Oct-2019**	18-Nov-2019	✓

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
EP071 SG-S: Total Petroleum Hydrocarbons in Soil - Silica gel cleanup							
Soil Glass Jar - Unpreserved (EP071SG-S) TP10@0.1 -0.5 - TP10@0.1-0.25, TP11@0.7, TP14@0.1 -0.3	**02-Oct-2019**	**09-Oct-2019**	16-Oct-2019	✓	**10-Oct-2019**	18-Nov-2019	✓
Soil Glass Jar - Unpreserved (EP071SG-S) TP27@0.35-0.65	**30-Sep-2019**	**09-Oct-2019**	14-Oct-2019	✓	**10-Oct-2019**	18-Nov-2019	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) TP10@0.1 -0.5 - TP10@0.1-0.25, TP11@0.7, TP14@0.1 -0.3	**02-Oct-2019**	**05-Oct-2019**	16-Oct-2019	✓	**09-Oct-2019**	16-Oct-2019	✓
Soil Glass Jar - Unpreserved (EP071) TP10@0.1 -0.5 - TP10@0.1-0.25, TP11@0.7, TP14@0.1 -0.3	**02-Oct-2019**	**09-Oct-2019**	16-Oct-2019	✓	**09-Oct-2019**	18-Nov-2019	✓
Soil Glass Jar - Unpreserved (EP080) TP27@0.35-0.65	**30-Sep-2019**	**05-Oct-2019**	14-Oct-2019	✓	**09-Oct-2019**	14-Oct-2019	✓
Soil Glass Jar - Unpreserved (EP071) TP27@0.35-0.65	**30-Sep-2019**	**09-Oct-2019**	14-Oct-2019	✓	**09-Oct-2019**	18-Nov-2019	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) TP10@0.1 -0.5 - TP10@0.1-0.25, TP11@0.7, TP14@0.1 -0.3	**02-Oct-2019**	**05-Oct-2019**	16-Oct-2019	✓	**09-Oct-2019**	16-Oct-2019	✓
Soil Glass Jar - Unpreserved (EP071) TP10@0.1 -0.5 - TP10@0.1-0.25, TP11@0.7, TP14@0.1 -0.3	**02-Oct-2019**	**09-Oct-2019**	16-Oct-2019	✓	**09-Oct-2019**	18-Nov-2019	✓
Soil Glass Jar - Unpreserved (EP080) TP27@0.35-0.65	**30-Sep-2019**	**05-Oct-2019**	14-Oct-2019	✓	**09-Oct-2019**	14-Oct-2019	✓
Soil Glass Jar - Unpreserved (EP071) TP27@0.35-0.65	**30-Sep-2019**	**09-Oct-2019**	14-Oct-2019	✓	**09-Oct-2019**	18-Nov-2019	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) TP10@0.1 -0.5 - TP10@0.1-0.25, TP11@0.7, TP14@0.1 -0.3	**02-Oct-2019**	**05-Oct-2019**	16-Oct-2019	✓	**09-Oct-2019**	16-Oct-2019	✓
Soil Glass Jar - Unpreserved (EP080) TP27@0.35-0.65	**30-Sep-2019**	**05-Oct-2019**	14-Oct-2019	✓	**09-Oct-2019**	14-Oct-2019	✓
EP202A: Phenoxyacetic Acid Herbicides by LCMS							
Soil Glass Jar - Unpreserved (EP202) TP05@0.0-0.2	**01-Oct-2019**	**09-Oct-2019**	15-Oct-2019	✓	**09-Oct-2019**	18-Nov-2019	✓
Soil Glass Jar - Unpreserved (EP202) TP11@0.1-0.3 - TP11@0.1-0.3	**02-Oct-2019**	**09-Oct-2019**	16-Oct-2019	✓	**09-Oct-2019**	18-Nov-2019	✓
Soil Glass Jar - Unpreserved (EP202) TP22 @0.0-0.15, TP25@0.3-0.65	**30-Sep-2019**	**09-Oct-2019**	14-Oct-2019	✓	**09-Oct-2019**	18-Nov-2019	✓

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
EP234H: Triazine Herbicides							
Soil Glass Jar - Unpreserved (EP234) TP05@0.0-0.2	**01-Oct-2019**	**11-Oct-2019**	15-Oct-2019	✓	**11-Oct-2019**	20-Nov-2019	✓
Soil Glass Jar - Unpreserved (EP234) TP11@0.1-0.3 - TP11@0.1-0.3	**02-Oct-2019**	**11-Oct-2019**	16-Oct-2019	✓	**11-Oct-2019**	20-Nov-2019	✓
Soil Glass Jar - Unpreserved (EP234) TP22 @0.0-0.15, TP25@0.3-0.65	**30-Sep-2019**	**11-Oct-2019**	14-Oct-2019	✓	**11-Oct-2019**	20-Nov-2019	✓

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: Separate bag received (EA200) Sample 1, Sample 4, Sample 8, TP12@0.0-0.1, TP26@0.0-0.15	**01-Oct-2019**	**----**	----	----	**08-Oct-2019**	29-Mar-2020	✓
Snap Lock Bag: Separate bag received (EA200) GB2@0.0-0.3	**02-Oct-2019**	**----**	----	----	**08-Oct-2019**	30-Mar-2020	✓
Snap Lock Bag: Separate bag received (EA200) TP16@0.0-0.3, TP20@0.0-0.1	**30-Sep-2019**	**----**	----	----	**08-Oct-2019**	28-Mar-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)							
Bulk Density	EA051	1	3	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by LCMSMS (Positive Ion Mode)	EP234	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	4	**25.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Pesticides by LCMSMS (Positive Ion Mode)	EP234	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Pesticides by LCMSMS (Positive Ion Mode)	EP234	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Pesticides by LCMSMS (Positive Ion Mode)	EP234	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Fluoride	EK040T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Bulk Density	* EA051	SOIL	The Determination of bulk density requires the measurments of the mass of soil in a measured volume
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 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Asbestos Classification and Quantitation per NEPM 2013	* EA200N	SOIL	Asbestos Classification and Quantitation per NEPM 2013 with Confirmation of Identification by AS 4964 - 2004 Gravimetric determination of Asbestos Containing Material, Fibrous Asbestos, Asbestos Fines and sample weight and calculation of percentage concentrations per NEPM protocols. Asbestos (Fines and Fibrous FA+AF) is reported as the equivalent weight in the sample received after accounting for sub-sampling (where applicable for the <7mm and/or <2mm fractions).
Total Fluoride	EK040T	SOIL	(In-house) Total fluoride is determined by ion specific electrode (ISE) in a solution obtained after a Sodium Carbonate / Potassium Carbonate fusion dissolution.
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
TRH - Semivolatile Fraction (Silica Gel Clean Up)	EP071SG-S	SOIL	In house: Referenced to USEPA SW 846 - 8015A. Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	SOIL	In house: LCMS (Electrospray in negative mode). Residues of acid herbicides are extracted from soil samples under the alkaline condition. An aliquot of the alkaline aqueous phase is taken and acidified before a SPE cleanup. After eluting off from the SPE cartridge, residues of acid herbicides are dissolved in HPLC mobile phase prior to instrument analysis.
Pesticides by LCMSMS (Positive Ion Mode)	EP234	SOIL	In house: LC-MSMS, direct injection. A sample extracted into acetonitrile, diluted with water and injected directly onto the instrument.. Analysis is by LC/MSMS, ESI Positive Mode.
Asbestos Identification in Bulk Solids	EA200	SOLID	In house: Referenced to AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining

Preparation Methods	Method	Matrix	Method Descriptions
Total Fluoride	EK040T-PR	SOIL	In house: Samples are fused with Sodium Carbonate / Potassium Carbonate flux.
Extraction for Phenoxy Acid Herbicides in Soils.	EP202-PR	SOIL	In-House: Alkaline extract followed by SPE clean up of acidified portion of the sample extract.
Sample preparation for Pesticides by LCMSMS	EP234-PR	SOIL	In house
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.

Preparation Methods	Method	Matrix	Method Descriptions
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.

APPENDIX G PREVIOUS REPORT

Mark Green
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10023978L01

30/07/2018

Due Diligence Soil Contamination Assessment and Indicative Waste Classification: Proposed Development at Kent Road Public School – 126 Kent Road, Marsfield, NSW

Dear Mark,

1 BACKGROUND & INTRODUCTION

Arcadis Australia Pacific Pty Ltd (Arcadis) was commissioned by Asset Geotechnical Engineering Pty Ltd (Asset) to complete a due diligence soil contamination assessment, including an indicative waste classification, within the proposed development area at Kent Road Public School (the site). The site is located at 126 Kent Road, Marsfield, NSW. The site location is provided in **Figure 1, Appendix A** and the proposed development areas are shown on **Figure 2, Appendix A**.

A Preliminary Site Investigation (PSI) was previously completed by Arcadis (April 2018; ref: 10019954RP01) which concluded that there was Low Risk for potential contamination. Whilst there was a Low Risk, a due diligence limited soil assessment was recommended to be completed within the footprint of the proposed development due to the identification of the following:

- Likely presence of fill materials of unknow origin, in particular within raised garden beds and the fill mound identified in the eastern portion of the site;
- Building materials containing asbestos;
- Lead paint; and
- Site history as a former market garden and orchard.

The proposed development area on the site occupies an approximate area of 5,500m^2.

The objective of the due diligence soil contamination assessment was to provide an indication of soil quality within the footprint of the proposed development areas and the likelihood of potential risk to human health (both workers and occupants/students) and ecological receptors.

Further, as the exact locations and volumes of any development excavations are unknown, the objective of this letter report was also to provide an indicative in-situ waste classification of the soils which may require excavation and offsite disposal to a licenced landfill facility. Arcadis note that this letter does not constitute a complete waste classification certificate, but only provides information on the likely waste classification of the materials for due diligence purposes.

All materials requiring removal from the site will need to be classified in accordance with Waste Classification Guidelines (NSW EPA, 2014).

2 SCOPE OF WORKS

The following scope of work was completed to achieve the due diligence soil contamination assessment and indicative in-situ waste classification of the material within the footprint of the proposed development areas:

- Eight boreholes were completed using a hand auger to a maximum depth of 0.3m below ground level (bgl) by a qualified and suitably experienced environmental scientist. Boreholes locations were selected using mixture of both targeted judgemental approach (based on the findings of the PSI) and a general systematic grid approach in accessible locations of the development area;
- Each soil sample location was logged in general accordance with the Unified Soil Classification System (USCS). Each soil sample collected was screened with a Photo-ionisation Detector (PID) to detect the potential presence of volatile organic compounds (VOCs);
- One soil sample of the fill/near surface material (0.2m bgl) from each borehole location was submitted to the NATA accredited laboratory Envirolab for analysis of:
  - Total recoverable hydrocarbons (TRH);
  - Benzene, toluene, ethyl benzene, xylenes and naphthalene (BTEXN);
  - Polycyclic aromatic hydrocarbons (PAHs);
  - Eight Priority Heavy Metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc);
  - Organochlorine/organophosphate pesticides (OCP/OPPs)
  - Polychlorinated Biphenyls (PCBs); and
  - Asbestos (WA/NEPM 2013).
- For quality assurance / quality control (QA/QC) purposes, an intra-laboratory (DUP1) and an inter-laboratory (TRIP1) duplicate sample was collected at a rate of 1:20 and analysed for the above analytes. A trip blank (FB) was also submitted with samples and analysed for selective VOC analytes;
- One (1) 10L sample from each of the eight borehole locations was collected from representative borehole location for assessment of Asbestos Containing Materials (ACM) in accordance with NEPC (2013) NEPM:
- Sample screened manually on-site through a < 7 mm sieve or spread out for inspection on a contrasting colour material (recommended for FA).
- Identified ACM and Friable Asbestos (FA) weighed to calculate asbestos soil concentration for individual samples as per NEPC (2013) NEPM.
- Collection of a 500mL soil sample and submitted for laboratory analysis of asbestos as FA and asbestos fines (AF).
- Comparison of results against the relevant NEPC (2013) NEPM HIL-A, HSL-A&B and EIL/ESL/ML urban residential guidelines (adopted as a screening level for primary schools and workers in a trench), and the NSW EPA (2014) Waste Classification Guidelines; and
- Preparation of a brief due diligence letter report detailing the findings for the soil assessment, including an indication of soil quality within the footprint of the proposed development areas, the likely waste classification and the likelihood of the potential risk to human health (both workers and occupants/students) and ecological receptors.

3 LIMITATIONS

The findings of this report are based on the scope of work outlined in **Section 2.** Arcadis performed its services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. No warranties, expressed or implied are made.

Subject to the scope of work, Arcadis' assessment was limited strictly to identifying the environmental conditions associated with the subject property and does not include evaluation of any other issues. The absence of any identified hazardous or toxic materials should not be interpreted as a guarantee that such materials do not exist on the subject property.

This report does not comment on any regulatory obligations based on the findings. This report relates only to the objectives stated and does not relate to any other work undertaken for the Client. It is a report based on the results and conclusions for the concentrations of contaminants observed in soil at the time of the sample collection. These conditions may change with time and space.

All conclusions and recommendations regarding the property are the professional opinions of Arcadis personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, Arcadis assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements or sources outside of Arcadis, or developments resulting from situations outside the scope of this project.

Arcadis is not engaged in environmental assessment and reporting for the purpose of advertising sales promoting, or endorsement of any client interests, including raising investment capital, recommending investment decisions, or other publicity purposes. The client acknowledges that this report is for the exclusive use of the client.

This investigation and scope of classification has necessarily been limited to the specified depth of final sampling per borehole. Materials at depths greater than the classification depth, in adjacent areas, or inconsistent with the soil descriptions above are not included within the scope of this report and are subject to separate classification. The client must take care when excavating the soil materials to not contaminate the soil materials with materials not included within the scope of this report.

4 IN SITU SOIL SAMPLING METHODOLOGY

The fieldwork was undertaken on 13 July 2018 by Arcadis' Environmental Scientist Jack O'Shaughnessy and included subsurface investigation at eight pre-determined locations within the footprint of the proposed development areas.

Eight boreholes (SB01 – SB08) were completed using a hand auger to a maximum investigation depth of 0.3m below ground level (bgl). Borehole and soil sampling locations are illustrated in **Figure 2**, **Appendix A**. Copies of the borelogs are provided in **Appendix B**.

The following procedures were followed during fieldwork to ensure quality control:

- Encountered borehole lithology was described in general accordance with the Unified Soil Classification System (USCS) and details of any discolouration, staining, odours or other indicators of contamination were also noted.
- The soil samples were collected directly from the hand auger. Efforts were made to minimise disturbance of the material being sampled to the extent practicable. Such techniques included significantly reducing the rotational speed of the augers as the target sampling depth was being approached, sampling only from the bottom of the auger and removing the outside layer of material, to prevent cross-contamination and minimise the potential for loss of volatile organic compounds (VOCs).

- Samples were collected from the hand auger using clean new nitrile gloves to prevent cross-contamination.
- Part of the soil sample was placed into snap lock plastic bag for screening with a photo-ionisation detector (PID) and the other being placed directly into a laboratory prepared 250ml glass jar with the details of the sample, including the sample name, the job number, the date of sample and the sample depth. A separate 500mL sample was placed into snap lock plastic bag for laboratory analysis of asbestos in accordance with the NEPM (1999) as amended 2013.
- One intra-laboratory duplicate sample (DUP1) and one inter-laboratory duplicated sample (TRIP1) was collected from primary sample location SB01 (0.2m).
- Sample preservation was undertaken in accordance with NEPC (2013), with samples immediately placed and stored in an ice filled esky to keep them chilled, prior to being couriered to the laboratory under a signed chain of custody (COC) form filled out with the required analysis.
- At each borehole location, a 10L bulk sample was also collected from the near surface (0.1-0.3m depth) and screened through a 7mm sieve. The material remaining in the sieve was inspected for bonded ACM and weighed (if any).
- Samples were transferred to the laboratory under a completed Chain-of-Custody.

In summary, soil samples were collected in accordance with Arcadis standard operating procedures which are based on the NEPM, Australian Standard AS4482.1-2005 and AS4482.2-1999 and OEH requirements.

5 DATA QUALITY ASSESSMENT

Field QA/QC - Statement of Duplicate Frequency:

The following intra-laboratory duplicates and inter-laboratory duplicates where collected within the field during effluent sampling along with their associated parent sample:

- QA/QC samples DUP1 and TRIP1 was collected from parent sample SB01 (0.2m).

Soil sample field duplicates were collected at 1:8 sample frequency, which is within the recommended 1:20 QA/QC frequency.

Laboratory QA/QC:

- Holding Times: Holding times are included on the laboratory reports in **Appendix D**. All samples were received and analysed within the specified holding times.
- Laboratory Accreditation for Analytical Methods Used: The primary laboratory used was Envirolab Sydney, which is NATA accredited to ISO 17025. The secondary laboratory used for analysis was ALS Environmental, which is also NATA accredited.
- Percent Recoveries of Spikes and Surrogates: All matrix spikes and sample surrogate recoveries with within acceptable ranges.
- Standard solution results: All standard solution (or LCS – laboratory control sample) were within acceptable ranges.
- Laboratory duplicate results: All laboratory duplicates were within acceptable ranges.
- Laboratory blank results: All laboratory blank results were within acceptable ranges.

QA/QC Data Evaluation:

- Documentation completeness:
  - Chain-of-custody forms were completed and appropriate.
- Data completeness:

  - All samples were received by the laboratories and analytical results reported including laboratory QA/QC.
- Data comparability:
  - Arcadis standard operating procedures (SOPs), Australian Standards and industry best practice were followed during sampling.
  - Consistent field conditions and staff were used during sampling.
  - Standard analytical methods were used by the laboratories for all analyses.
  - The limits of reporting are appropriate and consistent from each laboratory.
  - All samples were collected using the same method over the sampling event.
- Data representativeness:
  - The frequency of laboratory blanks was acceptable and the results were within specified ranges.
- Precision:
  - Field duplicates were collected at a rate of 1:8 for soil samples. These rates are within the Australian Standard (AS1482.1 1997) and Arcadis' QA frequency ranges.
  - Inter-laboratory duplicates were collected at the same rate as intra-laboratory duplicates.
  - Laboratory duplicates were collected at the expected rate. The laboratory duplicate RPDs were within acceptable ranges.

Data Precision - Relative Percentage Difference:

Relative percent difference (RPD) between primary samples and complementary field and laboratory duplicates shall be within appropriate limits. Precision is measured using the standard deviation 'SD' or '%RPD'. Replicate data for field duplicates of organics is expected to be as follows:

- RPD criteria of 50% or less, for concentrations > or = 10 times EQL;
- RPD criteria of 75% or less, for concentrations between 5 and 10 times the EQL; and
- RPD criteria of 100% or less, for concentrations < 5 times EQL.

Replicate data for field duplicates for inorganics, including metals is expected to be as follows:

- RPD criteria of 30% or less, for concentrations > or = 10 times EQL;
- RPD criteria of 75% or less, for concentrations between 5 and 10 times the EQL; and
- RPD criteria of 100% or less, for concentrations < 5 times EQL.

A summary of the RPDs calculations are presented in Table 3, **Appendix C**. Arcadis notes that RPDs were only calculated for groups of physicochemical compounds with detections above the laboratory detection limits.

Calculated RPDs were reported within the acceptable range for all primary, duplicate and triplicate samples.

Considering that the RPDs were within the acceptable range the sampling or analysis techniques, and consequently the analytical results are considered appropriate for the purposes of this report.

6 FIELD OBSERVATIONS

The general site soil lithology encountered during borehole investigation was as follows:

- **0.0 to 0.05m bgl:** Grass or Bark-chip surface cover.
- **0.05 to 0.3m bgl:** Silty Clay, brown, dry and hard. Some locations had some minor sand/gravel and organic inclusions.

No odours or staining were observed in any of the samples, with PID measurements reported below 0.3ppm.

No ACM was observed in any of the boreholes during sampling. No ACM was observed following sieving of the 10L sample.

Bore logs are provided in **Appendix B**.

7 ANALYTICAL RESULTS

7.1.1 Development Area Suitability

The summary of the soil sample laboratory results compared against land use suitability assessment criteria are shown in **Table 1, Appendix C**. The laboratory certificates are provided in **Appendix D**.

Soils collected were compared against the relevant NEPC (2013) NEPM HIL-A, HSL-A&B and EIL/ESL/ML urban residential guidelines to determine the potential risk to human health and environmental receptors.

Concentrations of BTEX, PAHs, OCPs, OPPs, PCBs and eight priority heavy metals were reported below the adopted NEPC (2013) NEPM HIL-A, HSL-A&B and EIL/ESL/ML urban residential guidelines. Additionally, there was no asbestos detected in any of the soil samples analysed.

The following exceedances of the adopted soil criteria were reported:

- Concentrations of TRH F2 (>C_{10}-C_{16} minus naphthalene) were reported exceeding the tier 1 NEPC (2013) NEPM HSL A&B criteria of 230mg/kg in the soil samples SB03-0.2 (410mg/kg) and SB07-0.2 (270mg/kg).
- Concentrations of TRH F2 (>C_{10}-C_{16}) were reported exceeding the tier 1 NEPC (2013) NEPM ESL criteria of 120mg/kg in the soil samples SB03-0.2 (410mg/kg), SB07-0.2 (270mg/kg) and SB08-0.2 (150mg/kg). Concentrations of TRH F3 (>C_{16}-C_{34}) were reported exceeding the tier 1 NEPC (2013) NEPM ESL criteria of 1300mg/kg in the soil sample SB03-0.2 (3,000mg/kg).

7.1.2 Indicative Waste Classification

The summary of the soil sample laboratory results compared against the NSW EPA (2014) *Waste Classification Guidelines Part 1: Classifying Waste* are shown in **Table 2, Appendix C**. The laboratory certificates are provided in **Appendix D**.

All samples reported concentrations of TPH, BTEX, PAHs, OCPs, OPPs, PCBs and eight priority heavy metals below the CT1 General Solid Waste criteria. No asbestos was reported above the laboratory limit of detection.

As such, the indicative in-situ waste classification of the proposed fill material is:

- **General Solid Waste (Non Putrescible).**

8 CONCLUSIONS AND RECOMMENDATIONS

Based on the above key findings, the following conclusions and recommendations are made:

Development Area Land Use Suitability:

- The reported TRH F2 (>C_{10}-C_{16} minus naphthalene) tier 1 NEPC (2013) NEPM HSL A&B exceedances in soil samples SB03-0.2 and SB07-0.2 indicate that there is a potential risk to human health via the vapour intrusion pathway if buildings were located over these locations. Arcadis note that both these samples were collected from the raised garden beds, which are understood to be comprised of imported materials.
- Further assessment, delineation and/or remediation of these soils should be completed to ensure that there is no unacceptable risk to human health for the proposed development.
- Arcadis note that these soils within the garden beds may be removed during the proposed development. If these soils are removed from site during development, validation samples of the raised garden bed footprint should be completed once removed to ensure that any underlying remaining soils do not pose an unacceptable risk to human health.
- If these soils will remain with the proposed development, further assessment may include (but not limited to):
  - Re-sampling and analysis for TRH with Silica Gel Clean-up analysis to determine if the reported TRH F2 is of a petrochemical origin or if its natural biological origin which are generally considered much less toxic to humans.
  - Collection of additional soil samples in the development area to increase the data set so that statistical analysis can be applied to determine the 95% UCL and compared against the NEPC (2013) NEPM HSL A&B criteria.
- The reported TRH F2 and F3 tier 1 NEPC (2013) NEPM ESL exceedances indicate that there is potential risk to territorial ecology, which may impact the growth of plants/vegetation and sub-surface organisms. Arcadis notes that there was no obvious signs of plant or vegetation stress at the exceedance locations.
  - As above, depending on the layout of the proposed development, further assessment, delineation and/or remediation of these soils may be completed to ensure that there is no unacceptable risk to ecological receptors.
  - Generally, the NEPC (2013) NEPM ESL only apply in areas where soils are accessible for plant/vegetation. They generally do not apply in areas covered by hardstand or building footprint, or where planter boxes are used. Therefore, further assessment or remediation will only be required if these exceedances are located outside of building or hardstand footprints.
- The soil results indicated that there is no unexpectable risk to human health for construction or maintenance workers. As the base of potential fill material was not encountered during the current investigation, potential exists for fill material of different type or quality to exist beyond 0.3m bgl. Therefore, indication of soil quality and the likelihood of a potential risk to human health (both workers and occupants) is recommended should excavation depth exceed 0.3m bgl.

Based on the above, Arcadis consider that the site can be made suitable for the proposed development, subject to the implementation of further soil assessment and/or soil remediation and validation works.

Indicative Waste Classification:

- Based on the results of this assessment, the soil is the indicative in-situ waste classification of the proposed fill material is:
- **General Solid Waste (Non Putrescible)**
- Further characterisation of the material must be completed prior to classification for offsite waste disposal purposes or for reuse onsite. Arcadis note that this letter does not constitute a complete waste classification certificate, but only provides information on the likely waste classification of the materials for due diligence purposes
- All materials requiring removal from the site will need to be classified in accordance with NSW EPA (2014) Waste Classification Guidelines. A suitable sampling density should be adopted, appropriate to fully characterise the actual volume of material to be removed. This material should only be transported offsite to an appropriately licensed landfill for disposal or to an appropriately licenced recycling facility which is licenced to receive this material, and waste disposal dockets kept for 'cradle to grave' waste tracking purposes.
- The material must not contain any asbestos containing material, if asbestos containing material is observed within the material during excavation, then the waste classification would also be Special Waste Asbestos.
- If any indication of other contaminants such as anthropogenic inclusions or chemical odours are noted during disturbance or removal of the soil, further advice must be obtained from a suitably qualified environmental consultant prior to offsite disposal.

◊◊◊◊◊

Should you have any questions or require further information, please contact the undersigned.

Yours sincerely,

Lee Douglass
Principal Hydrogeologist – Environmental Restoration
0412 625 989

Appendix A – Figures

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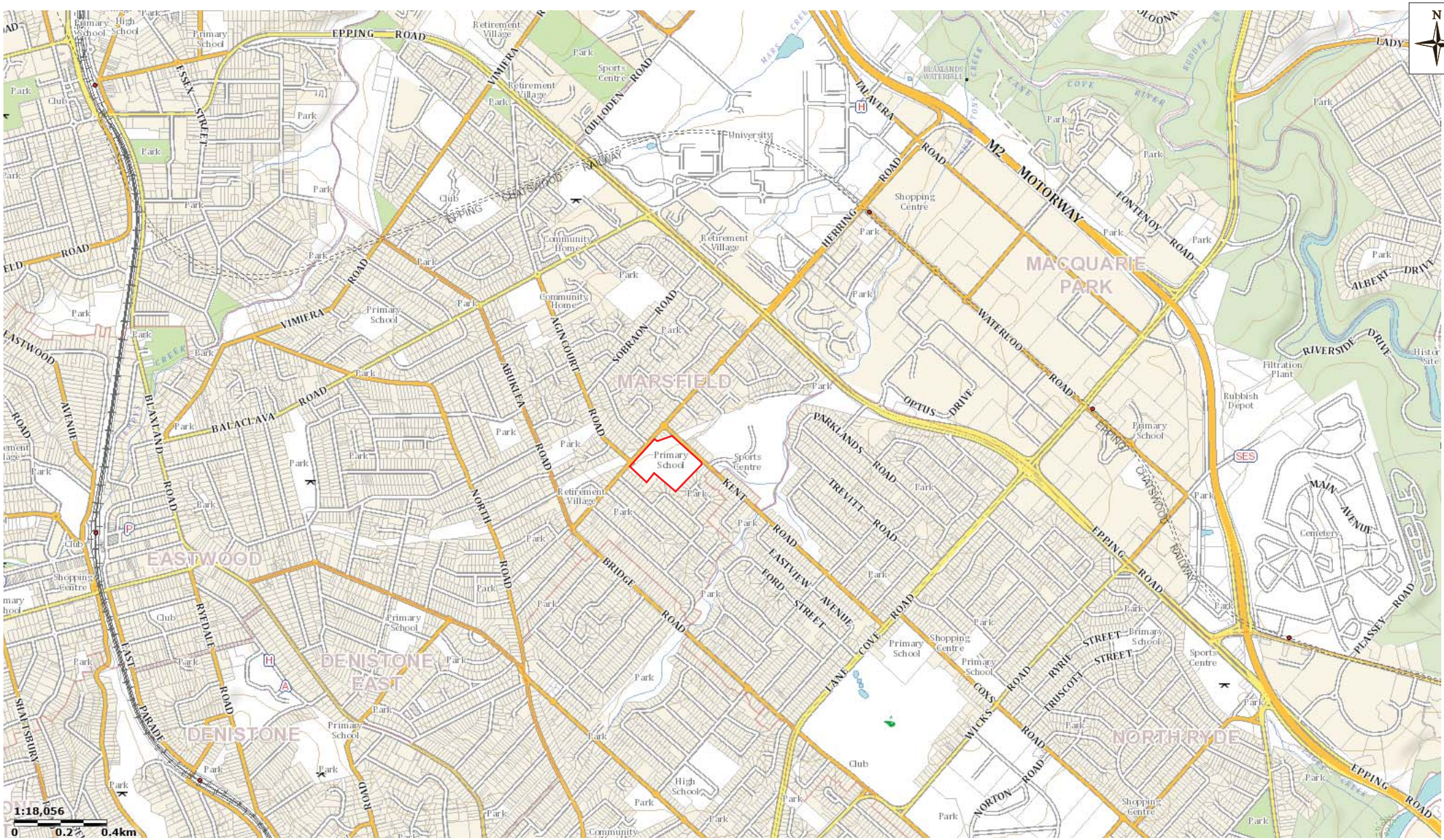
ARCADIS Design & Consultancy for natural and built assets

Site Location

Kent Road Public School - 126 Kent Road, Marsfield, NSW

Due Diligence Soil Assessment & Indicative Waste Classificaiton

FIGURE 1



Site Boundary

ARCADIS Design & Consultancy for natural and built assets

Proposed Development Area & Borehole Locations
Kent Road Public School - 126 Kent Road, Marsfield, NSW
Due Diligence Soil Assessment & Indicative Waste Classificaiton

FIGURE 2

Site Boundary
Proposed Development Footprint (Study Area)
Borehole Location

Appendix B – Bore Logs

Kent Road Borehole Logs

Borehole ID	Depth (mbgl)	Description	PID (ppm)	Field Sieve Results from 10L sample >7mm Asbestos
SB01	0.0-0.05	Grass and Topsoil, organic material inclusions, Silty Clay, dry. No ACM, odour or staining observed.	0.2	
	0.05-0.3	Silty Clay, brown, dry, hard, some organic material inclusions. No odour or staining.	0.1	No ACM observed in sample
SB02	0.0-0.1	Bark-chips (Garden bed). No ACM, odour or staining observed.	0.1	
	0.1-0.3	Silty Clay, brown, dry, with some sand. No odour or staining.	0.2	No ACM observed in sample
SB03	0.0-0.1	Bark-chips (Garden bed) and some organic material inclusions. No ACM, odour or staining observed.	0.1	
	0.1-0.3	Silty Clay, brown, dry, some organic material inclusions, soft. No odour or staining.	0.2	No ACM observed in sample
SB04	0.0-0.05	Grass, organic material. No ACM, odour or staining observed.	0.0	
	0.05-0.3	Silty Clay, brown, dry, soft, with some sand. No odour or staining.	0.1	No ACM observed in sample
SB05	0.0-0.05	Silty Clay, brown, soft, dry, with some coarse-grained sands and some organic material inclusions. No ACM, odour or staining observed.	0.2	
	0.05-0.3	Silty Clay, brown, soft, dry. No odour or staining.	0.1	No ACM observed in sample
SB06	0.0-0.05	Grass, organic material. No ACM, odour or staining observed.	0.0	
	0.05-0.3	Silty Clay, brown, soft, dry, with some coarse-grained sands and some organic material inclusions. No odour or staining.	0.3	No ACM observed in sample
SB07	0.0-0.05	Bark-chips (Garden bed) and some organic material inclusions. No ACM, odour or staining observed.	0.2	
	0.05-0.3	Silty Clay, brown, dry, soft.	0.2	No ACM observed in sample
SB08	0.0-0.05	Bark-chips (Garden bed) and some organic material inclusions. No ACM, odour or staining observed.	0.0	
	0.05-0.3	Silty Clay, brown, soft, dry, with some coarse-grained sands. No odour or staining.	0.1	No ACM observed in sample

Appendix C – Summary Results Tables

Table 1: Summary Result Table - Human Health and Environmental Soil Assessment Criteria
Kent Road Public School

			PCBs								TPH					Metals								BTEX							TRH													
			Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)	C6 - C9	C10 - C14	C15 - C28	C29-C36	C10 - C36 (Sum of total)	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	C6-C10	>C6-C10 less BTEX (F1)	C10-C16	>C10-C16 less Naphthalene (F2)	C16-C34	C34-C40	>C10 - C40 (Sum of total)	Total Positive PAHs	Benzo(a)pyrene TEQ calc (Half)	Benzo(b+j+k)fluoranthene	Benzo(a)pyrene TEQ calc (Zero)	Benzo(b+j)fluoranthene	Benzo(a)pyrene TEQ (LOR)
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	50	100	100	50	4	0.4	1	1	1	0.1	1	1	0.2	0.5	0.5	0.5	0.5	0.5	0.2	10	10	50	50	100	100	50	0.05	0.5	0.2	0.5	0.5	0.5
NEPM 2013 Table 1A(1) HILs Res A Soil										**1** [#1]						**100** [#2]	**20**	**100**	**6000**	**300** [#3]	**40** [#4]	**400**	**7400**															**300**	**3**		**3**		**3**
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt																																											
0-1m																								**0.6**	**390**	**NL** [#6]			**95**			**40** [#7]		**230** [#8]									
NEPM 2013 EIL for Urban Residential / Public Open Space (pH= 5.5, CEC=5cmol/kg, clay=5%, no ABC)																**100**		**320**	**130**	**1100**		**30**	**180**																					
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil																								**65**	**105**																			
0-2m																										**125**			**45**														
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil																															**800** [#11]		**1000** [#11]		**3500**	**10000**							
Sample ID	**Sample Date**	**Sample Depth**																																										
DUP	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<250	5	<0.4	15	15	44	<0.1	5	35	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	<50	<50	<100	<100	<50	1.8	<0.5	0.3	<0.5	-	<0.5
SB01	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<250	5	<0.4	15	12	42	<0.1	6	34	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	<50	<50	<100	<100	<50	1.6	<0.5	0.3	<0.5	-	<0.5
SB02	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<250	4	<0.4	12	28	37	<0.1	7	100	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	<50	<50	<100	<100	<50	0.3	<0.5	<0.2	<0.5	-	<0.5
SB03	13-Jul-18	0.2	<1	<1	<1	<1	<1	<1	<1	<1	<25	210	1600	1800	1990	11	<0.4	23	24	24	<0.1	7	92	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	410	410	3000	790	4200	0.4	<0.5	<0.2	<0.5	-	0.6
SB04	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<250	6	<0.4	19	14	33	<0.1	9	55	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	<50	<50	<100	<100	<50	<0.05	<0.5	<0.2	<0.5	-	<0.5
SB05	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<250	6	<0.4	21	18	30	<0.1	7	25	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	<50	<50	<100	<100	<50	2	<0.5	0.4	<0.5	-	<0.5
SB06	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<250	6	<0.4	18	18	47	<0.1	10	89	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	<50	<50	120	<100	120	<0.05	<0.5	<0.2	<0.5	-	<0.5
SB07	13-Jul-18	0.2	<1	<1	<1	<1	<1	<1	<1	<1	<25	78	660	610	1348	10	<0.4	15	28	23	<0.1	8	49	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	270	270	980	330	1600	0.4	<0.5	<0.2	<0.5	-	<0.5
SB08	13-Jul-18	0.2	<1	<1	<1	<1	<1	<1	<1	<1	<25	100	470	780	1350	<4	<0.4	10	21	33	<0.1	4	88	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	150	150	1100	360	1600	<0.05	<0.5	<0.2	<0.5	-	<0.5
TRIP	13-Jul-18	0.2	-	-	-	-	-	-	-	<0.1	<10	<50	<100	<100	<50	<5	<1	12	11	42	<0.1	5	31	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	<10	<50	<50	<100	<100	<50	-	0.6	-	<0.5	<0.5	1.2
Statistical Summary																																												
Number of Results			9	9	9	9	9	9	9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	1	10	10	10	10	10	10	10	9	10	9	10	1	10
Number of Detects			0	0	0	0	0	0	0	0	0	3	3	3	3	8	0	10	10	10	0	10	10	0	0	0	0	0	0	0	0	0	3	3	4	3	4	6	1	3	0	0	2
Minimum Concentration			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<50	<100	<100	<50	<4	<0.4	10	11	23	<0.1	4	25	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	<10	<50	<50	<100	<100	<50	<0.05	<0.5	<0.2	<0.5	<0.5	<0.5
Minimum Detect			ND	ND	ND	ND	ND	ND	ND	ND	ND	78	470	610	1348	4	ND	10	11	23	ND	4	25	ND	ND	ND	ND	ND	ND	ND	ND	ND	150	150	120	330	120	0.3	0.6	0.3	ND	ND	0.6
Maximum Concentration			<1	<1	<1	<1	<1	<1	<1	<1	<25	210	1600	1800	1990	11	<1	23	28	47	<0.1	10	100	<0.2	<0.5	<1	<2	<1	<1	<0.2	<25	<25	410	410	3000	790	4200	2	0.6	0.4	<0.5	<0.5	1.2
Maximum Detect			ND	ND	ND	ND	ND	ND	ND	ND	ND	210	1600	1800	1990	11	ND	23	28	47	ND	10	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	410	410	3000	790	4200	2	0.6	0.4	ND	ND	1.2
Average Concentration			0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.19	12	56	308	354	546	5.8	0.23	16	19	36	0.05	6.8	60	0.1	0.25	0.48	0.93	0.48	0.48		12	12	101	101	550	183	767	0.73	0.29	0.18	0.25		0.38
Median Concentration			0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	12.5	25	50	50	125	5.5	0.2	15	18	35	0.05	7	52	0.1	0.25	0.5	1	0.5	0.5	0.1	12.5	12.5	25	25	50	50	25	0.4	0.25	0.1	0.25	0.25	0.25
Standard Deviation			0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.22	2.4	60	504	576	723	2.9	0.095	4.2	6.2	8.3	0	1.9	29	0	0	0.079	0.24	0.079	0.079		2.4	2.4	136	136	953	246	1370	0.82	0.11	0.12	0	-	0.31
Number of Guideline Exceedances			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0
% of Results at or above the Detect Limit			0	0	0	0	0	0	0	0	0	30	30	30	30	80	0	100	100	100	0	100	100	0	0	0	0	0	0	0	0	0	30	30	40	30	40	67	10	33	0	0	20
% of Results below the Detect Limit			100	100	100	100	100	100	100	100	100	70	70	70	70	20	100	0	0	0	100	0	0	100	100	100	100	100	100	100	100	100	70	70	60	70	60	33	90	67	100	100	80
% of Detects at or above Guidelines			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	10	0	0	0	0	0	0	0	0
% of Results Below Guidelines or Non-Detect			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	70	90	100	100	100	100	100	100	100	100

Env Stds Description
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil:Management limits are applied after consideration of relevant ESLs and HSLs

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: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.
#4: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.
#5: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)
#6:Derived soil HSL exceeds soil saturation concentraiton
#7:To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#8:To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#9:Moderate reliability. To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#10:Moderate reliability. To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#11:Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

Table 1: Summary Result Table - Human Health and Environmental Soil Assessment Criteria
Kent Road Public School

			PAH															Organochlorine Pesticides																									
			Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	PAHs (Sum of total)	Phenanthrene	Pyrene	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
EQL			0.1	0.1	0.1	0.1	0.05	0.1	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.1	0.1	50	50	50	0.05	50	50	50	50	50	100	50	50	50	50	50	50	50	50	50	50	50	50	50
NEPM 2013 Table 1A(1) HILs Res A Soil																**300**[a]						**6**		**50000**					**240000**		**270000**				**10000**				**6000**	
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt 0-1m																																									
NEPM 2013 EIL for Urban Residential / Public Open Space (pH=5.5, CEC=5cmol/kg, clay=5%, no ABC)															**4**														**180**												
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil 0-2m							**0.7**																																		
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil																																									
Sample ID	**Sample Date**	**Sample Depth**																																								
DUP	13-Jul-18	0.2	<0.1	<0.1	<0.1	0.2	0.2	0.1	-	0.2	<0.1	0.4	<0.1	<0.1	<0.1	-	0.1	0.3	<100	<100	<100	-	<100	-	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	-	<100	<100	<100
SB01	13-Jul-18	0.2	<0.1	<0.1	<0.1	0.1	0.1	0.1	-	0.2	<0.1	0.4	<0.1	<0.1	<0.1	-	0.1	0.3	<100	<100	<100	-	<100	-	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	-	<100	<100	<100
SB02	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	0.07	<0.1	-	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	-	<0.1	0.1	<100	<100	<100	-	<100	-	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	-	<100	<100	<100
SB03	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<1000	<1000	<1000	-	<1000	-	<1000	<1000	<1000	<1000	<1000	<1000	<1000	-	<1000	<1000	<1000	<1000	<1000	-	<1000	<1000	<1000
SB04	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<100	<100	<100	-	<100	-	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	-	<100	<100	<100
SB05	13-Jul-18	0.2	<0.1	<0.1	<0.1	0.2	0.2	0.1	-	0.2	<0.1	0.4	<0.1	0.1	<0.1	-	0.1	0.4	<100	<100	<100	-	<100	-	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	-	<100	<100	<100
SB06	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<100	<100	<100	-	<100	-	<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	-	<100	<100	<100
SB07	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	0.07	<0.1	-	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	-	<0.1	0.1	<1000	<1000	<1000	-	<1000	-	<1000	<1000	<1000	<1000	<1000	<1000	<1000	-	<1000	<1000	<1000	<1000	<1000	-	<1000	<1000	<1000
SB08	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<1000	<1000	<1000	-	<1000	-	<1000	<1000	<1000	<1000	<1000	<1000	<1000	-	<1000	<1000	<1000	<1000	<1000	-	<1000	<1000	<1000
TRIP	13-Jul-18	0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	1.1	<0.5	0.5	<50	<50	<50	<0.05	<50	<50	<50	<50	<50	<50	<200	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Statistical Summary																																									
Number of Results			10	10	10	10	10	10	1	10	10	10	10	10	10	1	10	10	10	10	10	1	10	1	10	10	10	10	10	10	1	10	10	10	10	10	1	10	10	10
Number of Detects			0	0	0	3	6	3	0	3	0	6	0	1	0	1	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration			<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1.1	<0.1	<0.1	<50	<50	<50	<0.05	<50	<50	<50	<50	<50	<50	<100	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Minimum Detect			ND	ND	ND	0.1	0.07	0.1	ND	0.2	ND	0.1	ND	0.1	ND	1.1	0.1	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	1.1	<0.5	0.5	<1000	<1000	<1000	<0.05	<1000	<50	<1000	<1000	<1000	<1000	<1000	<1000	<50	<1000	<1000	<1000	<1000	<1000	<50	<1000	<1000	<1000
Maximum Detect			ND	ND	ND	0.2	0.4	0.1	ND	0.2	ND	0.6	ND	0.1	ND	1.1	0.1	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration			0.07	0.07	0.07	0.11	0.14	0.085		0.12	0.07	0.22	0.07	0.075	0.07		0.085	0.19	183	183	183		183		183	183	183	183	190	183	183		183	183	183	183	183		183	183	183
Median Concentration			0.05	0.05	0.05	0.05	0.085	0.05	0.25	0.05	0.05	0.1	0.05	0.05	0.05	1.1	0.05	0.1	50	50	50	0.025	50	25	50	50	50	50	50	50	25	50	50	50	50	50	25	50	50	50
Standard Deviation			0.063	0.063	0.063	0.08	0.12	0.063		0.085	0.063	0.21	0.063	0.063	0.063		0.063	0.17	219	219	219		219		219	219	219	219	214	219	219		219	219	219	219	219		219	219	219
Number of Guideline Exceedances			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results at or above the Detect Limit			0	0	0	30	60	30	0	30	0	60	0	10	0	100	30	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results below the Detect Limit			100	100	100	70	40	70	100	70	100	40	100	90	100	0	70	40	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
% of Detects at or above Guidelines			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results Below Guidelines or Non-Detect			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Env Stds Description
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil:Management limits are applied after consideration of relevant ESLs and HSLs

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
#2:Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where appropriate (refer Sheduk
#3: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
#4:Elemental mercury: HIL does not address elemental mercury. a site specific assessment should be considered if elemental mercury is present, or susp
#5:Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinogenic PAHs (should meet BaP T
#6:Derived soil HSL exceeds soil saturation concentraiton
#7:To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#8:To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#9:Moderate reliability. To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#10:Moderate reliability. To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#11:Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

Table 1: Summary Result Table - Human Health and Environmental Soil Assessment Criteria
Kent Road Public School

			Organophosphorous Pesticides																		Pesticides				Halogenated Benzenes	Asbestos			
			Methoxychlor	Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Fenthion	Malathion	Methyl parathion	Monocrotophos	Prothiofos	Ronnel	Demeton-S-methyl	Fenamiphos	Parathion	Pirimphos-ethyl	Hexachlorobenzene	Bonded ACM Asbestos ID in Soil (AS4964)	FA and AF (Friable Asbestos)	Asbestos ID in Soil (AS4964)	Trace Analysis
			µg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	%w/w	%w/w	g/kg	-
EQL			100	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.2	0.2	0.05	0.1	0.05	0.05	0.1	0.05	50	0.01	0.001	0.1	-
NEPM 2013 Table 1A(1) HILs Res A Soil			**300000**					**160**																	**10000**	**0.01**	**0.001**	-	-
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt 0-1m																													
NEPM 2013 EIL for Urban Residential / Public Open Space (pH=5.5, CEC=5cmol/kg, clay=5%, no ABC)																													
NEPM 2013 Table 1B(6) ESLs for Urban Res, Fine Soil 0-2m																													
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil																													
Sample ID	**Sample Date**	**Sample Depth**																											
DUP	13-Jul-18	0.2	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected
SB01	13-Jul-18	0.2	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected
SB02	13-Jul-18	0.2	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected
SB03	13-Jul-18	0.2	<1000	<1	<1	-	-	<1	<1	<1	<1	<1	<1	<1	-	<1	-	-	-	<1	-	-	<1	-	<1000	<0.01	<0.001	<0.1	No Asbestos Detected
SB04	13-Jul-18	0.2	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected
SB05	13-Jul-18	0.2	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected
SB06	13-Jul-18	0.2	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected
SB07	13-Jul-18	0.2	<1000	<1	<1	-	-	<1	<1	<1	<1	<1	<1	<1	-	<1	-	-	-	<1	-	-	<1	-	<1000	<0.01	<0.001	<0.1	No Asbestos Detected
SB08	13-Jul-18	0.2	<1000	<1	<1	-	-	<1	<1	<1	<1	<1	<1	<1	-	<1	-	-	-	<1	-	-	<1	-	<1000	<0.01	<0.001	<0.1	No Asbestos Detected
TRIP	13-Jul-18	0.2	<200	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.05	-	<0.05	<0.05	<0.2	<0.05	<50	-	-	-	-
Statistical Summary																													
Number of Results			10	10	10	1	1	10	10	10	10	10	10	9	1	10	1	1	1	9	1	1	10	1	10				
Number of Detects			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Minimum Concentration			<100	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.2	<0.2	<0.05	<0.1	<0.05	<0.05	<0.1	<0.05	<50				
Minimum Detect			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND				
Maximum Concentration			<1000	<1	<1	<0.05	<0.05	<1	<1	<1	<1	<1	<1	<1	<0.05	<1	<0.2	<0.2	<0.05	<1	<0.05	<0.05	<1	<0.05	<1000				
Maximum Detect			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND				
Average Concentration			190	0.18	0.18			0.18	0.18	0.18	0.18	0.18	0.18	0.2		0.18				0.2			0.19		183				
Median Concentration			50	0.05	0.05	0.025	0.025	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.025	0.05	0.1	0.1	0.025	0.05	0.025	0.025	0.05	0.025	50				
Standard Deviation			214	0.22	0.22			0.22	0.22	0.22	0.22	0.22	0.22	0.23		0.22				0.23			0.21		219				
Number of Guideline Exceedances			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Number of Guideline Exceedances(Detects Only)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
% of Results at or above the Detect Limit			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
% of Results below the Detect Limit			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100				
% of Detects at or above Guidelines			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
% of Results Below Guidelines or Non-Detect			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100				

Env Stds Description
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Fine Soil:Management limits are applied after consideration of relevant ESLs and HSLs

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
#2:Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability maybe important and should be considered where appropriate (refer Sheduli
#3:Lead: HILs A,B,C based on blood lead models (IEUBK & HIL D on adult lead model for where 50% bioavailability considered. Site-specific bioavailabili
#4:Elemental mercury: HIL does not address elemental mercury. a site specific assessment should be considered if elemental mercury is present, or susp
#5:Total PAHs: Based on sum of 16 most common reported (WHO 98). HIL application should consider presence of carcinogenic PAHs (should meet BaP T
#6:Derived soil HSL exceeds soil saturation concentraiton
#7:To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#8:To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#9:Moderate reliability. To obtain F1 subtract the sum of BTEX concentrations from the C6 - C10 fraction.
#10:Moderate reliability. To obtain F2 subtract napthalene from the >C10 - C16 fraction.
#11:Separate management limits for BTEX & napthalene are not available hence should not be subtracted from the relevant fractions to obtain F1 & F2

Table 2: Summary Result Table - Indicative Waste Classification
Kent Road Public School

			PCBs								TPH					Metals								BTEX							TRH											
			Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)	C6 - C9	C10 - C14	C15 - C28	C29-C36	C10 - C36 (Sum of total)	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	C6-C10	>C6-C10 less BTEX (F1)	C10-C16	>C10-C16 less Naphthalene (F2)	C16-C34	C34-C40	>C10 - C40 (Sum of total)	Total Positive PAHs	Benzo(a)pyrene TEQ calc (Half)	Benzo[b+j+k]fluoranthene	Benzo(a)pyrene TEQ calc (Zero)
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10	50	100	100	50	4	0.4	1	1	1	0.1	1	1	0.2	0.5	0.5	0.5	0.5	0.5	0.2	10	10	50	50	100	100	50	0.05	0.5	0.2	0.5
NSW 2014 General Solid Waste CT1 (No Leaching)										<50	650				10000	100	20	100		100	4	40	1	10	288	600			1000								200				
NSW 2014 Restricted Solid Waste CT2 (No Leaching)										<50	2600				40000	400	80	400		400	16	160		40	1152	2400			4000								800				
Sample ID	**Sample Date**	**Sample Depth**																																							
DUP	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<250	5	<0.4	15	15	44	<0.1	5	35	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	<50	<50	<100	<100	<50	1.8	<0.5	0.3	<0.5
SB01	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<250	5	<0.4	15	12	42	<0.1	6	34	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	<50	<50	<100	<100	<50	1.6	<0.5	0.3	<0.5
SB02	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<250	4	<0.4	12	28	37	<0.1	7	100	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	<50	<50	<100	<100	<50	0.3	<0.5	<0.2	<0.5
SB03	13-Jul-18	0.2	<1	<1	<1	<1	<1	<1	<1	<1	<25	210	1600	1800	1990	11	<0.4	23	24	24	<0.1	7	92	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	410	410	3000	790	4200	0.4	<0.5	<0.2	<0.5
SB04	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<250	6	<0.4	19	14	33	<0.1	9	55	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	<50	<50	<100	<100	<50	<0.05	<0.5	<0.2	<0.5
SB05	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<250	6	<0.4	21	18	30	<0.1	7	25	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	<50	<50	<100	<100	<50	2	<0.5	0.4	<0.5
SB06	13-Jul-18	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<250	6	<0.4	18	18	47	<0.1	10	89	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	<50	<50	120	<100	120	<0.05	<0.5	<0.2	<0.5
SB07	13-Jul-18	0.2	<1	<1	<1	<1	<1	<1	<1	<1	<25	78	660	610	1348	10	<0.4	15	28	23	<0.1	8	49	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	270	270	980	330	1600	0.4	<0.5	<0.2	<0.5
SB08	13-Jul-18	0.2	<1	<1	<1	<1	<1	<1	<1	<1	<25	100	470	780	1350	<4	<0.4	10	21	33	<0.1	4	88	<0.2	<0.5	<1	<2	<1	<1	-	<25	<25	150	150	1100	360	1600	<0.05	<0.5	<0.2	<0.5
TRIP	13-Jul-18	0.2	-	-	-	-	-	-	-	<0.1	<10	<50	<100	<100	<50	<5	<1	12	11	42	<0.1	5	31	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	<10	<50	<50	<100	<100	<50	1.1	0.6	-	<0.5
Statistical Summary																																									
Number of Results			9	9	9	9	9	9	9	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	1	10	10	10	10	10	10	10	10	10	9	10
Number of Detects			0	0	0	0	0	0	0	0	0	3	3	3	3	8	0	10	10	10	0	10	10	0	0	0	0	0	0	0	0	3	3	4	3	4	7	1	3	0
Minimum Concentration			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<10	<50	<100	<100	<50	<4	<0.4	10	11	23	<0.1	4	25	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<10	<10	<50	<50	<100	<100	<50	<0.05	<0.5	<0.2	<0.5
Minimum Detect			ND	ND	ND	ND	ND	ND	ND	ND	ND	78	470	610	1348	4	ND	10	11	23	ND	4	25	ND	ND	ND	ND	ND	ND	ND	ND	ND	150	150	120	330	120	0.3	0.6	0.3	ND
Maximum Concentration			<1	<1	<1	<1	<1	<1	<1	<1	<25	210	1600	1800	1990	11	<1	23	28	47	<0.1	10	100	<0.2	<0.5	<1	<2	<1	<1	<0.2	<25	<25	410	410	3000	790	4200	2	0.6	0.4	<0.5
Maximum Detect			ND	ND	ND	ND	ND	ND	ND	ND	ND	210	1600	1800	1990	11	ND	23	28	47	ND	10	100	ND	ND	ND	ND	ND	ND	ND	ND	ND	410	410	3000	790	4200	2	0.6	0.4	ND
Average Concentration			0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.19	12	56	308	354	546	5.8	0.23	16	19	36	0.05	6.8	60	0.1	0.25	0.48	0.93	0.48	0.48		12	12	101	101	550	183	767	0.77	0.29	0.18	0.25
Median Concentration			0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	12.5	25	50	50	125	5.5	0.2	15	18	35	0.05	7	52	0.1	0.25	0.5	1	0.5	0.5	0.1	12.5	12.5	25	25	50	50	25	0.4	0.25	0.1	0.25
Standard Deviation			0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.22	2.4	60	504	576	723	2.9	0.095	4.2	6.2	8.3	0	1.9	29	0	0	0.079	0.24	0.079	0.079		2.4	2.4	136	136	953	246	1370	0.78	0.11	0.12	0
Number of Guideline Exceedances			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Guideline Exceedances(Detects Only)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results at or above the Detect Limit			0	0	0	0	0	0	0	0	0	30	30	30	30	80	0	100	100	100	0	100	100	0	0	0	0	0	0	0	0	0	30	30	40	30	40	70	10	33	0
% of Results below the Detect Limit			100	100	100	100	100	100	100	100	100	70	70	70	70	20	100	0	0	0	100	0	0	100	100	100	100	100	100	100	100	100	70	70	60	70	60	30	90	67	100
% of Detects at or above Guidelines			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results Below Guidelines or Non-Detect			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Env Stds Comments

#1:Endosulfan means the total of Endosulfan I, Endosulfan II and Endosulfan sulfate.

Table 2: Summary Result Table - Indicative Waste Classification
Kent Road Public School

| | | | PAH | | | | | | | | | | | | | | | | | Organochlorine Pesticides | | | | | | | | | | | | | | | | |

Table 2: Summary Result Table - Indicative Waste Classification
Kent Road Public School

						Organophosphorous Pesticides																		Pesticides				Halogenated Benzenes	Asbestos			
			g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Fenthion	Malathion	Methyl parathion	Monocrotophos	Prothiofos	Ronnel	Demeton-S-methyl	Fenamiphos	Parathion	Pirimphos-ethyl	Hexachlorobenzene	Bonded ACMAsbestos ID in Soil (AS4964)	FA and AF (Friable Asbestos)	Asbestos ID in Soil (AS4964)	Trace Analysis
			µg/kg	µg/kg	µg/kg	µg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	%w/w	%w/w	g/kg	-
EQL			50	50	50	100	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.2	0.2	0.05	0.1	0.05	0.05	0.1	0.05	50	0.01	0.001	0.1	-
NSW 2014 General Solid Waste CT1 (No Leaching)											4																				
NSW 2014 Restricted Solid Waste CT2 (No Leaching)											16																				
Sample ID	**Sample Date**	**Sample Depth**																														
DUP	13-Jul-18	0.2	<100	<100	<100	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected
SB01	13-Jul-18	0.2	<100	<100	<100	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected
SB02	13-Jul-18	0.2	<100	<100	<100	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected
SB03	13-Jul-18	0.2	<1000	<1000	<1000	<1000	<1	<1	-	-	<1	<1	<1	<1	<1	<1	<1	-	<1	-	-	-	<1	-	-	<1	-	<1000	<0.01	<0.001	<0.1	No Asbestos Detected
SB04	13-Jul-18	0.2	<100	<100	<100	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected
SB05	13-Jul-18	0.2	<100	<100	<100	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected
SB06	13-Jul-18	0.2	<100	<100	<100	<100	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	-	-	-	<0.1	-	-	<0.1	-	<100	<0.01	<0.001	<0.1	No Asbestos Detected
SB07	13-Jul-18	0.2	<1000	<1000	<1000	<1000	<1	<1	-	-	<1	<1	<1	<1	<1	<1	<1	-	<1	-	-	-	<1	-	-	<1	-	<1000	<0.01	<0.001	<0.1	No Asbestos Detected
SB08	13-Jul-18	0.2	<1000	<1000	<1000	<1000	<1	<1	-	-	<1	<1	<1	<1	<1	<1	<1	-	<1	-	-	-	<1	-	-	<1	-	<1000	<0.01	<0.001	<0.1	No Asbestos Detected
TRIP	13-Jul-18	0.2	<50	<50	<50	<200	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	-	<0.05	<0.05	<0.2	<0.2	<0.05	-	<0.05	<0.05	<0.2	<0.05	<50	-	-	-	-
Statistical Summary																																
Number of Results			10	10	10	10	10	10	1	1	10	10	10	10	10	10	9	1	10	1	1	1	9	1	1	10	1	10	-	-	-	-
Number of Detects			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
Minimum Concentration			<50	<50	<50	<100	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.2	<0.2	<0.05	<0.1	<0.05	<0.05	<0.1	<0.05	<50	-	-	-	-
Minimum Detect			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-
Maximum Concentration			<1000	<1000	<1000	<1000	<1	<1	<0.05	<0.05	<1	<1	<1	<1	<1	<1	<1	<0.05	<1	<0.2	<0.2	<0.05	<1	<0.05	<0.05	<1	<0.05	<1000	-	-	-	-
Maximum Detect			ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-
Average Concentration			183	183	183	190	0.18	0.18			0.18	0.18	0.18	0.18	0.18	0.18	0.2		0.18				0.2			0.19		183	-	-	-	-
Median Concentration			50	50	50	50	0.05	0.05	0.025	0.025	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.025	0.05	0.1	0.1	0.025	0.05	0.025	0.025	0.05	0.025	50	-	-	-	-
Standard Deviation			219	219	219	214	0.22	0.22			0.22	0.22	0.22	0.22	0.22	0.22	0.23		0.22				0.23			0.21		219	-	-	-	-
Number of Guideline Exceedances			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
Number of Guideline Exceedances(Detects Only)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
% of Results at or above the Detect Limit			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
% of Results below the Detect Limit			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	-	-	-	-
% of Detects at or above Guidelines			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
% of Results Below Guidelines or Non-Detect			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	-	-	-	-

Env Stds Comments

#1:Endosulfan means the total of Endosulfan I, Endosulfan II and Endosulfan s

Table 3: Relative Percent Difference Results
Kent Road Public School

	SDG	ENVIROLAB 2018-07-13T00:00:00	ENVIROLAB 2018-07-13T00:00:00		ENVIROLAB 2018-07-13T00:00:00	ALSE-Sydney 16-Jul-18	
	Field ID	SB01	DUP	RPD	SB01	TRIP	RPD
	Sampled Date/Time	13/07/2018	13/07/2018		13/07/2018	13/07/2018	
ChemName	**Units**	**EQL**					
Arochlor 1016	mg/kg	0.1	<0.1	<0.1	0	<0.1	
Arochlor 1221	mg/kg	0.1	<0.1	<0.1	0	<0.1	
Arochlor 1232	mg/kg	0.1	<0.1	<0.1	0	<0.1	
Arochlor 1242	mg/kg	0.1	<0.1	<0.1	0	<0.1	
Arochlor 1248	mg/kg	0.1	<0.1	<0.1	0	<0.1	
Arochlor 1254	mg/kg	0.1	<0.1	<0.1	0	<0.1	
Arochlor 1260	mg/kg	0.1	<0.1	<0.1	0	<0.1	
PCBs (Sum of total)	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
C6 - C9	mg/kg	25 : 10 (Interlab)	<25	<25	0	<25	<10	0
C10 - C14	mg/kg	50	<50	<50	0	<50	<50	0
C15 - C28	mg/kg	100	<100	<100	0	<100	<100	0
C29-C36	mg/kg	100	<100	<100	0	<100	<100	0
Arsenic	mg/kg	4 : 5 (Interlab)	5	5	0	5	<5	0
Cadmium	mg/kg	0.4 : 1 (Interlab)	<0.4	<0.4	0	<0.4	<1	0
Chromium (III+VI)	mg/kg	1 : 2 (Interlab)	15	15	0	15	12	22
Copper	mg/kg	1 : 5 (Interlab)	12	15	22	12	11	9
Lead	mg/kg	1 : 5 (Interlab)	42	44	5	42	42	0
Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
Nickel	mg/kg	1 : 2 (Interlab)	6	5	18	6	5	18
Zinc	mg/kg	1 : 5 (Interlab)	34	35	3	34	31	9
Moisture	%	0.1	18	19	5	18		
Benzene	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0
Toluene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Ethylbenzene	mg/kg	1 : 0.5 (Interlab)	<1	<1	0	<1	<0.5	0
Xylene (m & p)	mg/kg	2 : 0.5 (Interlab)	<2	<2	0	<2	<0.5	0
Xylene (o)	mg/kg	1 : 0.5 (Interlab)	<1	<1	0	<1	<0.5	0
Xylene Total	mg/kg	1 : 0.5 (Interlab)	<1	<1	0	<1	<0.5	0
C6-C10	mg/kg	25 : 10 (Interlab)	<25	<25	0	<25	<10	0
>C6-C10 less BTEX (F1)	mg/kg	25 : 10 (Interlab)	<25	<25	0	<25	<10	0
C10-C16	mg/kg	50	<50	<50	0	<50	<50	0
>C10-C16 less Naphthalene (F2)	mg/kg	50	<50	<50	0	<50	<50	0
C16-C34	mg/kg	100	<100	<100	0	<100	<100	0
C34-C40	mg/kg	100	<100	<100	0	<100	<100	0
>C10 - C40 (Sum of total)	mg/kg	50	<50	<50	0	<50	<50	0
Total Positive PAHs	mg/kg	0.05	1.6	1.8	12	1.6		
Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5	<0.5	<0.5	0	<0.5	0.6	18
Benzo(b+j+k)fluoranthene	mg/kg	0.2	0.3	0.3	0	0.3		
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5	<0.5	<0.5	0	<0.5	1.2	82
Acenaphthene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.5	0
Acenaphthylene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.5	0
Anthracene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.5	0
Benz(a)anthracene	mg/kg	0.1 : 0.5 (Interlab)	0.1	0.2	67	0.1	<0.5	0
Benzo(a) pyrene	mg/kg	0.05 : 0.5 (Interlab)	0.1	0.2	67	0.1	<0.5	0
Benzo(g,h,i)perylene	mg/kg	0.1 : 0.5 (Interlab)	0.1	0.1	0	0.1	<0.5	0
Chrysene	mg/kg	0.1 : 0.5 (Interlab)	0.2	0.2	0	0.2	<0.5	0
Dibenz(a,h)anthracene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.5	0
Fluoranthene	mg/kg	0.1 : 0.5 (Interlab)	0.4	0.4	0	0.4	0.6	40
Fluorene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.5	0
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1 : 0.5 (Interlab)	<0.1	<0.1	0	<0.1	<0.5	0
Naphthalene	mg/kg	1 : 0.5 (Interlab)	<1	<1	0	<1	<0.5	0
Naphthalene	mg/kg	0.1 : 1 (Interlab)	<0.1	<0.1	0	<0.1	<0.5	0
Phenanthrene	mg/kg	0.1 : 0.5 (Interlab)	0.1	0.1	0	0.1	<0.5	0
Pyrene	mg/kg	0.1 : 0.5 (Interlab)	0.3	0.3	0	0.3	0.5	50
4,4-DDE	µg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50	0
a-BHC	µg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50	0
Aldrin	µg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50	0
b-BHC	µg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50	0
Chlordane (cis)	µg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50	0
Chlordane (trans)	µg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50	0
d-BHC	µg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50	0
DDD	µg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50	0
DDT	µg/kg	100 : 200 (Interlab)	<100	<100	0	<100	<200	0
DDT+DDE+DDD	µg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50	0
Dieldrin	µg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50	0
Endosulfan I	µg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50	0
Endosulfan II	µg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50	0
Endosulfan sulphate	µg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50	0
Endrin	µg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50	0
Endrin aldehyde	µg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50	0
g-BHC (Lindane)	µg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50	0
Heptachlor	µg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50	0
Heptachlor epoxide	µg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50	0
Methoxychlor	µg/kg	100 : 200 (Interlab)	<100	<100	0	<100	<200	0
orine Pesticides								
Azinophos methyl	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.05	0
Bromophos-ethyl	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.05	0
Chlorpyrifos	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.05	0
Chlorpyrifos-methyl	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.05	0
Diazinon	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.05	0
Dichlorvos	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.05	0
Dimethoate	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.05	0
Ethion	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.05	0
Fenitrothion	mg/kg	0.1	<0.1	<0.1	0	<0.1		
Malathion	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.1	<0.05	0
Ronnel	mg/kg	0.1	<0.1	<0.1	0	<0.1		
sphorous Pesticides								
Parathion	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.1	0	<0.1	<0.2	0
Hexachlorobenzene	µg/kg	100 : 50 (Interlab)	<100	<100	0	<100	<50	0

*RPDs have only been considered where a concentration is greater than 0 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 100 (0-5 x EQL); 75 (5-10 x EQL); 30 (> 10 x EQL))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

Appendix D – Laboratory Reports

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CERTIFICATE OF ANALYSIS 196252

Client Details

Client	Arcadis Australia Pacific Pty Ltd
Attention	Lee Douglass, Jack O'Shaughnessy
Address	Level 16, 580 George St, Sydney, NSW, 2000

Sample Details

Your Reference	**10023978**
Number of Samples	9 SOIL, 1 WATER
Date samples received	13/07/2018
Date completed instructions received	13/07/2018

Analysis Details

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

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

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

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	20/07/2018
Date of Issue	19/07/2018

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

Results Approved By
Dragana Tomas, Senior Chemist
Leon Ow, Chemist
Lucy Zhu, Asbsestos Analyst
Steven Luong, Senior Chemist

Authorised By

Jacinta Hurst, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		196252-1	196252-2	196252-3	196252-4	196252-5
Your Reference	UNITS	SB01	SB02	SB03	SB04	SB05
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	17/07/2018	17/07/2018	17/07/2018	17/07/2018	17/07/2018
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	136	98	97	96	94

vTRH(C6-C10)/BTEXN in Soil					
Our Reference		196252-6	196252-7	196252-8	196252-9
Your Reference	UNITS	SB06	SB07	SB08	DUP
Depth		0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	17/07/2018	17/07/2018	17/07/2018	17/07/2018
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	106	103	106	104

svTRH (C10-C40) in Soil						
Our Reference		196252-1	196252-2	196252-3	196252-4	196252-5
Your Reference	UNITS	SB01	SB02	SB03	SB04	SB05
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	17/07/2018	17/07/2018	17/07/2018	17/07/2018	17/07/2018
TRH C_{10} - C_{14}	mg/kg	<50	<50	210	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	1,600	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	1,800	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	410	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	410	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	3,000	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	790	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	4,200	<50	<50
Surrogate o-Terphenyl	%	95	94	135	94	92

svTRH (C10-C40) in Soil					
Our Reference		196252-6	196252-7	196252-8	196252-9
Your Reference	UNITS	SB06	SB07	SB08	DUP
Depth		0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	17/07/2018	17/07/2018	17/07/2018	17/07/2018
TRH C_{10} - C_{14}	mg/kg	<50	78	100	<50
TRH C_{15} - C_{28}	mg/kg	<100	660	470	<100
TRH C_{29} - C_{36}	mg/kg	<100	610	780	<100
TRH >C_{10} -C_{16}	mg/kg	<50	270	150	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	270	150	<50
TRH >C_{16} -C_{34}	mg/kg	120	980	1,100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	330	360	<100
Total +ve TRH (>C10-C40)	mg/kg	120	1,600	1,600	<50
Surrogate o-Terphenyl	%	94	106	110	91

PAHs in Soil						
Our Reference		196252-1	196252-2	196252-3	196252-4	196252-5
Your Reference	UNITS	SB01	SB02	SB03	SB04	SB05
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	17/07/2018	17/07/2018	17/07/2018	17/07/2018	17/07/2018
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.4	0.1	<0.1	<0.1	0.4
Pyrene	mg/kg	0.3	0.1	<0.1	<0.1	0.4
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	0.2
Chrysene	mg/kg	0.2	<0.1	<0.1	<0.1	0.2
Benzo(b,j+k)fluoranthene	mg/kg	0.3	<0.2	<0.2	<0.2	0.4
Benzo(a)pyrene	mg/kg	0.1	0.07	0.4	<0.05	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1
Total +ve PAH's	mg/kg	1.6	0.3	0.4	<0.05	2.0
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	0.6	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	99	95	104	108	98

PAHs in Soil					
Our Reference		196252-6	196252-7	196252-8	196252-9
Your Reference	UNITS	SB06	SB07	SB08	DUP
Depth		0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	17/07/2018	17/07/2018	17/07/2018	17/07/2018
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	0.1	<0.1	0.4
Pyrene	mg/kg	<0.1	0.1	<0.1	0.3
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	0.2
Chrysene	mg/kg	<0.1	<0.1	<0.1	0.2
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	0.3
Benzo(a)pyrene	mg/kg	<0.05	0.07	<0.05	0.2
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	0.1
Total +ve PAH's	mg/kg	<0.05	0.4	<0.05	1.8
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	96	103	105	101

Organochlorine Pesticides in soil						
Our Reference		196252-1	196252-2	196252-3	196252-4	196252-5
Your Reference	UNITS	SB01	SB02	SB03	SB04	SB05
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
HCB	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Surrogate TCMX	%	108	107	88	112	116

Organochlorine Pesticides in soil					
Our Reference		196252-6	196252-7	196252-8	196252-9
Your Reference	UNITS	SB06	SB07	SB08	DUP
Depth		0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
HCB	mg/kg	<0.1	<1	<1	<0.1
alpha-BHC	mg/kg	<0.1	<1	<1	<0.1
gamma-BHC	mg/kg	<0.1	<1	<1	<0.1
beta-BHC	mg/kg	<0.1	<1	<1	<0.1
Heptachlor	mg/kg	<0.1	<1	<1	<0.1
delta-BHC	mg/kg	<0.1	<1	<1	<0.1
Aldrin	mg/kg	<0.1	<1	<1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<1	<1	<0.1
gamma-Chlordane	mg/kg	<0.1	<1	<1	<0.1
alpha-chlordane	mg/kg	<0.1	<1	<1	<0.1
Endosulfan I	mg/kg	<0.1	<1	<1	<0.1
pp-DDE	mg/kg	<0.1	<1	<1	<0.1
Dieldrin	mg/kg	<0.1	<1	<1	<0.1
Endrin	mg/kg	<0.1	<1	<1	<0.1
pp-DDD	mg/kg	<0.1	<1	<1	<0.1
Endosulfan II	mg/kg	<0.1	<1	<1	<0.1
pp-DDT	mg/kg	<0.1	<1	<1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<1	<1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<1	<1	<0.1
Methoxychlor	mg/kg	<0.1	<1	<1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<1	<1	<0.1
Surrogate TCMX	%	101	80	128	99

Organophosphorus Pesticides						
Our Reference		196252-1	196252-2	196252-3	196252-4	196252-5
Your Reference	UNITS	SB01	SB02	SB03	SB04	SB05
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Dichlorvos	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Surrogate TCMX	%	108	107	88	112	116

Organophosphorus Pesticides					
Our Reference		196252-6	196252-7	196252-8	196252-9
Your Reference	UNITS	SB06	SB07	SB08	DUP
Depth		0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Azinphos-methyl (Guthion)	mg/kg	<0.1	<1	<1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<1	<1	<0.1
Chlorpyriphos	mg/kg	<0.1	<1	<1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<1	<1	<0.1
Diazinon	mg/kg	<0.1	<1	<1	<0.1
Dichlorvos	mg/kg	<0.1	<1	<1	<0.1
Dimethoate	mg/kg	<0.1	<1	<1	<0.1
Ethion	mg/kg	<0.1	<1	<1	<0.1
Fenitrothion	mg/kg	<0.1	<1	<1	<0.1
Malathion	mg/kg	<0.1	<1	<1	<0.1
Parathion	mg/kg	<0.1	<1	<1	<0.1
Ronnel	mg/kg	<0.1	<1	<1	<0.1
Surrogate TCMX	%	101	88	128	99

PCBs in Soil						
Our Reference		196252-1	196252-2	196252-3	196252-4	196252-5
Your Reference	UNITS	SB01	SB02	SB03	SB04	SB05
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Aroclor 1016	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<1	<0.1	<0.1
Surrogate TCLMX	%	108	107	88	112	116

PCBs in Soil					
Our Reference		196252-6	196252-7	196252-8	196252-9
Your Reference	UNITS	SB06	SB07	SB08	DUP
Depth		0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL
Date extracted	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Aroclor 1016	mg/kg	<0.1	<1	<1	<0.1
Aroclor 1221	mg/kg	<0.1	<1	<1	<0.1
Aroclor 1232	mg/kg	<0.1	<1	<1	<0.1
Aroclor 1242	mg/kg	<0.1	<1	<1	<0.1
Aroclor 1248	mg/kg	<0.1	<1	<1	<0.1
Aroclor 1254	mg/kg	<0.1	<1	<1	<0.1
Aroclor 1260	mg/kg	<0.1	<1	<1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<1	<1	<0.1
Surrogate TCLMX	%	101	88	128	99

Acid Extractable metals in soil						
Our Reference		196252-1	196252-2	196252-3	196252-4	196252-5
Your Reference	UNITS	SB01	SB02	SB03	SB04	SB05
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Arsenic	mg/kg	5	4	11	6	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	15	12	23	19	21
Copper	mg/kg	12	28	24	14	18
Lead	mg/kg	42	37	24	33	30
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	6	7	7	9	7
Zinc	mg/kg	34	100	92	55	25

Acid Extractable metals in soil					
Our Reference		196252-6	196252-7	196252-8	196252-9
Your Reference	UNITS	SB06	SB07	SB08	DUP
Depth		0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL
Date prepared	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Arsenic	mg/kg	6	10	<4	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	18	15	10	15
Copper	mg/kg	18	28	21	15
Lead	mg/kg	47	23	33	44
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	10	8	4	5
Zinc	mg/kg	89	49	88	35

Moisture						
Our Reference		196252-1	196252-2	196252-3	196252-4	196252-5
Your Reference	UNITS	SB01	SB02	SB03	SB04	SB05
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	17/07/2018	17/07/2018	17/07/2018	17/07/2018	17/07/2018
Moisture	%	18	15	29	14	16

Moisture					
Our Reference		196252-6	196252-7	196252-8	196252-9
Your Reference	UNITS	SB06	SB07	SB08	DUP
Depth		0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL
Date prepared	-	16/07/2018	16/07/2018	16/07/2018	16/07/2018
Date analysed	-	17/07/2018	17/07/2018	17/07/2018	17/07/2018
Moisture	%	12	16	20	19

Asbestos ID - soils NEPM - ASB-001						
Our Reference		196252-1	196252-2	196252-3	196252-4	196252-5
Your Reference	UNITS	SB01	SB02	SB03	SB04	SB05
Depth		0.2	0.2	0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date analysed	-	19/07/2018	19/07/2018	19/07/2018	19/07/2018	19/07/2018
Sample mass tested	g	647.36	218.52	351.41	481.79	586.07
Sample Description	-	Brown coarse-grained soil & rocks	Brown soil & organic debris	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001				
Our Reference		196252-6	196252-7	196252-8
Your Reference	UNITS	SB06	SB07	SB08
Depth		0.2	0.2	0.2
Date Sampled		13/07/2018	13/07/2018	13/07/2018
Type of sample		SOIL	SOIL	SOIL
Date analysed	-	19/07/2018	19/07/2018	19/07/2018
Sample mass tested	g	543.87	264.94	225.29
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown soil & organic debris
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–
FA and AF Estimation*	g	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001

Asbestos ID - soils		
Our Reference		196252-9
Your Reference	UNITS	DUP
Depth		0.2
Date Sampled		13/07/2018
Type of sample		SOIL
Date analysed	-	19/07/2018
Sample mass tested	g	Approx. 30g
Sample Description	-	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected

BTEX in Water		
Our Reference		196252-10
Your Reference	UNITS	FB
Depth		-
Date Sampled		13/07/2018
Type of sample		WATER
Date extracted	-	13/07/2018
Date analysed	-	16/07/2018
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Surrogate Dibromofluoromethane	%	96
Surrogate toluene-d8	%	95
Surrogate 4-BFB	%	92

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

Method ID	Methodology Summary
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	196252-2
Date extracted	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Date analysed	-			17/07/2018	1	17/07/2018	17/07/2018		17/07/2018	17/07/2018
TRH C_6 - C_9	mg/kg	25	Org-016	<25	1	<25	<25	0	97	89
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	1	<25	<25	0	97	89
Benzene	mg/kg	0.2	Org-016	<0.2	1	<0.2	<0.2	0	86	78
Toluene	mg/kg	0.5	Org-016	<0.5	1	<0.5	<0.5	0	92	83
Ethylbenzene	mg/kg	1	Org-016	<1	1	<1	<1	0	99	92
m+p-xylene	mg/kg	2	Org-016	<2	1	<2	<2	0	105	95
o-Xylene	mg/kg	1	Org-016	<1	1	<1	<1	0	97	89
naphthalene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	103	1	136	94	37	109	96

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	196252-2
Date extracted	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Date analysed	-			16/07/2018	1	17/07/2018	17/07/2018		16/07/2018	17/07/2018
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	1	<50	<50	0	117	119
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	1	<100	<100	0	97	123
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	1	<100	<100	0	92	#
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	1	<50	<50	0	117	119
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	1	<100	<100	0	97	123
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	1	<100	<100	0	92	#
Surrogate o-Terphenyl	%		Org-003	91	1	95	93	2	95	94

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	196252-2
Date extracted	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Date analysed	-			17/07/2018	1	17/07/2018	17/07/2018		17/07/2018	17/07/2018
Naphthalene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	111	98
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	116	98
Phenanthrene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.1	0	107	97
Anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	1	0.4	0.3	29	104	96
Pyrene	mg/kg	0.1	Org-012	<0.1	1	0.3	0.3	0	111	102
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	1	0.2	0.2	0	101	93
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	1	0.3	0.3	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	1	0.1	0.1	0	103	92
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	100	1	99	99	0	120	118

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	196252-2
Date extracted	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Date analysed	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
HCB	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	84	85
gamma-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	86	82
Heptachlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	90	89
delta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	93	88
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	91	92
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	96	92
Dieldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	105	101
Endrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	92	89
pp-DDD	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	92	89
Endosulfan II	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	77	94
Methoxychlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	113	1	108	108	0	119	114

QUALITY CONTROL: Organophosphorus Pesticides						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	196252-2
Date extracted	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Date analysed	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	86	84
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	90	89
Dimethoate	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	89	85
Fenitrothion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	88	87
Malathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	76	89
Parathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	94	94
Ronnel	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	95	89
Surrogate TCMX	%		Org-008	113	1	108	108	0	110	105

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	196252-2
Date extracted	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Date analysed	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	101	104
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	113	1	108	108	0	110	105

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	196252-2
Date prepared	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Date analysed	-			16/07/2018	1	16/07/2018	16/07/2018		16/07/2018	16/07/2018
Arsenic	mg/kg	4	Metals-020	<4	1	5	5	0	112	98
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	104	92
Chromium	mg/kg	1	Metals-020	<1	1	15	14	7	110	102
Copper	mg/kg	1	Metals-020	<1	1	12	14	15	114	107
Lead	mg/kg	1	Metals-020	<1	1	42	49	15	108	94
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	104	98
Nickel	mg/kg	1	Metals-020	<1	1	6	7	15	111	99
Zinc	mg/kg	1	Metals-020	<1	1	34	42	21	107	78

QUALITY CONTROL: BTEX in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			13/07/2018	[NT]	[NT]	[NT]	[NT]	13/07/2018	[NT]
Date analysed	-			16/07/2018	[NT]	[NT]	[NT]	[NT]	16/07/2018	[NT]
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	102	[NT]
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate Dibromofluoromethane	%		Org-016	97	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate toluene-d8	%		Org-016	104	[NT]	[NT]	[NT]	[NT]	109	[NT]
Surrogate 4-BFB	%		Org-016	94	[NT]	[NT]	[NT]	[NT]	102	[NT]

Result Definitions

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

Quality Control Definitions

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

Report Comments

TRH Soil C10-C40 NEPM - # Percent recovery is not possible to report due to interference from analytes (other than those being tested) in sample 2.

OC's, OP and PCB in Soil - PQL has been raised due to interference from analytes(other than those being tested) in samples 3,7,and 8.

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

Note: All samples analysed as received. However, samples 196252-2-4 & 7 are below the minimum 500mL sample volume as per National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013.

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures.
We cannot guarantee that this sub-sample is indicative of the entire sample.
Envirolab recommends supplying 40-50g of sample in its own container.
Note: Sample 196252-9 was sub-sampled from a jar provided by the client.

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP - National phone number 1300 42 43 44

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 / sydney@envirolab.com.au

Perth Lab - MPL Laboratories
16-18 Hayden Crt Myaree, WA 6154
Ph 08 9317 2505 / lab@mpl.com.au

Melbourne Lab - Envirolab Services
1A Dalmore Drive Scoresby VIC 3179
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Brisbane Office - Envirolab Services
20a, 10-20 Depot St, Banyo, QLD 4014
Ph 07 3266 9532 / brisbane@envirolab.com.au

Adelaide Office - Envirolab Services
7a The Parade, Norwood, SA 5067
Ph 0406 350 706 / adelaide@envirolab.com.au

Client: Arcadis	Client Project Name / Number / Site etc (ie report title): Asset Geotechnical-126 Kent Road, Marsfield
Contact Person: Lee Douglass	
Project Mgr: Lee Douglass	PO No.:
Sampler: Jack O'Shaughnessy	Envirolab Quote No. :
Address: Level 16, 580 George Street, Sydney, NSW, 2000	Date results required: Or choose: standard *Note: Inform lab in advance if urgent turnaround is required - surcharges apply*
Phone: Mob: 0403481503	Report format: esdat / equis /
Email: jack.o'shaughnessy@arcadis.com lee.douglass@arcadis.com.au	Lab Comments:

Sample information					Tests Required													Comments
Envirolab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample		Combo 6	Asb (WA)		BTEX									Provide as much information about the sample as you can
1 18	SB01	0-2	13/7/18	Soil		x	x											
2 14	SB02					x												
3 15	SB03					x												
4 16	SB04					x												
5 17	SB05					x												
6 18	SB06					x												
7 19	SB07					x												
8 20	SB08 (SB08)					x												
9 21	DUP					x												
	TRIP					x												· SEND TO HLS ✓
10 22	FB			WATER		x			x									
						x												
						x												

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

Job No: 190252

Date Received: 13/7/18
Time Received: 1230
Received By: KM
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished by (Company): Arcadis	Received by (Company):
Print Name: J. O'Shaughnessy	Print Name: KM
Date & Time: 13.7.18	Date & Time: 13/7/18 1230
Signature:	Signature:

Lab use only:
Samples Received: Cool or Ambient (circle one)
Temperature Received at: (if applicable)
Transported by: Hand delivered / courier

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1820957**	Page	: 1 of 7
Client	: **ARCADIS AUSTRALIA PACIFIC PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR LEE DOUGLASS	Contact	: Chloe Leong
Address	: L16, 480 GEORGE STREET SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8907 9000	Telephone	: +61-2-8784 8555
Project	: Asset Geotechnical-126 Kent Road,Marsfield	Date Samples Received	: 16-Jul-2018 17:14
Order number	:	Date Analysis Commenced	: 17-Jul-2018
C-O-C number	: ----	Issue Date	: 20-Jul-2018 18:47
Sampler	: JACK O SHAUGHNESSY		
Site	: ----		
Quote number	: EN/333/17 - Secondary Work		
No. of samples received	: 1		
No. of samples analysed	: 1		

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*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Rassem Ayoubi	Senior Organic Chemist	Sydney Organics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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

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

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

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

- EP080: Poor matrix spike recovery due to sample matrix. Confirmed by re-analysis.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TRIP 0.2m	----	----	----	----
			Client sampling date / time	13-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1820957-001	---------	---------	---------	---------
				Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**18.3**	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**12**	----	----	----	----
Copper	7440-50-8	5	mg/kg	**11**	----	----	----	----
Lead	7439-92-1	5	mg/kg	**42**	----	----	----	----
Nickel	7440-02-0	2	mg/kg	**5**	----	----	----	----
Zinc	7440-66-6	5	mg/kg	**31**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TRIP 0.2m	----	----	----	----
				Client sampling date / time	13-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1820957-001	---------	---------	---------	---------
					Result	----	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued									
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg		<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg		<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg		<0.2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	----	----	----
Ethion	563-12-2	0.05	mg/kg		<0.05	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		**0.6**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TRIP 0.2m	----	----	----	----
				Client sampling date / time	13-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1820957-001	---------	---------	---------	---------
					Result	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Pyrene	129-00-0	0.5	mg/kg		**0.5**	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		**1.1**	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TRIP 0.2m	----	----	----	----
				Client sampling date / time	13-Jul-2018 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1820957-001	---------	---------	---------	---------
					Result	----	----	----	----
EP080: BTEXN - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		101	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		79.0	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		67.0	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		67.6	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		71.4	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		67.7	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		82.1	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		79.7	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		76.0	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		103	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		101	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		106	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES19256DF**	Page	: 1 of 11
Client	: **ARCAGIS AUSTRALIA PACI0IC PTY LTG**	Laboratory	: Environmental Division Sydney
Contact	: MR LEE DOUGLASS	Contact	: Chloe Leong
Address	: L16, 480 GEORGE STREET SYDNEY NSW 2000	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8907 9000	Telephone	: +61-2-8784 8555
Project	: Asset Geotechnical-126 Kent Road,Marsfield	Date Samples Received	: 16-Jul-2018
Order number	:	Date Analysis Commenced	: 17-Jul-2018
C-O-C number	: ----	Issue Date	: 20-Jul-2018
Sampler	: JACK O SHAUGHNESSY		
Site	: ----		
Quote number	: EN/333/17 - Secondary Work		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

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*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Rassem Ayoubi	Senior Organic Chemist	Sydney Organics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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

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

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 (%)*
EA5DD: (o3) tare Col tel t MGr3ed s 15Dbf15yC- MQC Lot: 195415c-									
ES1820936-001	Anonymous	EA055: Moisture Content	----	0.1	%	13.5	14.0	3.23	0% - 50%
ES1820944-008	Anonymous	EA055: Moisture Content	----	0.1	%	84.0	83.6	0.523	0% - 20%
En 55DT: Toti u(eti u) @ ICPbAES MQC Lot: 1956Fc2-									
ES1820937-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	34	31	9.66	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	11	14	24.5	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	28	31	11.1	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	21	18	13.6	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	38	38	0.00	No Limit
ES1820937-011	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	14	17	14.7	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	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	8	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	7	5	24.3	No Limit
En 5cDT: Toti uRe8overi @e (er8ar° @ 0l(S MQC Lot: 1956Fcc-									
ES1820937-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1820937-011	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP544: Pou'87 ur3 i ted h3B7el °u) MPCh- MQC Lot: 195D546-									
ES1820944-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1820956-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP549A: Orpi l o87 ur3 e Pe) t33de) MDC- MQC Lot: 195D549-									

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 (%)*
EP549A: Orpi l o87 ıor3 e Pe) t3 3 le) MDC- MDC Lot: 195D549- b8ol t3 aed									
ES1820944-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
ES1820956-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

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 (%)*
EP549A: Orpi l o87 ıor3 e Pe) t33de) MDC- MQC Lot: 195D549- b8ol t3 aed									
ES1820956-001	Anonymous	EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP549h: Orpi l oB7o) B7ora) Pe) t33de) MDP- MQC Lot: 195D549-									
ES1820944-001	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.12	<0.12	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
ES1820956-001	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit

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 (%)*
EP549h: Orpi l oB7o) B7ora) Pe) t33de) MDP- MQC Lot: 195D549- b8ol t3 aed									
ES1820956-001	Anonymous	EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP5FDMSI(-h: Pou l a8uei r Arog i t33 m dro8i r@l) MQC Lot: 195D54F-									
ES1820944-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<2.0	<2.0	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<1.0	<1.0	0.00	No Limit
ES1820956-001	Anonymous	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

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 (%)*
EP5FDM8l(-h: Pou l a8uei r Arog i t3 m dro8i r@l) MQC Lot: 195D54F- b8ol t3 aed									
ES1820956-001	Anonymous	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
EP595l5F1: Toti uPetroueag m dro8i r@l) MQC Lot: 195D544-									
ES1820944-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	14400	14800	2.99	0% - 20%
		EP071: C29 - C36 Fraction	----	100	mg/kg	1940	2480	24.5	0% - 50%
		EP071: C10 - C14 Fraction	----	50	mg/kg	<110	<110	0.00	No Limit
ES1820956-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	1590	1500	5.82	0% - 50%
		EP071: C29 - C36 Fraction	----	100	mg/kg	950	1140	18.4	0% - 50%
		EP071: C10 - C14 Fraction	----	50	mg/kg	120	110	11.3	No Limit
EP595l5F1: Toti uPetroueag m dro8i r@l) MQC Lot: 195Dc/ D-									
ES1820944-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1820956-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP595l5F1: Toti uRe8overi @e m dro8i r@l) bNEP(251c 0ri 8t3ol) MQC Lot: 195D544-									
ES1820944-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	15800	16800	6.09	0% - 20%
		EP071: >C34 - C40 Fraction	----	100	mg/kg	1900	1420	28.7	0% - 50%
		EP071: >C10 - C16 Fraction	----	50	mg/kg	120	<110	0.00	No Limit
ES1820956-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	2100	2080	1.14	0% - 20%
		EP071: >C34 - C40 Fraction	----	100	mg/kg	790	1060	28.7	0% - 50%
		EP071: >C10 - C16 Fraction	----	50	mg/kg	300	280	6.86	No Limit
EP595l5F1: Toti uRe8overi @e m dro8i r@l) bNEP(251c 0ri 8t3ol) MQC Lot: 195Dc/ D-									
ES1820944-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1820956-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	15	39.9	No Limit
EP595: hTEXN MQC Lot: 195Dc/ D-									
ES1820944-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	0.9	0.8	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
ES1820956-001	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
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
En 55DT: Toti u(eti u) @ ICPbAES MQCLot: 1956Fc2-								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	99.2	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	103	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	91.7	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	102	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	99.1	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	102	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	104	80	122
En 5cDT: Toti uRe8overi @je (er8ar° @ 0l(S MQCLot: 1956Fcc-								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	73.2	70	105
EP544: Pou 87 wor3 i ted h3B7el °u) MPCh- MQCLot: 195D546-								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	88.0	62	126
EP549A: Orpi l o87 wor3 e Pe) t33de) MDC- MQCLot: 195D549-								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	92.8	69	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	86.8	65	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	87.1	67	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	105	68	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	90.4	65	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	100	67	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	94.6	69	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	91.7	62	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	87.0	63	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.9	66	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	92.6	64	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	92.3	66	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	89.8	67	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	87.7	67	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	87.7	69	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	84.9	69	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	83.1	56	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	90.1	62	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	86.6	66	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	87.2	64	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	78.8	54	130
EP549h: Orpi l oB7o) B7ora) Pe) t33de) MDP- MQCLot: 195D549-								

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
EP549h: Orpi l oB7o) B7ora) Pe) t33de) MDP- MQCLot: 195D549- b8ol t3 aed								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	91.0	59	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.2	62	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	84.3	54	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	82.4	67	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	100	70	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	90.3	72	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	84.0	68	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	84.1	68	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	87.7	69	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	90.3	76	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	80.1	64	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	81.6	70	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	79.1	69	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	83.4	66	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	78.8	68	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	92.1	62	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	85.5	68	120
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	90.5	65	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	67.3	41	123
EP5FDM6l(-h: Pou l a8ue i r Arog i t38 m° dro8i r@p l) MQCLot: 195D54F-								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	116	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	111	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	110	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	114	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	116	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	117	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	117	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	120	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	105	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	113	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	101	68	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	116	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	116	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	104	61	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	105	62	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	104	63	121
EP595H5F1: Toti uPetrou eag m° dro8i r@p l) MQCLot: 195D544-								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	101	75	129

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
EP595H5F1: Toti uPetroueag m° dro8i r@l) MQCLot: 195D544- b8ol t3 aed								
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	109	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	95.2	71	129
EP595H5F1: Toti uPetroueag m° dro8i r@l) MQCLot: 195Dc/ D-								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	93.6	68	128
EP595H5F1: Toti uRe8overi @e m° dro8i r@l) bNEP(251c 0ri 8t3ol) MQCLot: 195D544-								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	98.1	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	106	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	78.7	63	131
EP595H5F1: Toti uRe8overi @e m° dro8i r@l) bNEP(251c 0ri 8t3ol) MQCLot: 195Dc/ D-								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	98.2	68	128
EP595: hTEXN MQCLot: 195Dc/ D-								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	93.6	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	97.4	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	94.3	65	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	96.7	66	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	98.3	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	103	63	119

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
En55DT: Toti u(eti u) @ ICPbAES MQCLot: 1956Fc2-							
ES1820937-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	97.5	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	93.5	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	91.9	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	99.3	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	96.1	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	94.9	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	98.4	70	130
En5cDT: Toti uRe8overi @e (er8ar° @ 0l(S MQCLot: 1956Fcc-							
ES1820937-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	95.3	70	130
EP544: Pou87uor3 i ted h3B7el °u) MPCh- MQCLot: 195D546-							

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
EP544: Pou 87 uor3 i ted h 3B7 el °u) MPCh - MQCLot: 195D546- b8ol t3 aed							
ES1820944-001	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	80.0	70	130
EP549A: Orpi l o87 uor3 e Pe) t3 3de) MOC- MQCLot: 195D549-							
ES1820944-001	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	81.7	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	83.8	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	78.1	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	87.2	70	130
		EP068: Endrin	72-20-8	2 mg/kg	80.8	70	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	80.4	70	130
EP549h: Orpi l oB7o) B7ora) Pe) t3 3de) MOP- MQCLot: 195D549-							
ES1820944-001	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	74.6	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	72.4	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	72.5	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	87.7	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	75.5	70	130
EP5FDMSI(-h: Pou l a8ue i r Arog i t3 m° dro8i r@ l) MQCLot: 195D54F-							
ES1820944-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	90.3	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	104	70	130
EP595H5F1: Toti uPetrou eag m° dro8i r@ l) MQCLot: 195D544-							
ES1820944-001	Anonymous	EP071: C10 - C14 Fraction	----	523 mg/kg	96.9	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	124	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	119	52	132
EP595H5F1: Toti uPetrou eag m° dro8i r@ l) MQCLot: 195Dc/ D-							
ES1820944-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	# 68.0	70	130
EP595H5F1: Toti uRe8overi @e m° dro8i r@ l) bNEP(251c 0ri 8t3 ol) MQCLot: 195D544-							
ES1820944-001	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	97.5	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	115	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	115	52	132
EP595H5F1: Toti uRe8overi @e m° dro8i r@ l) bNEP(251c 0ri 8t3 ol) MQCLot: 195Dc/ D-							
ES1820944-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	# 67.2	70	130
EP595: hTEXN MQCLot: 195Dc/ D-							
ES1820944-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	# 61.0	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	# 65.6	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	# 68.2	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	# 68.1	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	# 68.0	70	130

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*
EP595: hTEXN MQCLot: 195Dc/ D- b8ol t3 aed							
ES1820944-001	Anonymous	EP080: Naphthalene	91-20-3	2.5 mg/kg	# 65.9	70	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1820957**	Page	: 1 of 5
Client	: **ARCADIS AUSTRALIA PACIFIC PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: MR LEE DOUGLASS	Telephone	: +61-2-8784 8555
Project	: Asset Geotechnical-126 Kent Road,Marsfield	Date Samples Received	: 16-Jul-2018
Site	: ----	Issue Date	: 20-Jul-2018
Sampler	: JACK O SHAUGHNESSY	No. of samples received	: 1
Order number	:	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP080/071: Total Petroleum Hydrocarbons	ES1820944--001	Anonymous	**C6 - C9 Fraction**	----	68.0 %	70-130%	**Recovery less than lower data quality objective**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2	ES1820944--001	Anonymous	**C6 - C10 Fraction**	C6_C10	67.2 %	70-130%	**Recovery less than lower data quality objective**
EP080: BTEXN	ES1820944--001	Anonymous	**Benzene**	71-43-2	61.0 %	70-130%	**Recovery less than lower data quality objective**
EP080: BTEXN	ES1820944--001	Anonymous	**Toluene**	108-88-3	65.6 %	70-130%	**Recovery less than lower data quality objective**
EP080: BTEXN	ES1820944--001	Anonymous	**Ethylbenzene**	100-41-4	68.2 %	70-130%	**Recovery less than lower data quality objective**
EP080: BTEXN	ES1820944--001	Anonymous	**meta- & para-Xylene**	108-38-3 106-42-3	68.1 %	70-130%	**Recovery less than lower data quality objective**
EP080: BTEXN	ES1820944--001	Anonymous	**ortho-Xylene**	95-47-6	68.0 %	70-130%	**Recovery less than lower data quality objective**
EP080: BTEXN	ES1820944--001	Anonymous	**Naphthalene**	91-20-3	65.9 %	70-130%	**Recovery less than lower data quality objective**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
TRIP - 0.2m	**13-Jul-2018**	**----**	----	----	**17-Jul-2018**	27-Jul-2018	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
TRIP - 0.2m	**13-Jul-2018**	**18-Jul-2018**	09-Jan-2019	✓	**18-Jul-2018**	09-Jan-2019	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
TRIP - 0.2m	**13-Jul-2018**	**18-Jul-2018**	10-Aug-2018	✓	**19-Jul-2018**	10-Aug-2018	✓

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
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066)							
TRIP - 0.2m	**13-Jul-2018**	**17-Jul-2018**	27-Jul-2018	✓	**18-Jul-2018**	26-Aug-2018	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
TRIP - 0.2m	**13-Jul-2018**	**17-Jul-2018**	27-Jul-2018	✓	**18-Jul-2018**	26-Aug-2018	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068)							
TRIP - 0.2m	**13-Jul-2018**	**17-Jul-2018**	27-Jul-2018	✓	**18-Jul-2018**	26-Aug-2018	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
TRIP - 0.2m	**13-Jul-2018**	**17-Jul-2018**	27-Jul-2018	✓	**18-Jul-2018**	26-Aug-2018	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
TRIP - 0.2m	**13-Jul-2018**	**17-Jul-2018**	27-Jul-2018	✓	**18-Jul-2018**	27-Jul-2018	✓
Soil Glass Jar - Unpreserved (EP071)							
TRIP - 0.2m	**13-Jul-2018**	**17-Jul-2018**	27-Jul-2018	✓	**19-Jul-2018**	26-Aug-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
TRIP - 0.2m	**13-Jul-2018**	**17-Jul-2018**	27-Jul-2018	✓	**18-Jul-2018**	27-Jul-2018	✓
Soil Glass Jar - Unpreserved (EP071)							
TRIP - 0.2m	**13-Jul-2018**	**17-Jul-2018**	27-Jul-2018	✓	**19-Jul-2018**	26-Aug-2018	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
TRIP - 0.2m	**13-Jul-2018**	**17-Jul-2018**	27-Jul-2018	✓	**18-Jul-2018**	27-Jul-2018	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	12	**16.67**	**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	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	12	**8.33**	**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	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	12	**8.33**	**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	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	12	**8.33**	**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	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	12	**8.33**	**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 7.1 and Table 1 (14 day holding time).
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 (2013) 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 (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.

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)
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.

ES18 20957

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP - National phone number 1300 42 43 44

Sydney Lab - Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 / sydney@envirolab.com.au

Perth Lab - MPL Laboratories
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Client: Arcadis

Contact Person: Lee Douglass

Project Mgr: Lee Douglass

Sampler: Jack O'Shaughnessy

Address: Level 16, 580 George Street, Sydney, NSW, 2000

Phone: Mob: 0403481503

Email: jack.o'shaughnessy@arcadis.com lee.douglass@arcadis.com.au

Client Project Name / Number / Site etc (ie report title): Asset Geotechnical-126 Kent Road, Marsfield

PO No.:

Envirolab Quote No. :

Date results required:

Or choose: standard

Note: Inform lab in advance if urgent turnaround is required - surcharges apply

Report format: esdat / equis /

Lab Comments:

Environmental Division Sydney
Work Order Reference
ES1820957

Telephone : + 61-2-8784 8555

Sample information | **Tests Required**

Envirolab Sample ID	Client Sample ID or information	Depth	Date sampled	Type of sample	Combo 6	Acid (WA)	BTEX										
1 13	SB01	0-2	13/7/18	Soil	X	X											
2 14	SB02				X												
3 15	SB03				X												
4 16	SB04				X												
5 17	SB05				X												
6 18	SB06				X												
7 19	SB07				X												
8 20	SB60				X												
9 21	DUP				X												
	TRIP				X												
10 22	FB			WATER	X		X										
					X												
					X												
					X												

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

Job No: 190252

Date Received: 13/7/18

Time Received: 1230

Received By: KM

Temp: Cool/Ambient

Cooling: Icepack

Security: Intact/Broken/None

ANDREW 16/7/18 5:14PM

SENT TO MS ✓

Relinquished by (Company):	Arcadis	ECS
Print Name:	J. O'Shaughnessy	JACK EMBLEN
Date & Time:	13.7.18	16/7/18 1310
Signature:		

Received by (Company):	
Print Name:	KM
Date & Time:	13/7/18 1230
Signature:	

Lab use only:

Samples Received: Cool or Ambient (circle one)

Temperature Received at: (if applicable)

Transported by: Hand delivered / courier