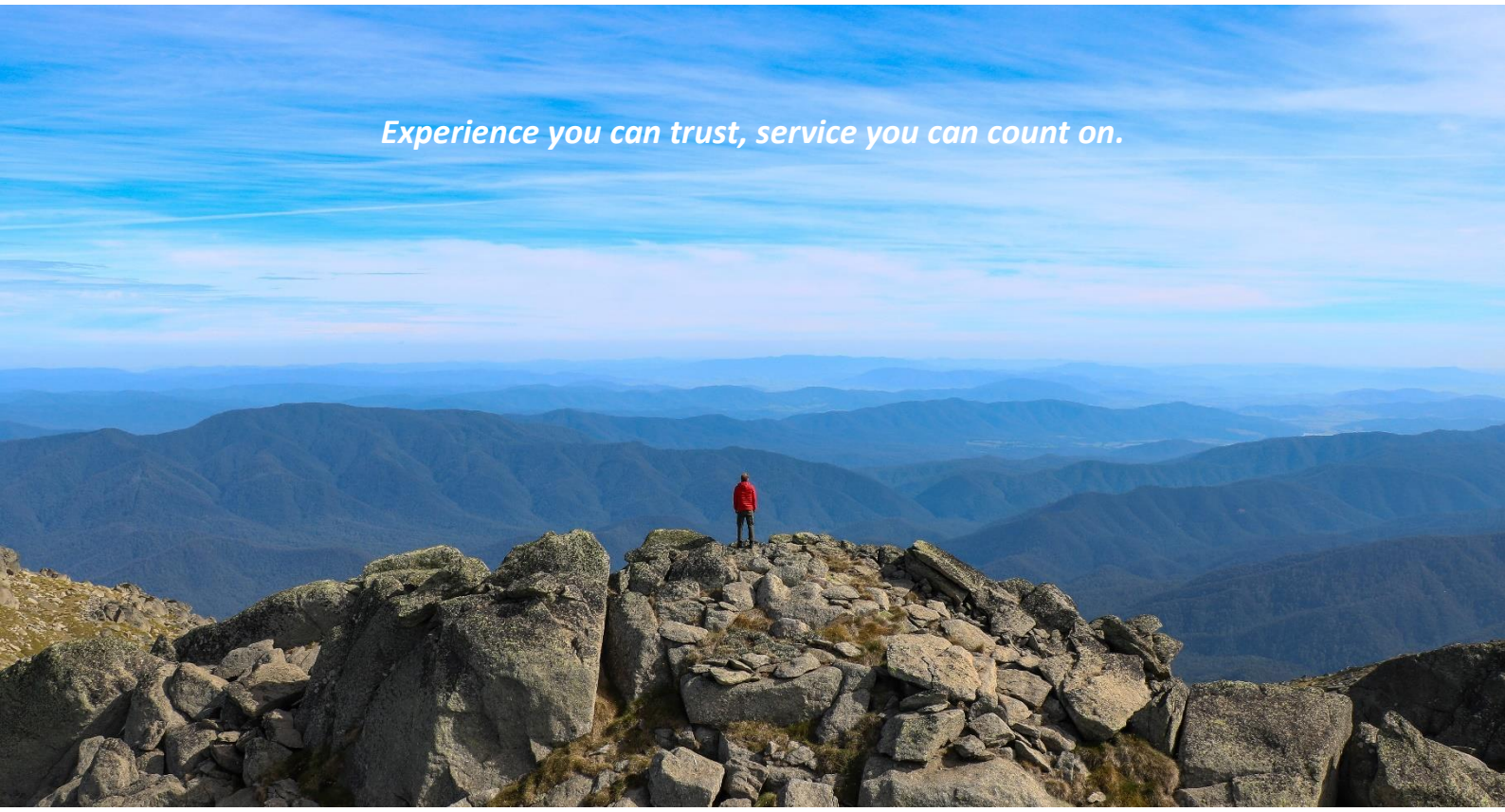

Preliminary Site Investigation

with limited sampling

116-123 Kerrs Road, Mount Vernon NSW 2178

Prepared For:	Mr. Tony Trimboli C/- United Surveyors
Reference:	22-1294
Date:	25 February 2022

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EXECUTIVE SUMMARY

ECON Environmental Pty Ltd was engaged by Mr. Tony Trimboli on behalf of United Surveyors Pty Ltd to conduct a Preliminary Site Investigation with Limited Sampling within the proposed development on the subject site located at 116-123 Kerrs Road, Mount Vernon NSW 2178. The objective of the investigation is to assess the potential for site contamination, based on historical and current land use practices, and to evaluate its suitability for its intended land use and proposed development.

A site inspection was carried out on Tuesday 01 February 2022 and again on Tuesday 15 February 2022 by ECON Environmental's representative Con Kariotoglou, which involved a visual assessment of the entire site and surrounding areas, as well as the acquisition of representative limited soil sampling around the subject site and vicinity of the onsite dam. A sample of the dam water was also collected during the site inspection.

Representative limited soil sampling within the entire subject site was undertaken for analysis and characterisation purposes. All nine (9) limited representative soil samples collected and tested from within the site (BH1-BH9) on Tuesday 01 February and 15 February 2022 were reported by the laboratory to have concentrations **BELOW** the adopted site assessment criteria for HIL A, land use as per the NEPM, 2013, with the exception of the following samples:

- **BH1 (0.1-0.2m) Chrysotile Asbestos and Amosite Asbestos detected – 0.033%ww**

Based on the results of this investigation it is considered that the risks to human health and the environment associated with soil contamination at the site are **LOW** within the context of the proposed use of the site for a residential development. The site is therefore considered to be rendered **SUITABLE** for the proposed development and intended land use, subject to the following recommendations:

- An appropriate remedial / management strategy is developed, culminating in preparation of a **Remedial Action Plan (RAP)** in accordance with EPA guidelines, in regard to the removal of asbestos contaminated soils within the vicinity of borehole **BH1 sampling location**. The RAP also will identify remediation and validation procedures regarding the **Asbestos contamination** within underlying soils within the identified borehole locations, as well as the additional soil sampling beneath building footprint areas post demolition of the building structures, *as per Figure 5 in Appendix A.*
- The preparation of a **Hazardous Material Assessment Registry** for the existing building structure within the subject sites, prior to their demolition.
- If any proposed plans for the subject site include excavations and disposal of those underlying soils to a NSW EPA licenced facility, then a **Waste Classification** report of soils is to be prepared in accordance with the NSW EPA Waste Classification Guidelines: Part 1 Classifying Waste (2014).

TABLE OF CONTENTS

LIST OF FIGURES – APPENDIX A 7

1. INTRODUCTION 8

1.1 Background 8

1.2 Objectives 8

1.3 Scope of Works 9

1.4 Proposed Development or Intended Land Use 9

1.5 Legislative Requirements 9

2. SITE DESCRIPTION 11

2.1 Site Identity 11

2.2 Surrounding Land Use 11

2.3 Topography 11

2.4 Dominant Soil Materials 11

2.5 Geology and Soils 12

2.6 Surface Water Hydrology 12

2.7 Hydrogeology 12

2.8 Acid Sulfate Soils 13

2.9 Dryland Salinity Potential of Western Sydney 13

2.10 Bushfire Prone Land 13

2.11 Site Inspection Observations 13

3. SITE HISTORICAL RECORDS 15

3.1 List of NSW Contaminated Sites – Notified to the EPA 15

3.2 Contaminated Land – Records of Notice 15

3.3 Former Gasworks 15

3.4 National Waste Management Site Database 15

3.5 National Liquid Fuel Facilities 15

3.6 EPA PFAS Investigation Program 15

3.7 Air Services Australia National PFAS Management Program 15

3.8 Defense 3 Year Regional Contamination Program 16

3.9 Other EPA Sites with Contamination Issues 16

3.10 Licensed Activities under POEO Act 1997 16

3.11 Delicensed Activities Still Regulated by EPA 16

3.12 Former Licensed Activities under the POEO Act 1997, now revoked or surrendered 16

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3.13 Business Directory Records Road or Area Matches 1950-1991 17
3.14 Dry Cleaners, Motor Garages & Service Stations Premise or Road Intersection Match 1948-1993 17
4. SITE HISTORCAL IMAGERY 18
4.1 Historical Aerial Photographs 18
4.2 Information Gaps 19
5. CONCEPTUAL SITE MODEL (CSM) 20
5.1 Potential Areas of Concern 20
5.2 Human Receptors and Sensitive Environments 20
6. DATA QUALITY OBJECTIVES 21
6.1 Step 1 - Define the Problem 21
6.2 Step 2 - Identify the Decision 21
6.3 Step 3 - Identify Inputs to the Decision 21
6.4 Step 4 - Define the Study Boundaries 22
6.5 Step 5 - Develop a Decision Rule 22
6.6 Step 6 - Specify Limits of Decision Errors 23
6.7 Step 7 - Optimise Design for Obtaining Data 23
7. DATA QUALITY INDICATORS 25
7.1 General 25
7.2 Completeness 25
7.3 Comparability 26
7.4 Representativeness 26
7.5 Representativeness 27
7.6 Accuracy 27
8. SITE ASSESSMENT CRITERIA 28
8.1 General 28
8.2 Soils Investigation and Screening Levels 28
8.2.1 Health Investigation Levels (HILs) 28
8.2.2 Health Screening Levels (HSLs) 28
8.2.3 Interim Soil Vapour Health Investigation Levels (Interim HILs) 29
8.2.4 Ecological Investigation Levels (EILs) 29
8.2.5 Ecological Screening Levels (ESLs) 30
8.2.6 Petroleum Hydrocarbon Management Limits 30
8.2.7 Asbestos in Soils 30
8.3 Export of Waste 30

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M: 0452 654 962 | **E:** info@econenvironmental.com.au | **W:** www.econenvironmental.com.au

8.4 Duty to Report 31
9. SOIL SAMPLING AND ANALYSIS PLAN 32
9.1 General Methodology 32
9.2 Soil Sampling Density and Sampling Location Rationale 32
9.3 Soil Sampling Depth 33
9.4 Soil Sample Methodology 33
9.5 Sample Handling, Storage and Transport 33
9.6 Borehole Sampling Logs 34
9.7 Laboratory Analysis 35
10. QUALITY ASSURANCE / QUALITY CONTROL 36
10.1 Site Procedures 36
10.2 Field QA/QC 36
10.2.1 General 36
10.2.2 Field Duplicates 36
10.2.3 Sample Handling, Storage and Transport 37
10.2.4 Decontamination Procedures 37
10.3 Laboratory QA/QC 37
10.3.1 Laboratories Used 37
10.3.2 Holding Times 38
10.3.3 Test Methods and Practical Quantitation Limits 38
10.4 QA/QC Data Evaluation 38
11. FIELD OBSERVATIONS 40
11.1 Geology 40
12. LABORATORY RESULTS 41
12.1 General 41
12.2 Soil Results 41
12.2.1 Heavy Metals 41
12.2.1.1 Health Investigation Levels (HILs) 41
12.2.1.2 Ecological Investigation Levels (EILs) 41
12.2.2 TRH, BTEX, Naphthalene &/or Benzo(a)pyrene 41
12.2.2.1 Health Screening Levels (HSLs) 41
12.2.2.2 Ecological Screening Levels (ESLs) 41
12.2.2.3 Management Limits 42
12.2.3 PAH, OCP, PCB, Phenols 42

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M: 0452 654 962 | **E:** info@econenvironmental.com.au | **W:** www.econenvironmental.com.au

12.2.3.1 Health Investigation Levels (HILs) 42
12.2.3.2 Ecological Investigation Levels (EILs) 42
12.2.4 Asbestos 42
12.2.5 Dam Water 42
13. REFINED CONCEPTUAL SITE MODEL 43
13.1 Conceptual Site Model 43
13.2 Data Gaps 45
14. CONCLUSIONS AND RECOMMENDATIONS 46
14.1 Historical Data 46
14.2 Current Site Observations 46
14.3 Soil Laboratory Results 46
14.4 Upper 95% Confidence Limits 46
14.4.1 TRH F3 (C16-C34) 46
14.5 Potential Risks to Onsite Receptors 47
14.6 Potential for Migration of Contaminants 47
14.7 Recommendations 47
15. LIMITATION STATEMENT 49
APPENDIX A: SITE PLANS 50
APPENDIX B: PROPOSED DEVELOPMENT PLANS 51
APPENDIX C: SITE PHOTOGRAPHS 52
APPENDIX D: FIELDNOTES 64
APPENDIX E: SITE ASSESSMENT CRITERIA 65
APPENDIX F: SUMMARY OF RESULTS TABLES 66
APPENDIX G: LABORATRY CERTIFICATES 67
APPENDIX H: LOTSEARCH 68

LIST OF FIGURES – APPENDIX A

Figure 1 Site Locality
Figure 2 Site Aerials
Figure 3 Topography Map
Figure 4 Soil Sampling Borehole Locations
Figure 5 Hotspot Locations

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1. INTRODUCTION

1.1 Background

ECON Environmental Pty Ltd was engaged by Mr. Tony Trimboli on behalf of United Surveyors Pty Ltd to conduct a Preliminary Site Investigation with Limited Sampling within the proposed development on the subject site located at 116-123 Kerrs Road, Mount Vernon NSW 2178. The objective of the investigation is to assess the potential for site contamination, based on historical and current land use practices, and to evaluate its suitability for its intended land use and proposed development.

A site inspection was carried out on Tuesday 01 February 2022 and again on Tuesday 15 February 2022 by ECON Environmental's representative Con Kariotoglou, which involved a visual assessment of the entire site and surrounding areas, as well as the acquisition of representative limited soil sampling around the subject site and vicinity of the onsite dam. A sample of the dam water was also collected during the site inspection.

Details of the findings are presented within the body of this report, as well as an assessment of significance with regards to the findings of the investigation.

A site investigation was undertaken as part of the Development Application (DA) for the subject site for Penrith City Council.

This report was completed in accordance with the *Guidelines for Consultants Reporting on Contaminated Sites, NSW EPA, August 2011.*

1.2 Objectives

The objectives of this Preliminary Site Investigation are to:

- Identify any past or present potentially contaminating activities,
- Describe the site and discuss its condition,
- Identify potential contaminants of concern,
- Provide soil analysis to determine the depth and extent of contamination within the areas of environmental concern,
- Provide water analysis to determine extent of contamination within the onsite dam,
- Identify the potential nature and extent of contamination on site,
- Identify potential contamination migration routes,
- Assess the adequacy of information available, and
- Determine the need for any further investigation or management actions.

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1.3 Scope of Works

The scope of works included the following:

- Research and review of the information available, including previous environmental investigations, current and historical titles information, review of aerial photographs, groundwater bore searches, EPA notices, council records, anecdotal evidence, site survey and site records on waste management practices,
- A site inspection of the entire subject site, review of the physical site setting and site conditions based on a site inspection, including research of the location of sewers, drains, holding tanks and pits, spills, patches of discoloured vegetation, etc. (where applicable),
- Development of a preliminary Conceptual Site Model (CSM) to demonstrate the interactions between potential sources of contamination, exposure pathways and human/ecological receptors identified,
- A targeted soil boring/sampling investigative study – formulating and conducting a sampling plan and borehole investigation,
- Limited soil sampling within areas of potential environmental concern,
- Collection of water sample from the dam,
- Laboratory analysis and results from sample analysis – findings and comparison to regulatory guidelines,
- Reporting in accordance with the associated legislations and guidelines, and
- Recommendations for additional investigations should any data gaps be identified or possible strategies for the management of the site, where relevant.

1.4 Proposed Development or Intended Land Use

The proposed development is for proposed new residential subdivision development, as per the proposed plans in Appendix A – Proposed Development Plans

1.5 Legislative Requirements

The legislative framework for the report is based on guidelines that have been set out by the NSW Environmental Protection Agency (EPA) formerly the Office of Environment and Heritage (OEH) in the form of the following Acts/Regulations:

- Protection of the Environment Operations Act (1997)
- Protection of the Environment Operations Regulation (2008)
- Contaminated Land Management Act (1998)

In addition, the following guidelines and technical documents have been reviewed and applied where applicable:

- Contaminated Land Management - Guidelines for the NSW Site Auditor Scheme (3 Edition, 2017).
- State Environmental Planning Policy No.55 (SEPP55) – Remediation of Land (2018)
- NSW EPA Guidelines for Consultants Reporting on Contaminated Sites (2011).
- NSW EPA Sampling Design Guidelines (1995).
- NSW EPA Waste Classification Guidelines Part 1: Classifying Waste (2014).
- Guidelines on the Investigation Levels for Soil and Groundwater, National Environmental
- Protection Measure 1999, 2013 Amendment (NEPC, 2013).
- Guidelines for the Assessment, Remediation & Management of Asbestos - Contaminated Sites (DOH, 2009).

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2. SITE DESCRIPTION

2.1 Site Identity

The subject site is located at 116-123 Kerrs Road, Mount Vernon NSW 2178. Figures 1 and 2, Appendix A shows an aerial photograph of the subject site relative to its surrounding land.

Table 1: Site Identification	
Street Address	116-123 Kerrs Road, Mount Vernon NSW 2178
Lot and DP Number	Lot 103 in DP 31924
Approx. Total Site Area	20,249m^2 (2.025ha)
Zoning	C4 – Environmental Living
Local Government Area	Penrith City Council

2.2 Surrounding Land Use

The site is located within a rural residential setting and bordered by small rural residential properties to the north, east, south and west of the subject site.

2.3 Topography

According to https://www.environment.nsw.gov.au/eSpade2Webapp the topography of the site includes gently undulating rises on Wianamatta Shale with local relief 10–30 m and slopes generally >5% but occasionally up to 10%. Crests and ridges are broad (200–600 m) and rounded with convex upper slopes grading into concave lower slopes. Outcrops of shale do not occur naturally on the surface. They may occur, however, where soils have been removed.

2.4 Dominant Soil Materials

Friable brownish black loam. This is a friable brownish black loam to clay loam with moderately pedal subangular blocky structure and rough-faced porous ped fabric. This material occurs as topsoil. Peds are well defined subangular blocky and range in size from 2–20 mm. Surface condition is friable. Colour is brownish black but can range from dark reddish brown to dark yellowish brown. The pH varies from moderately acid (pH 5.5) to neutral (pH 7.0). Rounded iron indurated fine gravel-sized shale fragments and charcoal fragments are sometimes present. Roots are common.

Hardsetting brown clay loam. This is a brown clay loam to silty clay loam which is hardsetting on exposure or when completely dried out. It has apedal massive to weakly pedal structure and slowly porous earthy fabric. Peds when present are weakly developed, subangular blocky and are rough faced and porous. They range in size between 20–50 mm. This material is water repellent when extremely dry. Colour is dark brown but can range from dark reddish brown to dark brown. The pH

varies from moderately acid (pH 5.0) to slightly acid (pH 6.5). Platy, iron indurated gravel-sized shale fragments are common. Charcoal fragments and roots are rarely present.

Strongly pedal, mottled brown light clay. This is a brown light to medium clay with strongly pedal polyhedral or sub-angular to blocky structure and smooth-faced dense ped fabric. This material usually occurs as subsoil. Texture often increases with depth. Peds range in size from 5–20 mm. Colour is brown but may range from reddish brown to brown. Frequent red, yellow or grey mottles occur often becoming more numerous with depth. The pH varies from strongly acid (pH 4.5) to slightly acid (pH 6.5). Fine to coarse gravel-sized shale fragments are common and often occur in stratified bands. Both roots and charcoal fragments are rare.

Light grey plastic mottled clay. This is a plastic light grey silty clay to heavy clay with moderately pedal polyhedral to subangular blocky structure and smooth-faced dense ped fabric. This material usually occurs as deep subsoil above shale bedrock. Peds range in size from 2–20 mm. Colour is usually light grey or, less commonly, greyish yellow. Red, yellow or grey mottles are common. The pH varies from strongly acid (pH 4.0) to moderately acid (pH 5.5). Strongly weathered ironstone concretions and rock fragments are common. Gravel-sized shale fragments and roots are occasionally present. Charcoal fragments are rare.

2.5 Geology and Soils

The Geological Map of Penrith(Geological Series Sheet 9030, Scale 1:100,000, 1991), published by the Department of Mineral Resources indicated the site is located within an area underlain by Wianamatta Group—Ashfield Shale consisting of laminite and dark grey siltstone, Bringelly Shale which consists of shale with occasional calcareous claystone, laminite and infrequent coal, and Minchinbury Sandstone consisting of fine to medium-grained quartz lithic sandstone.

2.6 Surface Water Hydrology

No surface water or distinct overland flow paths were noted during the investigation, except for a small onsite dam within the northern portion of the site. Stormwater is expected to infiltrate into soils or sheet north towards the dam.

2.7 Hydrogeology

A search of the State Department of Primary Industries Groundwater map showed no groundwater wells within 1.0km radius of the subject site.

2.8 Acid Sulfate Soils

Atlas of Australian Acid Sulfate Soil categories within the dataset buffer

Table 2: Atlas of Australian Acid Sulfate Soils			
Soil Class	Description	Distance	Direction
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	0m	On-site

2.9 Dryland Salinity Potential of Western Sydney

Dryland Salinity Potential of Western Sydney within the dataset buffer?

Table 3: Dryland Potential of Western Sydney			
Classification	Description	Distance	Direction
Moderate	Area of Moderate Salinity Potential	0m	On-site
High	Area of High Salinity Potential	643m	North-East
Salt	Area of Unknown Salinity	954m	East
High	Area of High Salinity Potential	999m	South West

2.10 Bushfire Prone Land

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

Table 4: Bushfire Prone Land		
Bushfire Prone Land Category	Distance	Direction
Vegetation Buffer	63m	South
Vegetation Category 2	93m	South West
Vegetation Category 3	847m	South East

2.11 Site Inspection Observations

On Tuesday 01 February 2022 a site inspection was conducted by ECON Environmental's representative Con Kariotoglou. Field work was carried out in accordance with the methodology described in AS 4482.1 – 2005 and the NEPM (2013).

At the time of inspection Tuesday 01 February 2022, the following observations were noted:

- The main two-storey brick residential dwelling was noted within the south-eastern portion of the site, with a detached carport to the south of the dwelling,

- The immediate surface area around the house and carport was paved,
- Separate small single-storey residential dwellings were noticed to the north of the main residential building,
- A metal corrugated workshop was noticed north of the residential dwelling within the central eastern portion of the site. At the time of the inspection the workshop consisted of numerous machinery tools and equipment, and a cracked and stained concrete hardstand,
- Hazardous building materials were noted on the exterior of all building structures,
- The majority of the southern portion of the site was covered by low lying grasses, with large trees scattered throughout and around the boundary of the subject site, with no vegetation distress was observed, and no evidence of potential environmental areas of concern, however the majority of the northern portion of the site was inaccessible due to overgrown grasses which restricted access. A request was made to the client to provide suitable access to the northern portion of the site, hence an additional day was required to complete the inspection.
- No oil staining, no odours, and no visible fragments of ACM were detected on surface soils within the investigative areas,
- Representative soil sampling was undertaken within the inspected potential areas of environmental concern within southern portion of the site for analysis and characterisation purposes.

At the time of inspection Tuesday 15 February 2022, the following observations were noted:

- Access to the northern portion of the site was made available for inspection,
- A small residential dam was observed within the northern portion of the site, the dam water was clear with no debris within the dam water, the surface water contained small amounts of vegetation and algae, the surrounding dam embankments contained low lying grasses, with no vegetation distress was observed,
- No oil staining, no odours, and no visible fragments of ACM were detected on surface soils within the investigative areas,
- Representative soil sampling was undertaken within the potential areas of environmental concern within the dam area for analysis and characterisation purposes.

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3. SITE HISTORICAL RECORDS

3.1 List of NSW Contaminated Sites – Notified to the EPA

Records from the NSW EPA Contaminated Land list within the dataset buffer.

- No records

3.2 Contaminated Land – Records of Notice

Records from the NSW EPA Contaminated Land list within the dataset buffer:

- No records

3.3 Former Gasworks

Former Gasworks within the dataset buffer:

- No records

3.4 National Waste Management Site Database

National Waste Management Site Database within the dataset buffer:

- No records

3.5 National Liquid Fuel Facilities

National Liquid Fuel Facilities within the dataset buffer:

- No records

3.6 EPA PFAS Investigation Program

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

- No records

3.7 Air Services Australia National PFAS Management Program

Sites being investigated or managed by Airservices Australia for PFAS contamination within the dataset buffer:

- No records

3.8 Defense 3 Year Regional Contamination Program

- No records

3.9 Other EPA Sites with Contamination Issues

- No records

3.10 Licensed Activities under POEO Act 1997

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

- No records

3.11 Delicensed Activities Still Regulated by EPA

Delicensed activities still regulated by the EPA, within the dataset buffer:

- No records

3.12 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:

License No	Organisation	Location	Status	Issued Date	Activity	Distance	Direction
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered	06.09.2000	Other Activities / Non-Scheduled Activity - Application of Herbicides	0m	Onsite
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered	07.09.2000	Other Activities / Non-Scheduled Activity - Application of Herbicides	0m	Onsite
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered	09.11.2000	Other Activities / Non-Scheduled Activity - Application of Herbicides	0m	Onsite
5150	FAIRFIELD CITY COUNCIL	WATERWAYS OF FAIRFIELD CITY COUNCIL – FAIRFIELD NSW 2165	Surrendered	17.08.2000	Other Activities / Non-Scheduled Activity - Application of Herbicides	836m	East

3.13 Business Directory Records Road or Area Matches 1950-1991

- No records

3.14 Dry Cleaners, Motor Garages & Service Stations Premise or Road Intersection Match 1948-1993

- No records

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4. SITE HISTORCAL IMAGERY

4.1 Historical Aerial Photographs

Historical aerial imagery information was obtained and reference in Appendix G – Lotsearch and is summarised below in the following Table 5.

Table 5: Findings of the historical aerial photograph review

Year	Description
1930	• Black and white aerial low resolution photo • The subject site appears vacant and covered by sparse vegetation • Surrounding lands appear vacant and covered by sparse vegetation to the north, east and west of the subject site
1949	• Black and white aerial low resolution photo • No significant changes to the subject site, a small creek appears to run through the north portion of the site, • No significant changes to the surrounding lands
1955	• Black and white aerial low resolution photo • No significant changes to the subject site, • No significant changes to the surrounding lands
1961	• Black and white aerial high resolution photo • No significant changes to the subject site, except for the construction of an access road along the southern boundary of the site, • No significant changes to the surrounding lands, except for the construction of a residential dwelling to the west of the subject site and minor clearing of land to the south
1965	• Black and white aerial low resolution photo • The site appears to be under construction with several small building structures noted within the south and eastern portion of the site, and the appearance of a dam within the northern portion of the site, • Additional constructions of properties and dams appear to the north, south, west and east of the subject site,
1970	• Black and white aerial high resolution • Construction of the property appears to continue to the south and east portions of the site, • Further residential constructions appear to the east, south and north-west of the site, and the appearance of market gardens to the east of the subject site,
1978	• Black and white aerial high resolution • No significant changes to the subject site • No significant changes to the surrounding lands
1982	• Coloured aerial high-resolution photo • No significant changes to the subject site • No significant changes to the surrounding lands
1986	• Coloured aerial high-resolution photo • No significant changes to the subject site • No significant changes to the surrounding lands

1991	• Coloured aerial high-resolution photo • No significant changes to the subject site, except for minor earthworks within the centre of the site, • No significant changes to surrounding areas
1994	• Coloured aerial high-resolution photo • No significant changes to the subject site • No significant changes to surrounding areas
2000	• Coloured aerial high-resolution photo • No significant changes to the subject site • No significant changes to surrounding areas except for further residential construction to the south east of the subject site
2005	• Coloured aerial high-resolution photo • No significant changes to the subject site, • No significant changes to surrounding areas
2011	• Coloured aerial high-resolution photo • No significant changes to the subject site • Additional construction of residential properties to the north, west and north-west of the subject site
2016	• Coloured aerial high-resolution photo • No significant changes to the subject site • No significant changes to surrounding areas
2021	• Coloured aerial high-resolution photo • No significant changes to the subject site • Additional construction of residential properties to the west of the subject site

4.2 Information Gaps

A site history has been established using the various sources as outlined above. However, the following information gaps have been identified:

1. Inferences have been drawn based on 'point in time' aerial photographs
2. Historical business directories were matched to named roads and not the exact premises and are therefore approximate location.

Regarding the information available, it is considered that the quality of the information is consistent the industry standard and that the information is of high integrity with respect to the historical use of the site overall.

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5. CONCEPTUAL SITE MODEL (CSM)

5.1 Potential Areas of Concern

- Underlying soils beneath the entire site and around the dam has the potential to be comprised of imported fill material containing hazardous materials.

Table 6 identifies the main Potential Areas of Environmental Concern (PAECs), and their associated Contaminants of Concern (COCs), using the information gathered through this assessment and qualitative judgement based on consultant experience.

Table 6: Areas of Environmental Concern

PAEC	Potentially Contaminating Activity	Contaminants of Concern	Likelihood of Contamination
Underlying soils within the entire site	Underlying soils within the entire site may contain fill material comprising of hazardous substances	• Hydrocarbons (TRH), • BTEXN, • PAH, • Phenols • Heavy Metals • Asbestos • OC/OP Pesticides • PCB	Possible
Dam water	Dam water may be comprised of potentially hazardous materials as a results of surface runoff	• Heavy Metals • Hydrocarbons • OC/ OP Pesticides • BDO • Oil and Grease • Total Faecal Coliforms	Possible
Current building structure with in both subject sites	Building structure may potentially containing hazardous building materials	• Asbestos • Heavy Metals (Lead)	Possible

5.2 Human Receptors and Sensitive Environments

On-site Human Receptors & Sensitive Environments:

- Demolition / Excavation / Construction workers during the construction process,
- Future occupants of the subject site.
- Natural ecosystems within the subject site.

Off-site Human Receptors & Sensitive Environments:

- Occupants of the adjacent neighbouring properties to the subject site.
- Natural ecosystems within adjacent neighbouring creeks and dams.

6. DATA QUALITY OBJECTIVES

Data quality objectives were established for the site characterisation works, following the decision-making procedures outlined in NEPC (2013):

- Step 1 - Define the problem,
- Step 2 - Identify the decision,
- Step 3 - Identify inputs to the decision,
- Step 4 - Define the study boundaries,
- Step 5 - Develop a decision rule,
- Step 6 - Specify limits on decision errors, and
- Step 7 - Optimise the design for obtaining data.

6.1 Step 1 - Define the Problem

Potential risks to human health and the environment exist from the potential contamination of soils associated with uncontrolled fill material within the entire site.

6.2 Step 2 - Identify the Decision

Based on the decision-making process for assessing urban redevelopment sites, the following decisions must be made:

1. Are there any unacceptable health risks to future onsite receptors?
2. Are there any unacceptable ecological risks posed by the site?
3. Are there any aesthetic issues at the site?
4. Is there any evidence of, or potential for, migration of contaminants from the site?
5. Is a site management strategy required?

6.3 Step 3 - Identify Inputs to the Decision

The following inputs were used to allow the assessment of the decisions:

1. Historical information,
2. Observations made during site investigations,
3. Soil analytical data from samples collected on site,
4. Adopted site assessment criteria, and
5. Data quality indicators.

6.4 Step 4 - Define the Study Boundaries

The study site is located within the subject site located at 116-123 Kerrs Road, Mount Vernon. It can be identified as a rectangular shaped lot located north of Kerrs Road The total area of site is approximately 20,249m^2.

The lateral extent of the investigation is within the entire boundaries of the subject site, while the vertical extent of the investigation included the surface topsoils down to natural soil material, approx. 0.2-0.3m BGL.

6.5 Step 5 - Develop a Decision Rule

Soil analytical data were assessed against National Environmental Protection Measure (NEPM) criteria as referenced in Section 8. Statistical analysis of the data will be undertaken if necessary. The following statistical criteria shall be adopted:

1. The upper 95% confidence limit on the average concentration for each analyte (calculated for samples collected from consistent soil horizons, stratigraphy or material types) must be below the adopted criterion,
2. No single analyte shall exceed 250% of the adopted criterion, and
3. The standard deviation of the results must be below 50 % of the criterion.

The acceptable limits for laboratory QA/QC parameters are shown in the table below and are based upon the laboratory reported acceptable limits and those stated within the NEPM 2013 Schedule B3 Guideline & AS 4482.1-2005.

Table 7: Soil QA/QC Parameters

Type of QC Sample	Control Limit
FIELD	
Rinsate Blanks	Analytes <LOR
Intra-Laboratory Duplicates	RPD's < 30 - 50%
Inter-Laboratory Duplicates	RPD's < 30 - 50%
Trip Blanks	Volatiles <LOR
Trip Spike Recovery	>70%
LABORATORY	
Method Blanks	< Laboratory LOR
Matrix Spike	Recovery targets: • Metals: 70% to 130% • Organics: 60% to 140%
Laboratory Duplicate	RPD's <30%
Laboratory Control Samples	Recovery targets: 70% to 130%
Surrogate Spike	Recovery targets: 60% to 140%

The following conditions should be adopted:

- If the control limits are exceeded, then an assessment of the significance of the results should be carried out,
- If major non-conformances from the laboratory or field data are identified, then further sampling and laboratory analysis may be required to provide an adequate sample set for data reliance,
- If the results of the DQI assessment indicate that the data set is reliable, then the data set will be deemed to be acceptable for the purposes of the validation works, and
- If the measured concentrations of soil samples analysed meet their respective validation criteria, then no additional remediation is required.

6.6 Step 6 - Specify Limits of Decision Errors

The usual null hypothesis for remediation of contamination is that the land has unacceptable risk from residual contamination, and this hypothesis is able to be accepted at a 95% confidence level, giving a 5% risk of a Type I error (site is deemed suitable when it is not).

An assessment of the likelihood of a decision error will be made based on:

- The acceptable limits for inter/intra laboratory duplicate sample comparisons as specified in Step 5 of the DQOs, and
- The acceptable limits for laboratory QA/QC parameters are based upon the laboratory reported acceptable limits and those stated within the NEPM 2013 Schedule B3 Guideline & AS 4482.1-2005.

If the concentration of a particular contaminant of concern exceeds its remediation/validation criteria, then a further assessment is required to address the significance of the result. Statistical analysis (arithmetic mean) based on 95% UCL may be used to assess the significance of the data provided the following conditions are met:

- the 95%ucl of the arithmetic mean must be less than the criterion,
- the standard deviation of the data set is less than 50% of the relevant threshold level, and
- no individual sample result should be greater than 250% of the relevant threshold level.

6.7 Step 7 - Optimise Design for Obtaining Data

The optimum design for obtaining data in order to achieve the Data Quality Objectives is as follows:

- Review of previous environmental site investigation results,
- Only NATA-accredited environmental testing laboratories will be commissioned to analyse soil and groundwater samples and will implement a quality control plan conforming to the NEPM (Assessment of Site Contamination) Measure Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils and Groundwater.

- Assessment of the Data Quality Indicators to determine if the field procedures and laboratory analytical results are reliable,
- Collection of QA/QC samples at frequencies prescribed in the NEPM Guidelines,
- Field sampling works will be carried out by an experienced and qualified Environmental Scientist in accordance with ECON Environmental protocols, based on National Environmental Protection (Assessment of Site Contamination) Amendment Measure 2013 Schedules B1, B2, B4, B6 & B9 and other NSW EPA endorsed guidelines, and
- In accordance with the NSW EPA "Sampling Design Guidelines" (September 1995) for this combined sized investigative site (approx. 2,000m^2), a total of eight (8) soil samples plus one (1) QA/QC samples are required to be collected to provide general site coverage. However, additional sampling points may be incorporated to target specific areas of potential environmental concern identified above.

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7. DATA QUALITY INDICATORS

7.1 General

The five Data Quality Indicators (DQIs) comprising completeness; comparability; representativeness; precision and accuracy provide an assessment of the reliability of field procedures and laboratory analytical results in accordance with the 'Guidelines for the NSW Site Auditor Scheme (2nd Edition), 2006. These are addressed in the following sub-sections.

7.2 Completeness

Data Completeness is a measure of the amount of useable data (expressed as %) from a data collection activity. The completeness is equal to the percentage of valid quality assurance and quality control results.

The assessment should address the following:

Table 8: Data Completeness

Field	Laboratory
• All critical locations are sampled • All samples collected from critical grids and depths • Consistency in the use of standard operating procedures, equipment, sampler • Completion and correctness of field documentation.	• All critical samples and analytes are analysed in accordance with the SAQP, *if prepared* • Appropriateness of laboratory methods and PQLs.

The minimum target frequency for each type of QA/QC sample should be carried out in accordance with the following tables

Table 9: QA/QC Requirements

Field QA/QC Sample	Frequency (Soil)	Frequency (Groundwater)
Intra-Laboratory Duplicate	1 in 20 samples	1 in 20 samples
Inter-Laboratory Duplicate	1 in 20 samples	1 in 20 samples
Field Blanks	1 per day (Rinsate)	1 per day (Rinsate)
Trip Blank	1 per sample batch	1 per sample batch
Trip Spike	1 per sample batch	1 per sample batch

Where any of the above objectives are not achieved for particular samples, steps will be taken to rectify the non-conformance, if possible. Alternatively, data qualifiers detailing the nature of the quality problem will be documented in the report and attached to relevant data in the result summary tables.

The target for overall completeness for each data set is a minimum of 95%. A data completeness of less than 95% may be accepted where it can be justified that the non-conformance does not have a significant effect on the outcome of the results.

7.3 Comparability

Data Comparability is the confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event.

The qualitative assessment should address the following:

Table 10: Data Comparability

Field	Laboratory
• Consistency in the use of standard operating procedures, equipment, sampler • Consistency in the method of sample collection for each media • Quantification of influence by climatic conditions	• Consistency of analytical methods and limits of reporting (LOR) for each analyte • Whether laboratory limits of reporting are set at < 20% of the adopted site criteria value for each analyte • Consistent use of one primary and one secondary laboratory

7.4 Representativeness

Data Representativeness is the confidence (expressed qualitatively) that data are representative of each media present on the site.

The qualitative assessment should address the following:

Table 11: Data Representativeness

Field	Laboratory
• Samples are collected in accordance with the SAQP, *if provided* • Receipt of samples within holding times • Receipt of intact samples • Receipt of adequately preserved samples	• All samples are extracted and analysed within their respective holding times

7.5 Representativeness

Data Precision is a quantitative measure of the variability (or reproducibility) of data.

Intra-laboratory or Inter-laboratory Duplicate Samples (B) results are compared with Primary Sample (A) results using Relative Percentage Differences (RPDs) according to the following formula:

$$\%RPD = \left|\frac{A - B}{A + B}\right| \times 200$$

Duplicate sampling rates for this assessment (**for each separate sample batch**) are to be tested for all the same analytes as the primary sample:

Table 12: Data Precision	
Type of QC Sample	Control Limit
Field Intra-Laboratory Duplicate (Blind)	RPD < +/- 50%
Field Inter-Laboratory Duplicate (Split)	RPD < +/- 50%

Where the laboratory has reported results for a particular analyte below the limit of reporting for either the primary sample or a duplicate sample, the RPD is reported as 'Not Calculable' or NC. A discussion should be made as to which sample should be adopted and compared against the relevant assessment criteria. However, no discussion is required where both the primary sample and the duplicate sample for a particular analyte are below the limit of reporting.

7.6 Accuracy

Data Accuracy is a quantitative measure of the closeness of reported data to the true value. Laboratory measured recovery of analytes in lab control samples with known concentrations. Laboratory QA/QC testing is to include:

Table 13: Data Accuracy	
Laboratory QA/QC Sample	Frequency
Method Blank	1 per 20 samples
Matrix Spike	1 per 20 samples
Laboratory Duplicate	Laboratory defined
Laboratory Control	Laboratory defined
Surrogate Spike	All organic samples

8. SITE ASSESSMENT CRITERIA

8.1 General

Concentrations of contaminants in soil samples were compared against the National Environmental Protection Council (2013) site assessment criteria presented below and summarised in Appendix G.

- Health Investigation Levels (HIL) for Soil Contaminants – NEPM HIL Residential A
- Soil Health Screening Levels (HSL) for Vapour Intrusion – Residential A
- NEPM 2013 Management Limits for TRH Fractions F1-F4 in Soil - Residential, Parkland and Public Open Space (Fine Grained Soils)
- NEPM 2013 ESLs for TRH fractions F1 – F4, BTEX and benzo(a)pyrene in soil
- Health Screening Levels for Asbestos Contamination in Soil – Commercial/Industrial, Guidelines for the Assessment, Remediation and Management Asbestos-Contaminated sites in Western Australia.

8.2 Soils Investigation and Screening Levels

8.2.1 Health Investigation Levels (HILs)

The NEPM presents Tier 1 Health Investigation Levels (HILs) for a broad range of chemicals such as metals, inorganics, PAHs, phenols, pesticides and other organics. The HILs are applicable to generic land uses such as residential, commercial/industrial or public open space and all soil types, generally within the first 3 metres of soil below ground level. The HILs have been applied to assess human health risks via all relevant pathways of exposure.

Based on the proposed development, soil investigation results within the building footprint/site will be assessed against the following criteria:

- ***HIL 'A' -*** *Residential use with gardens/accessible soils, including children's day-care centres, preschools and primary schools,*

8.2.2 Health Screening Levels (HSLs)

The NEPM presents Tier 1 Health Screening Levels (HSLs) for the following petroleum compounds and fractions:

- Benzene, Toluene, Ethylbenzene and Xylenes (BTEX);
- Naphthalene, and
- TPH C6-C10 and TPH >C10-C16 fractions.

The HSLs are applicable to generic land uses such as residential, commercial/industrial or recreational/public open space and different soil types between the ground surface and soils >4 metres below ground level. The HILs have been applied to assess human health risks via the inhalation and direct contact pathways of exposure.

Point 1 of Table 1A (4), which indicates that HSL D can be used in lieu of HSL B for buildings that comprise car parks or commercial properties on the ground floor.

8.2.3 Interim Soil Vapour Health Investigation Levels (Interim HILs)

The NEPM presents Interim Soil Vapour Health Investigation Levels (Interim HILs) for selected Volatile Organic Chlorinated Compounds (VOCCs).

The Interim Soil Vapour HILs are applicable to generic land uses such as residential, commercial/industrial or recreational/public open space and all soil types within the first metre depth from the ground surface or the first metre depth beneath a sub-slab. The Interim Soil Vapour HILs have been applied to assess human health risks via the inhalation pathways of exposure.

8.2.4 Ecological Investigation Levels (EILs)

The NEPM presents Ecological Investigation Levels (Interim EILs) for As, Cu, CrIII, Ni, Pb, Zn, DDT and naphthalene.

The EILs are applicable to generic land uses such as areas of ecological significance, urban residential areas and public open space, and commercial/industrial land uses. The EILs have been applied to assess risks to terrestrial ecosystems, generally, within the top 2 metres of soil at the final surface/ground level.

Site specific EILs for Copper, Zinc, Nickel and Chromium III can be derived by adding the Ambient Background Concentration (ABC) to the Added Contaminant Limits (ACL), as per the following formula:

$$EIL = ABC + ACL$$

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

The ACL is the added concentration (above the ABC) of a contaminant above which further appropriate investigation and evaluation of the impact on ecological values is required. ACLs are based on the soil characteristics of pH, CEC and clay content. Different soils types / profiles will have different contaminant EILs rather than a single generic EIL for each contaminant. ACLs apply chromium III (CrIII), copper (Cu), nickel (Ni) and zinc (Zn) for site-specific EIL determination. The soil

properties to be measured for site-specific derivation of ACLs for CrIII, Cu, Ni and Zn are summarised below:

- pH - Cu
- CEC - Cu, Ni, Zn
- % clay - CrIII

Note – the lowest concentration of copper that is derived from the pH or the CEC calculation is to be used for the ACL.

Insufficient data was available to derive ACLs for As, Pb, DDT and naphthalene. As a result, the derived EILs are generic to all soils and are presented as total soil contaminant concentrations in Tables 1(B)4 and 1(B)5.

8.2.5 Ecological Screening Levels (ESLs)

Table 1B (6) of the NEPM presents Ecological Screening Levels (ESLs) for TPH C6-C40 fractions, BTEX and benzo(a)pyrene.

The ESLs are applicable to generic land uses such as areas of ecological significance, urban residential areas and public open space, and commercial/industrial land uses. The ESLs have been applied to assess risks to terrestrial ecosystems, generally, within the top 2 metres of coarse or fine soil at the final surface/ground level.

8.2.6 Petroleum Hydrocarbon Management Limits

Table 1B (7) of the NEPM presents petroleum hydrocarbon management limits for application to TPH fractions C_6-C_{10}, >C_{10}-C_{16}, >C_{16}-C_{34} and >C_{34}-C_{40}. The management limits are applicable for coarse or fine soils in residential, parkland, public open space or commercial/industrial land uses following consideration of relevant ESLs and HSLs.

8.2.7 Asbestos in Soils

Health screening for asbestos in soil, which are based on scenario-specific likely exposure levels, are adopted from the WA DoH Guidelines, and are referred in Table 8 in NEPM Schedule B1.

8.3 Export of Waste

Any soil to be removed from the site shall be classified in accordance with the NSW EPA (2014) "*Waste Classification Guidelines, Part 1: Classifying Waste"* before it can be disposed of off-site.

8.4 Duty to Report

In accordance with Section 2.3.5 of the EPA (2015) Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997, notification is required when:

- the contaminant has entered or will foreseeably enter groundwater or surface water; and
- the concentration of the contaminant in the groundwater or surface water is, or will foreseeably be, above the groundwater investigation level for that contaminant as specified in Section 6, Schedule B1 of the National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPC 2013); and
- the concentration of the contaminant in the groundwater or surface water will foreseeably continue to remain above the specified concentration.

Furthermore, the guideline specifies situations not intended to be captured by the duty to report such as:

- sites without off-site contamination where:
    - on-site contamination is not likely to migrate to a neighbouring property, and
    - any on-site contamination has been assessed and the site found to be suitable for the proposed use in accordance with the requirements under the Environmental Planning and Assessment Act 1979
- sites with contaminants that are at levels above the triggers but are equal to, or below, the ambient background concentration.

9. SOIL SAMPLING AND ANALYSIS PLAN

9.1 General Methodology

In order to meet the Data Quality Objectives, the investigation will comprise fieldwork and sample collection carried out in general accordance with the procedures outlined in the ECON Environmental fieldwork protocols (refer to Appendix L), which are based on industry accepted standard practice.

The sampling strategy is based on our current level of understanding of the site conditions and to address Council queries. However, the fieldwork and the soil sampling and analysis program may be subject to change based on the observations made during field work, such as depth of fill material, actual geology beneath the site and visual extent of contamination.

The drilling method adopted should ensure that no pathways of contamination are created between various soil strata encountered.

Prior to the commencement of the intrusive investigation, a professional services locator (Smartscan Locators) was engaged to clear the proposed sampling locations for underground services, where necessary.

Each borehole was drilled using a hand-held auger with a 100mm diameter auger.

The boreholes were backfilled with clean spoil or clean sand/gravel. Where a semi-confined or confined layer was encountered, a bentonite seal was used to prevent potential cross-contamination between the overlying and underlying strata.

The soil samples were collected on Tuesday 01 February and 15 February 2022.

9.2 Soil Sampling Density and Sampling Location Rationale

Based on the available information, a targeted soil sampling plan was considered most appropriate to provide sufficient characterisation data.

Seven (7) representative soil samples within the southern portion of the site were collected on Tuesday 01 February 2022 with the use of a 100mm diameter hand auger from up to approximately 0.20m BGL of underlying (subsurface) fill material.

An additional two (2) representative soil samples from up to approximately 0.30m BGL of underlying (subsurface) fill material plus one (1) dam water sample were collected on Tuesday 15 February 2022 from within the northern portion of the subject site.

Therefore, a total of nine (9) boreholes (BH1-BH9), plus one (1) QA/QC sample were advanced across the entire subject sites, by adopting a systematic grid sampling pattern to provide general site coverage with consideration given to accessibility, site features, and the proposed development areas.

9.3 Soil Sampling Depth

Boreholes were advanced through fill material (BH1-BH9) and terminated into natural soils (0.2-0.3m BGL) to allow for the collection of at least one soil sample from fill material, where indicated.

9.4 Soil Sample Methodology

During the collection of soil samples, any features such as seepage, discoloration, staining, odours, or other physical indicators of groundwater contamination was noted.

Soil sampling was carried out in general accordance with ECON Environmental Fieldwork Protocols. In summary:

- Soil samples were collected using a 100mm diameter hand-held auger from each soil type or change in lithology. However, additional samples were collected where there was visual evidence of contamination,
- Samples were transferred into clean laboratory supplied containers, and
- In general, each soil sample was divided into two sub-samples. One of the sub-samples was placed into a laboratory-supplied container and a second sub-sample was placed in a separate zip-lock bag for field headspace screening using a PID.

Sampling of asbestos was undertaken as follows:

- A minimum 10L sample from each sample location was recovered,
- Each sample (minimum of 10 L) was screened through a 7mm sieve and the material retained on the sieve examined for any bonded ACM and / or suspect material and forwarded to the laboratory for analysis if any suspected ACM is encountered,
- If visible FA material is present or suspected, the soil was wetted to minimise the release of fibres,
- Identified bonded ACM and FA was weighed for each sample, and
- One wetted 500ml sample from each sampling location was submitted to a NATA accredited laboratory for analysis for AF. Soil asbestos analysis should comply with Australian Standard Method for the Qualitative Identification of asbestos in bulk samples (AS4964–2004).

9.5 Sample Handling, Storage and Transport

The following sampling handling, storage and transport procedures were adopted to ensure sample integrity:

- All samples were collected in laboratory supplied containers. A list of sample preservation methods and the types of sample containers used are attached in Appendix E.

- All soil sample containers were placed immediately into a chilled cooler box and dispatched to their respective analytical laboratories on the same day. If this was not possible, samples were temporarily held overnight in the ECON Environmental's office refrigerator at a temperature of no greater than 4 ºC and dispatched the following day.
- A Chain of Custody form (COC) was completed for all samples collected and included with the samples for transport to their respective laboratories for chemical analysis. Copies of COCs are included in Appendix C.
- All glass jars were individually bubble wrapped for protection and insulated containers/coolers were used for sample shipment.
- Disposable nitrile gloves were used for WH&S purposes and were changed between every sample location and sample collection.
- The decontamination of non-dedicated sampling equipment was achieved by washing with phosphate-free detergent and tap water, followed by a final rinse with distilled water. Decontamination was conducted after the collection of samples at each sample location. A clean pair of disposable gloves was used when handling each sample. The hand-held equipment was decontaminated between sampling locations by physically removing soil material between boreholes, washing the equipment with water.

9.6 Borehole Sampling Logs

The following table should be read in conjunction with Figure 4, Appendix A – Borehole Sampling Locations, and Appendix C – Site Photographs.

Borehole Sample No.	Potential Area of Concern	Reason for Sampling	Sampling depth (m BGL)	Soil description	Soil observations	Latitude + Longitude
BH1	Southwest corner of Carport	Historical earthworks, potential oil and hydrocarbon spillages from vehicles	0.1-0.2m BGL	FILL: Compacted silty clay, beneath pavers, red brown to dark brown, dry with minor inclusions of sand, rock and gravel	No oil stains, oil sheens or odours detected. No ACM detected.	-33.867678482, 150.809385294
BH2	West of residential dwellings	Historical earthworks, and downgradient to residential dwellings	0.1-0.2m BGL	FILL: Silty clay loam, red brown to dark brown, dry with minor inclusions of sand, rock and gravel	No oil stains, oil sheens or odours detected. No ACM detected	-33.867399536, 150.809457043
BH3	Adjacent to Storage Sheds and Workshop	Historical earthworks, potential oil and hydrocarbon spillages from machinery	0.0-0.1m BGL	FILL: Gravelly sand, orange brown to brown, dry with minor inclusions of rocks and gravel	No oil stains, oil sheens or odours detected. No ACM detected	-33.867147871, 150.809652174
BH4	Inside Workshop	Historical earthworks, potential oil and hydrocarbon spillages from machinery	0.0-0.1m BGL	FILL: Compacted gravelly sand, orange brown to brown, dry with minor inclusions of rocks and gravel	Oil stains on concrete hardstand with oil sheens, no odours detected. No ACM detected	-33.867097204, 150.809713865

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BH5	Southern portion of site	Historical earthworks and general subsurface soil coverage	0.1-0.2m BGL	FILL: Silty clay loam, red brown to dark brown, dry with minor inclusions of sand, rock and gravel	No oil stains, oil sheens or odours detected. No ACM detected	-33.867819346, 150.809107685
BH6	South-western portion of site	Historical earthworks and general subsurface soil coverage	0.2-0.3m BGL	FILL: Silty clay loam, red brown to dark brown, dry with minor inclusions of sand, rock and gravel	No oil stains, oil sheens or odours detected. No ACM detected	-33.867810438, 150.808659086
BH7	Central portion of site	Historical earthworks and general subsurface soil coverage	0.2-0.3m BGL	FILL: Silty clay loam, red brown to dark brown, dry with minor inclusions of sand, rock and gravel	No oil stains, oil sheens or odours detected. No ACM detected	-33.867293747, 150.809153954
BH8	Northern central portion of site	Historical earthworks and general subsurface soil coverage	0.3-0.4m BGL	FILL: Silty clay loam, red brown to dark brown, dry with minor inclusions of sand, rock and gravel	No oil stains, oil sheens or odours detected. No ACM detected	-33.8666695207, 150.809641445
BH9	South dam embankment	Potential contaminant surface runoff from entire site	0.3-0.4m BGL	FILL: Silty clay loam, red brown to dark brown, dry with minor inclusions of sand, rock and gravel	No oil stains, oil sheens or odours detected. No ACM detected	-33.865980293, 150.810153747
DAM1	Dam water	Potential contaminant surface runoff from entire site	Surface water	Clear, slightly turbid water with minor floating vegetation debris.	No oil stains, oil sheens or odours detected.	-33.865912365, 150.810168499

**BGL – Below Ground Level, No Groundwater was detected within each of the borehole locations.*

9.7 Laboratory Analysis

The laboratory used for the analysis of all samples was ALS Environmental located at 277-289 Woodpark Road, Smithfield NSW Australia. The laboratory is NATA accredited for the selected analyses. The completed analysis schedule is summarised in Table 8 below providing a diverse range of analytes:

Table 14: Analytical Schedule

Soil Sample ID	Analytes
BH1-BH9	TRH(C6-40)/BTEXN/PAH/Phenols, OP/OC, PCB and 8 Metals (Suite S-19) Asbestos (Suite EA200F)
DAM1	TRH(C6-40)/BTEXN/PAH/Phenols, OP/OC, PCB and 8 Metals (Suite W-27), Biochemical Oxygen Demand (BDO), Oil & Grease, Total Dissolved Solids (TDS), Total Faecal Coliforms

10. QUALITY ASSURANCE / QUALITY CONTROL

10.1 Site Procedures

The following field quality assurance and quality control measures were implemented:

- All sample jars and sample bags were clearly labelled prior to site visit,
- All soil samples were collected by hand (after shallow excavation using a clean mattock),
- Disposable gloves were worn throughout the process and changed between the collection of each soil sample,
- All sampled jars and bags were immediately placed in an ice-block chilled esky,
- All samples were clearly labelled and sealed for couriering,
- The ALS Environmental chain-of-custody form was completed and emailed to the lab as well as a hard copy placed with the esky with the samples,
- All samples were kept in the office of ECON Environmental until collected by courier, and
- Ice blocks were interchanged prior to couriering.

10.2 Field QA/QC

10.2.1 General

The frequency required for each field quality assurance / quality control (QA/QC) sample is presented in the table below.

Table 15: QA/QC Sampling Frequency

	Intra-Lab Duplicates	Inter-Lab Duplicates	Rinsates	Trip Blanks	Trip Spikes
Sampling Frequency	1 in 20 primary samples	1 in 20 primary samples	1 / Day	1 / Day	1 / Day

10.2.2 Field Duplicates

Duplicates of primary samples were collected to enable the assessment of variability in analyte concentrations between samples collected from the same sampling point. The tables below list the duplicate soil and groundwater samples collected with their corresponding primary samples.

Table 16: Soil Field Duplicate Samples

Primary Sample ID	Sample Depth (m BGL)	Blind Duplicate ID	Split Duplicate ID	Date Sampled
BH4	0.0-0.1	D1	-	01.02.2022

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10.2.3 Sample Handling, Storage and Transport

The following sampling handling, storage and transport procedures were adopted to ensure sample integrity:

- Samples were collected in laboratory supplied containers. A list of sample preservation methods and the types of sample containers used are attached in Appendix I,
- Soil and groundwater sample containers were placed immediately into a chilled cooler box and dispatched to their respective analytical laboratories on the same day. If this was not possible, samples were temporarily held overnight in the ECON Environmental office refrigerator at a temperature of no greater than 4 ºC and dispatched the following day,
- A Chain of Custody form (COC) was completed for all samples collected and included with the samples for transport to their respective laboratories for chemical analysis. Copies of COCs are included in Appendix I.
- All glass bottles were individually bubble wrapped for protection and insulated containers/coolers were used for sample shipment.
- Disposable nitrile gloves were used for OH&S purposes and were changed between every sample location.

10.2.4 Decontamination Procedures

The decontamination of non-dedicated sampling equipment was achieved by washing with phosphate-free detergent and tap water, followed by a final rinse with distilled water. Decontamination was conducted after the collection of soil samples at each sample location. A clean pair of disposable gloves was used when handling each soil sample.

The drilling augers were decontaminated between sampling locations by physically removing soil material between boreholes, washing the augers with Decon 90 and rinsing them with water.

10.3 Laboratory QA/QC

10.3.1 Laboratories Used

The following NATA-accredited laboratories were commissioned to carry out laboratory analysis of soil, groundwater and soil vapour samples collected:

- Primary Laboratory – ALS Laboratories (Sydney)
- Secondary Laboratory – ALS Laboratories (Newcastle) to conduct asbestos analysis on selected soil samples.

These laboratories also operate Quality Systems that are designed to comply with ISO/IEC 17025.

All primary samples, blind duplicates, rinsate samples, trip blank/spikes were dispatched to the primary laboratory.

Laboratory Certificates of Analysis are included in Appendix F.

10.3.2 Holding Times

The holding times for chemicals analysed are presented in Appendix F and were based on USEPA methods, Standard Methods for the Examination of Water and Wastewater (APHA).

10.3.3 Test Methods and Practical Quantitation Limits

The test methods adopted by ALS Laboratories – Sydney & Newcastle are listed in Appendix I and Practical Quantitation Limits (PQLs) adopted are specified within the Laboratory Certificates of Analysis included in Appendix F.

The methods used by the laboratories generally comply with those listed in the NEPM and the ANZG, "Australian and New Zealand Guidelines for Fresh and Marine Water Quality" (2018). Alternate methods used by the laboratories (i.e. not identified in the NEPM and ANZECC guidelines) have been validated by the laboratories, as recommended in the NEPM and ANZECC guidelines, and endorsed by NATA.

10.4 QA/QC Data Evaluation

A full evaluation of the Data Quality Indicators (DQIs) for both fieldwork and laboratory procedures are presented in Appendix F. These were assessed with reference to Appendix V of the NEPM and Guidelines for the NSW Site Auditor Scheme (2nd ed.), 2006. In summary, the findings of the QA/QC evaluation indicated the following:

- Data Completeness – The data set is considered to be adequately complete. However, the following minor non-conformances were identified:
    - Trip blanks and trip spikes were not collected during the soil investigation. However, given that TPH C6-C10 fraction and BTEX concentrations were not detected in any of the samples during the preliminary investigation, this was not considered to affect the outcome of the results.
- Data Comparability – The data set is considered to be adequately comparable.
- Data Representativeness – The data set is considered to be adequately representative.
- Data Precision – The data set is considered to be adequately precise.
- Data Accuracy – The data set is considered to be adequately accurate.

The sampling methods (including sample preservation, transport and decontamination procedures) and laboratory methods followed during this investigation works were consistent with ECON Environmental protocols and were found to meet the DQOs for this project.

It is therefore considered that the data is sufficiently reliable and that the results can be used for the purpose of this project.

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11. FIELD OBSERVATIONS

11.1 Geology

Based on surface and sub-surface conditions observed during the intrusive investigation, the surface and sub-surface profile across the site is summarised in the table below.

Table 17: Summary of Geological Observations

Geological Unit	Lithological Description	Depth Ranges: Top to Base (m BGL)
Fill	LOAM. Silty clay loam, with traces of sand, fine gravel, and roots, red brown to dark brown	0.0-0.2m
Natural Soils (Residual)	SILTY CLAY. SILTY clay, medium plasticity, red brown	0.2-0.3m *(maximum depth of drilling BH1)*

The following additional observations were made:

- No hydrocarbon staining was observed within any of the borehole locations,
- No hydrocarbon odours were encountered within any of the borehole locations,
- No fibre-containing fragments or sheeting were observed in any of the borehole samples.

We recommend that this section be read in conjunction with Figure 4 Soil Sample Borehole Locations in Appendix A, the Daily Work Sheets in Appendix D and the borehole logs in Appendix E.

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12. LABORATORY RESULTS

12.1 General

A comparison of soil laboratory results against their respective assessment criteria (as specified in Section 7) are presented in the summary tables in Appendix E. Certificates of laboratory analysis are attached in Appendix F. A discussion of the results is presented in the following sub-sections.

12.2 Soil Results

12.2.1 Heavy Metals

12.2.1.1 Health Investigation Levels (HILs)

As indicated in Table B, the concentrations of the discrete heavy metals were BELOW the Health Investigation Level (HIL) for a residential development, that being the HIL 'A' with the exception of sample:

- **BH5 (0.1-0.2m) TRH F3 (C16-C34) – 580mg/kg**

12.2.1.2 Ecological Investigation Levels (EILs)

As indicated in Table A1, the arsenic concentrations were BELOW the Ecological Investigation Level (EIL) for urban residential and public open space.

12.2.2 TRH, BTEX, Naphthalene &/or Benzo(a)pyrene

12.2.2.1 Health Screening Levels (HSLs)

As indicated in Table C, the F1 (C_6-C_{10}), F2 (>C_{10}-C_{16}), benzene, toluene, ethyl benzene, xylenes and naphthalene concentrations were BELOW the HSL 'A' & HSL 'B' for a clay soil profile with a source depth of "0m to <1m" and "1m-2m".

12.2.2.2 Ecological Screening Levels (ESLs)

As indicated in Table D, the F1 (C_6-C_{10}), F2 (>C_{10}-C_{16}), F3 (C_{16}-C_{34}), F4 (C_{34}-C_{40}), benzene, toluene, ethyl benzene, xylenes and benzo(a)pyrene concentrations were BELOW the ESL for a fine-grained soil texture in an "urban residential and public open space" environment.

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12.2.2.3 Management Limits

As indicated in Table E, the F1 (C_6-C_{10}), F2 (>C_{10}-C_{16}), F3 (C_{16}-C_{34}), F4 (C_{34}-C_{40}), benzene, toluene, ethyl benzene, xylenes and benzo(a)pyrene concentrations were BELOW the Management Limits for a fine-grained soil texture in an "residential parkland and public open space" environment.

12.2.3 PAH, OCP, PCB, Phenols

12.2.3.1 Health Investigation Levels (HILs)

As indicated in Table F, the concentrations of the benzo(a)pyrene (as TEQ), Total PAH, OCP, PCB, Phenols were BELOW the Health Investigation Level (HIL) for a residential development, that being the HIL 'A'.

12.2.3.2 Ecological Investigation Levels (EILs)

As indicated in Table F, the concentrations of naphthalene and DDT/DDE/DDD were BELOW the Ecological Investigation Level (EIL) for urban residential and public open space.

12.2.4 Asbestos

As indicated in Table G, no asbestos was detected in any of the samples analysed, except for the following sample:

- **BH1 (0.1-0.2m) Chrysotile Asbestos and Amosite Asbestos detected – 0.033%ww**

12.2.5 Dam Water

The water sample was reported by the laboratory to have concentrations below the adopted site assessment criteria for all the analytes tested.

13. REFINED CONCEPTUAL SITE MODEL

13.1 Conceptual Site Model

The refined Conceptual Site Model (CSM) presented in the table below provides a representation of the potential risks associated with the linkages between the following elements:

- Potential contamination sources and their associated contaminants of concern identified in Section 4. Only potential areas of concern with a significance rating of low to high were included,
- Potential human receptors that may be impacted by site contamination are current and future end-users, construction workers and the general public within the immediate vicinity,
- Potential environmental receptors identified in Section 4,
- Potential exposure pathways, and
- Whether each source-pathway-receptor pollution linkage are complete, limited or not present, based on current and future site conditions.

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Table 18: Conceptual Site Model					
Potential Sources	Potential Receptor	Potential Exposure Pathways	Complete Linkages	Risk	Justification
Contaminated soil from placement of uncontrolled fill across the site.	Site users or the general public	Dermal contact, inhalation or ingestion of exposed impacted soils	Limited (current)	Low	Direct contact with impacted soils is limited to the concrete sealed areas around the UST and grassed areas around the site
			No (future)	Negligible	If present, contaminated soils are likely to be remediated and removed with the remaining soils from the site for off-site disposal.
		Inhalation or ingestion of exposed impacted soils	Limited	Low	As above
			No (future)	Negligible	As above
	The aquatic ecosystems	Migration of impacted groundwater and surface water run-off	Yes (current)	Low	No obvious sources of contamination were observed on site that could migrate off site with surface water run-off.
			No (future)	Negligible	If present, contaminated groundwater is likely to be remediated and any remaining residual contamination would likely be at negligible concentrations.
	Underlying Aquifer	Leaching and migration of contaminants through groundwater infiltration	Limited (Current)	Low	Groundwater infiltration is likely to be higher within sandy or weathered bedrock zones. However, this would be limited within higher strength bedrock at further depths where groundwater would be present within water bearing zones such as fractures and joints.
			No (Future)	Negligible	If present, overlying contaminated soils are likely to be remediated and removed with the remaining soils from the proposed development for off-site disposal.
Asbestos in buildings	Site user or visitors	Inhalation of airborne fibres	Limited (Current)	Low	If present, asbestos material is likely to be limited to the building fabric and would be in bonded form.
			No (Future)	Negligible	A hazardous materials survey is required prior to the demolition of the existing buildings for the proposed development and licensed contractors would have to remove any asbestos likely to be present.

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13.2 Data Gaps

Based on the CSM, the following data gaps were identified with respect to the contamination linkages identified:

1. No rinsate sample was sent to the laboratory for analysis, as part of this investigation. This does not warrant further investigations as the majority of sample results indicated concentrations of key contaminants BELOW site assessment criteria.
2. No trip blank and trip spike samples were analysed as part of this investigation however, this does not warrant further investigation as no hydrocarbon contaminants were identified within all soil samples from within the subject sites.
3. The existing building structures within the subject site located at 116-123 Kerrs Road, Mount Vernon consist of fibre-cement building materials. Therefore, a Hazardous Materials Assessment Registry is recommended prior to the demolition of all building structures within the subject sites and an Asbestos Clearance Inspection is required once all Asbestos containing building materials have been disposed of offsite.

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14. CONCLUSIONS AND RECOMMENDATIONS

14.1 Historical Data

Based on historical data of previous business activities within and adjacent to the subject site, the underlying soils do not have the potential to be comprised of soils containing hazardous materials, therefore is unlikely to cause direct potentially contaminating activities within the subject site.

14.2 Current Site Observations

At the time of inspection on Tuesday 01 February and 15 February 2022, no areas within the subject site were deemed potential areas of environmental concern, except for the workshop, adjacent storage cages and the residential dwellings onsite which may contain hazardous building materials.

Also, subsequent representative soil sampling is warranted beneath the building footprints of the residential dwellings and the workshop which may contain potentially hazardous materials within subsurface soils not visible at the time of the site inspection.

14.3 Soil Laboratory Results

Representative limited soil sampling within the entire subject site was undertaken for analysis and characterisation purposes. All nine (9) limited representative soil samples collected and tested from within the site (BH1-BH9) on Tuesday 01 February and 15 February 2022 were reported by the laboratory to have concentrations **BELOW** the adopted site assessment criteria for HIL A, land use as per the NEPM, 2013, with the exception of the following samples:

- **BH1 (0.1-0.2m) Chrysotile Asbestos and Amosite Asbestos detected – 0.033%ww**
- **BH5 (0.1-0.2m) TRH F3 (C16-C34) – 580mg/kg**

14.4 Upper 95% Confidence Limits

Please refer to Appendix E for the 95% UCL calculations regarding the contaminants exceedances as mentioned in Section 13.1 above. The results indicate that:

14.4.1 TRH F3 (C16-C34)

- The upper 95% confidence limit on the average concentration for **TRH F3 (C1-C34)** *(calculated for samples collected from consistent soil horizons, stratigraphy or material types)* was **220mg/kg** which was **BELOW** the adopted criterion of 300mg/kg.
- TRH F3 (C16-C34) **DID NOT** exceed 250% of the adopted criterion, and
- The standard deviation of the TRH F3 (C16-C34) results was **BELOW** 50 % of the criterion.
- Therefore, TRH F3 (C16-C34) is not deemed a contaminant within the subject sites.

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14.5 Potential Risks to Onsite Receptors

Human exposure to the potential contaminants identified is currently considered as **LOW** as:

- The site is privately owned and is not publicly accessible,
- No visible signs of oil staining and odours, and no visible fragments of ACM were observed on surface soils within the site.
- All representative soil sampling undertaken within potential areas of environmental concern were reported by the laboratory to have concentrations **BELOW** the adopted site assessment criteria for HIL A, land use as per the NEPM, 2013, with the exception of sampling locations BH1. However, the asbestos contaminants reported in BH1 were within subsurface soils (0.1-0.2m BGL).

14.6 Potential for Migration of Contaminants

Based on the results of this investigation it is considered that the risks to human health and the environment associated with potential contamination at the subject sites is considered as **LOW** within the context of the proposed use of the site for a residential development. However, if future proposed developments of the subject site include the demolition of existing building structures within the subject site and subsequent excavation of the underlying soils beneath building footprints, then there is a **MEDIUM** potential for contaminants present within building structures and underlying soils to have the ability to migrate vertically up into the atmosphere (Asbestos fibres), or down through the water column into the groundwater or migrate horizontally to adjacent properties or washed downgradient with stormwater runoff into adjacent properties or into the existing dam within the northern portion of the site.

14.7 Recommendations

Based on the results of this investigation it is considered that the risks to human health and the environment associated with soil contamination at the site are **LOW** within the context of the proposed use of the site for a residential development. The site is therefore considered to be rendered **SUITABLE** for the proposed development and intended land use, subject to the following recommendations:

- An appropriate remedial / management strategy is developed, culminating in preparation of a **Remedial Action Plan (RAP)** in accordance with EPA guidelines, in regard to the removal of asbestos contaminated soils within the vicinity of borehole BH1 sampling location. The RAP also will identify remediation and validation procedures regarding the Asbestos contamination within underlying soils within the identified borehole locations, as well as the additional soil sampling beneath building footprint areas post demolition of the building structures, *as per Figure 5 in Appendix A.*
- The preparation of a **Hazardous Material Assessment Registry** for the existing building structure within the subject sites, prior to their demolition.

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- If any proposed plans for the subject site include excavations and disposal of those underlying soils to a NSW EPA licenced facility, then a **Waste Classification** report of soils is to be prepared in accordance with the NSW EPA Waste Classification Guidelines: Part 1 Classifying Waste (2014).

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15. LIMITATION STATEMENT

ECON Environmental Pty Ltd has undertaken the following report in accordance with the scope of works set out between ECON Environmental Pty Ltd and the client. ECON Environmental Pty Ltd derived the data in this report primarily from the site and soil assessment conducted on the date of site inspection. The impacts of future events may require future investigation of the site and subsequent data analysis, together with a re-evaluation of the conclusions and recommendations of this report.

In preparing this report, ECON Environmental Pty Ltd has relied upon, and assumed accurate, certain site information provided by the client and other persons. Except as otherwise stated in the report, we have not attempted to verify the accuracy or completeness of any such information. ECON Environmental Pty Ltd accepts no liability or responsibility whatsoever for or in respect to any use or reliance upon this report by any third party.

The information contained within this report have been prepared exclusively for the client. ECON Environmental Pty Ltd have prepared the report to address the risk associated with scale of the works. The report has been prepared with a degree of care and skill ordinarily exercised in similar investigations by reputable members of the environmental industry in Australia. No other warranty, expressed or implied, is made or intended. This report is to be read in its entirety including attachments and appendices and should not read in individual sections.

A third party should not rely upon the information prior to making an assessment that the scope of work conducted meets their specific needs. ECON Environmental Pty Ltd cannot be held liable for third party reliance on this document.

ECON Environmental Pty Ltd's professional opinions are based upon its professional judgment, experience, training and results from analytical data. In some cases, further testing and analysis may be required, thus producing different results and/or opinions. ECON Environmental Pty Ltd has limited its investigation to the scope agreed upon with its client.

APPENDIX A: SITE PLANS

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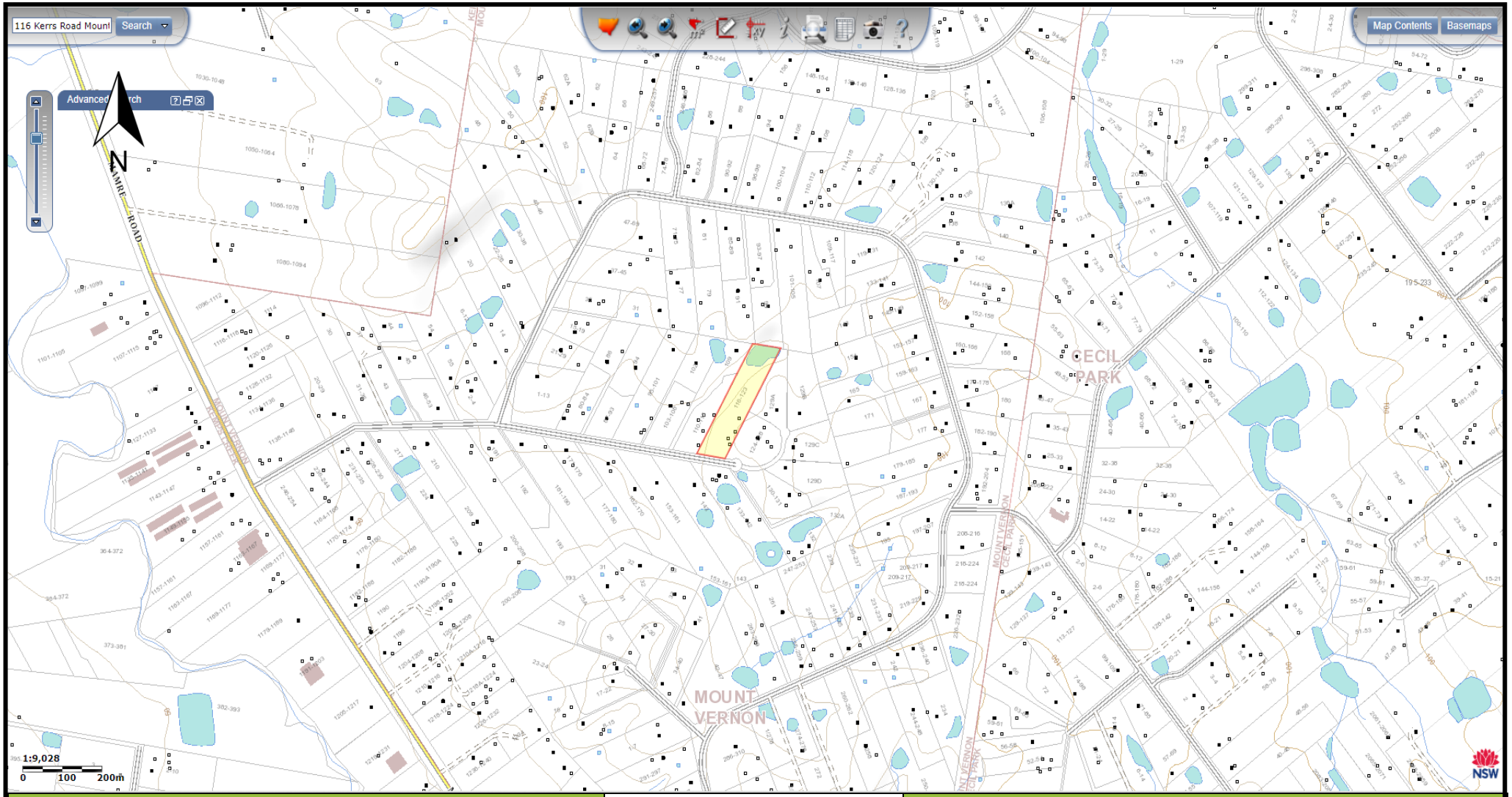
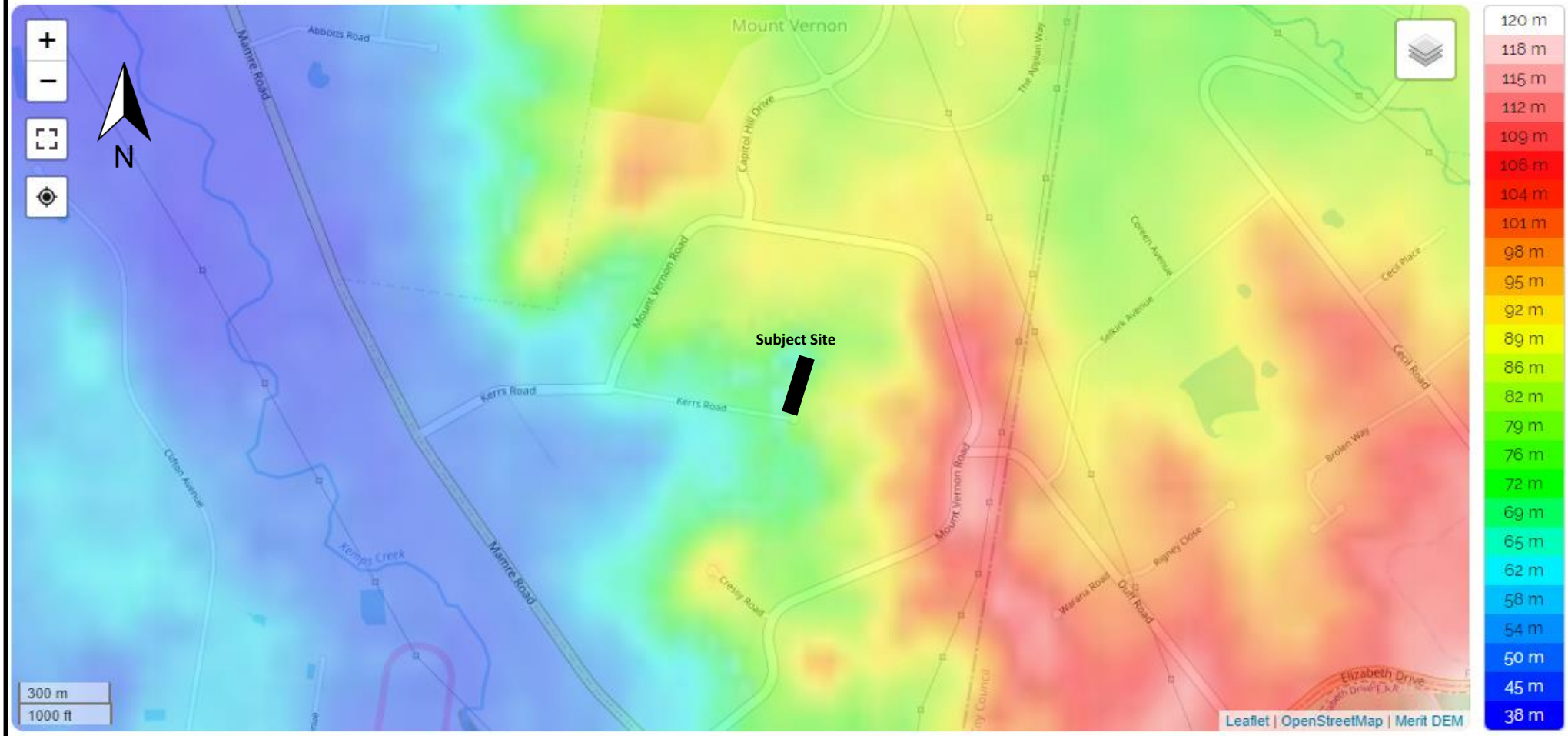


PROJECT DETAILS			DRAWING DETAILS: SITE LOCALITY			
Project Title	Preliminary Site Investigation		Figure No.	1	Rev No.	0
Project No.	22-1294		Scale	As above	Size	A4
Client	Mr Tony Trimboli C/- United Surveyors Pty Ltd		Drawn by	CK	Date	24.02.2022
Site Address	116-123 Kerrs Road, Mount Vernon NSW 2178		Approved by	CK	Date	24.02.2022

PROJECT DETAILS			DRAWING DETAILS: SITE AERIAL			
Project Title	Preliminary Site Investigation		Figure No.	2	Rev No.	0
Project No.	22-1294		Scale	As above	Size	A4
Client	Mr Tony Trimboli C/- United Surveyors Pty Ltd		Drawn by	CK	Date	24.02.2022
Site Address	116-123 Kerrs Road, Mount Vernon NSW 2178		Approved by	CK	Date	24.02.2022



Mount Vernon, Sydney, Penrith City Council, New South Wales, 2178, Australia (-33.85667 150.80944)

PROJECT DETAILS			DRAWING DETAILS: TOPOGRAPHIC MAP			
Project Title	Preliminary Site Investigation		Figure No.	3	Rev No.	0
Project No.	22-1294		Scale	As above	Size	A4
Client	Mr Tony Trimboli C/- United Surveyors Pty Ltd		Drawn by	CK	Date	24.02.2022
Site Address	116-123 Kerrs Road, Mount Vernon NSW 2178		Approved by	CK	Date	24.02.2022

PROJECT DETAILS			DRAWING DETAILS: BOREHOLE LOCATION			
Project Title	Preliminary Site Investigation		Figure No.	4	Rev No.	0
Project No.	22-1294		Scale	As above	Size	A4
Client	Mr Tony Trimboli C/- United Surveyors Pty Ltd		Drawn by	CK	Date	24.02.2022
Site Address	116-123 Kerrs Road, Mount Vernon NSW 2178		Approved by	CK	Date	24.02.2022

PROJECT DETAILS			DRAWING DETAILS: BOREHOLE LOCATION			
Project Title	Preliminary Site Investigation		Figure No.	5	Rev No.	0
Project No.	22-1294		Scale	As above	Size	A4
Client	Mr Tony Trimboli C/- United Surveyors Pty Ltd		Drawn by	CK	Date	24.02.2022
Site Address	116-123 Kerrs Road, Mount Vernon NSW 2178		Approved by	CK	Date	24.02.2022

APPENDIX B: PROPOSED DEVELOPMENT PLANS

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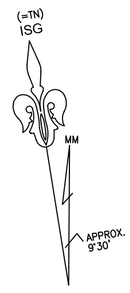
* THIS DETAIL SURVEY IS NOT A 'LAND SURVEY' AS DEFINED BY THE SURVEYING ACT, 2002.
* DISTANCES SHOWN HAVE BEEN TAKEN FROM A REGISTERED PLAN OF SUBDIVISION KNOWN AS DP31924
* THE AREA SHOWN HAS BEEN CALCULATED FROM THE REGISTERED LAND DIMENSIONS.
* BOUNDARY ANGLES AND DIMENSIONS ARE SUBJECT TO SURVEY INVESTIGATION.
* VISIBLE AND ACCESSIBLE SERVICES HAVE ONLY BEEN LOCATED. THE LOCATION OF ANY UNDERGROUND SERVICES WAS NOT INVESTIGATED. INVESTIGATIONS WITH DIAL BEFORE YOU DIG (PH:1100) AND SERVICE PROVIDORS MUST BE UNDERTAKEN PRIOR TO ANY DESIGN, EXCAVATION AND/OR CONSTRUCTION WORKS.

TITLE NOTES :

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 LAND EXCLUDES MINERALS BY THE CROWN GRANT OF 12 ACRES 1 ROOD
3 J180898 COVENANT

THE ABOVE NOTIFICATIONS HAVE NOT BEEN INVESTIGATED.



LOT 1021
DP1011434

99°08'10"
72.455

DAM

PROPOSED
LOT 1031
1.02ha
(9092m²)

EDGE OF SHRUBS

LOT 3
DP856693

PROPOSED
LOT 1032
1.0ha

LOT 1020
DP1011434

CONTAINER

METAL SHED

METAL SHED

METAL SHED

DIS. USED SWIMMING POOL

ONE STOREY CLAD BLDG. METAL ROOF

LOT 2
DP856693

TWO STOREY BRICK & CLAD RESIDENCE TILE ROOF
FL 75.23

BRICK WALL

CARPORT

TAP

PP

PP

PP

28°36'15"
296.325

208°36'15"

163.10

163.10

133.10

65.105

7.0

7.435

278°36'50"

65.105

BENCH NAIL
IN BITUMEN
RL73.63 GPS AHD

EDGE OF BITUMEN

EDGE OF BITUMEN

KERRS ROAD

REVISION	DATE	DETAILS
A	20/01/2022	1ST ISSUE

DATUM: AUSTRALIAN HEIGHT DATUM
ORIGIN: GLOBAL POSITIONING SYSTEM
DWG REF: 11074-3
REDUCTION RATIO: 1:400
SHEET SIZE: A1
DATE OF SURVEY: 11 JANUARY 2022
SURVEYOR: FC/JF
SHEET 1 OF 1

LEGEND

PP - POWER POLE

* AUSTRALIAN HEIGHT DATUM HAS BEEN DETERMINED USING GLOBAL POSITIONING SYSTEMS. (GPS). THE ACCURACY OF THE LEVEL IS DEPENDANT ON THE NUMBER AND POSITON OF SATELLITES AT THE TIME OF SURVEY.

DIAL 1100 BEFORE YOU DIG

united surveyors

PROPOSED SUBDIVISION
AT: 116-123 KERRS ROAD
MOUNT VERNON
BEING: LOT 103 IN DP31924
CLIENT: VERSABUILD

APPENDIX C: SITE PHOTOGRAPHS

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Photo 1: Showing borehole BH1 sampling location, 01.02.2022.

Photo 2: Showing borehole BH1 sampling location, looking north, 01.02.2022.

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Photo 3: Showing borehole BH2 sampling location, 01.02.2022.

Photo 4: Showing borehole BH2 sampling location, looking southeast, 01.02.2022.

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Photo 5: Showing borehole BH3 sampling location, 01.02.2022.

Photo 6: Showing borehole BH3 sampling location, looking north, 01.02.2022.

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Photo 7: Showing borehole BH4 sampling location, 01.02.2022.

Photo 8: Showing borehole BH4 sampling location, looking north, 01.02.2022.

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Photo 9: Showing borehole BH5 sampling location, 01.02.2022.

Photo 10: Showing borehole BH5 sampling location, looking west, 01.02.2022.

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Photo 11: Showing borehole BH6 sampling location, 01.02.2022.

Photo 12: Showing borehole BH6 sampling location, looking south, 01.02.2022.

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Photo 13: Showing borehole BH7 sampling location, 01.02.2022.

Photo 14: Showing borehole BH7 sampling location, looking north, 01.02.2022.

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Photo 15: Showing northern portion of the site, inaccessible, looking north, 01.02.2022.

Photo 16: Showing northern portion of the site, after clearing, looking north, 15.02.2022.

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Photo 17: Showing borehole BH8 sampling location, 15.02.2022.

Photo 18: Showing borehole BH8 sampling location, looking north, 15.02.2022.

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Photo 19: Showing borehole BH9 sampling location, 15.02.2022.

Photo 20: Showing borehole BH9 sampling location, looking north, 15.02.2022.

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Photo 21: Showing DAM1 water sampling location, looking north, 15.02.2022.

Photo 22: Showing workshop, looking south, 15.02.2022.

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APPENDIX D: FIELDNOTES

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Site Assessment
Daily Worksheet Record

ECON ENVIRONMENTAL

PROJECT NAME: ASI	**PROJECT NO:** 22-1294
CLIENT: Tony Trimboli & United Surveyors	**DATE:** 01-02-2022
SITE ADDRESS: 116-123 Kerrs Road Mount Vernon.	
SITE CONTACT: Tony Trimboli	**PHONE:** [redacted]
ECON REPRESENTATIVE: Con Karatoglou	
TITLE: Environmental Consultant	**PHONE:** [redacted]
FIELD NOTES:	

Start Time	900am.	Finish Time	1230pm.
Weather	Sunny	Rainfall (mm)	NIL.
Wind Direction	NNW	Wind Speed	9km/hr
Humidity	77%	Temperature	26.4°C.

Environmental and Safety Concerns

Odours Present	NIL	Staining Present	NIL.
USTs Present	NIL	ACM Present	On Residential & Workshop
Chemicals Present	NIL	Other Hazards Present	NIL.

Actions

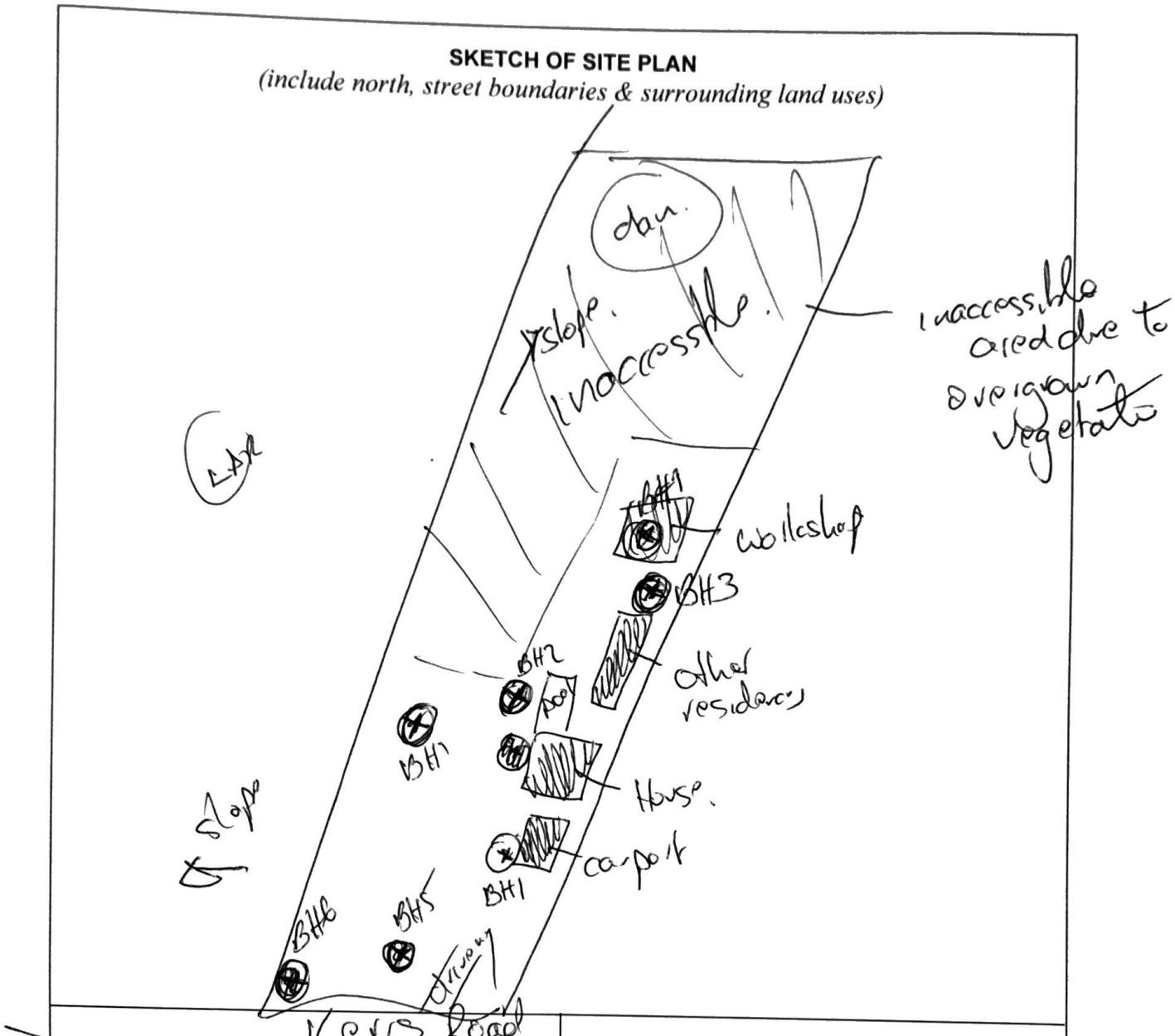
Site Safety Induction	N/A	Stormwater Control	N/A
Dust Suppression	N/A	Traffic Control	N/A
Machinery onsite	N/A	Equipment onsite	Hand Augers PPE
Other Comments		Sample jars, eskys, ice bricks.	

Description of Site Activities

ECON ENVIRONMENTAL

SKETCH OF SITE PLAN

(include north, street boundaries & surrounding land uses)



SOIL PROFILE

0.0

FILL
silty clay loam, with sand rocks gravel

0.2m.

0.3 Natural silty clay med. plasticity red-brown.

LEGEND / NOTES

⊛ Borehole sample location

Soil Sampling

ECON ENVIRONMENTAL

SOIL ASSESSMENT AND SAMPLING			
Sample No. (show on site plan)	**Depth** (m)	**Material Description** Fill / Natural	**PID** (ppm)
BH1	0.1-0.2	Fill - compacted silty clay with rocks + gravel, clay @ 0.2~ bgl. red brown and black	
BH2	0.1-0.2	Fill - Silty clay loam. red brown + to dark brown.	
BH3	0.0-0.1	Fill Gravelly sand + rocks	
BH4 (+D1)	0.0-0.1	Fill: Gravelly sand + rocks compacted. red brown.	
BH5	0.1-0.2	Fill: Silty clay loam. red brown - to dark brown. + rocks + gravel.	
BH6	0.2-0.3	Fill: Silty clay loam. red brown to dark brown + rocks + gravel.	
BH7	0.2-0.3	Fill: Silty clay loam. brown to dark brown. + rocks + gravel.	

Site Assessment
Daily Worksheet Record

ECON ENVIRONMENTAL

PROJECT NAME:	PSI	**PROJECT NO:**	22-1294
CLIENT:	Tony Trimboli, c/- united surveyors	**DATE:**	15-2-2022.
SITE ADDRESS:	116-123 Keira Rd Mount Vernon.		
SITE CONTACT:	Tony Trimboli	**PHONE:**	[redacted]
ECON REPRESENTATIVE:	Con Kariotoglou		
TITLE:	Environmental Consultant	**PHONE:**	[redacted]
FIELD NOTES:			

Start Time	9.00am.	Finish Time	10.30am.
Weather	Sunny	Rainfall (mm)	NIL.
Wind Direction	NW	Wind Speed	4km/hr
Humidity	80%	Temperature	23.2°C.

Environmental and Safety Concerns

Odours Present	NIL	Staining Present	NIL.
USTs Present	NIL	ACM Present	Residence + Workshop
Chemicals Present	NIL.	Other Hazards Present	NIL.

Actions

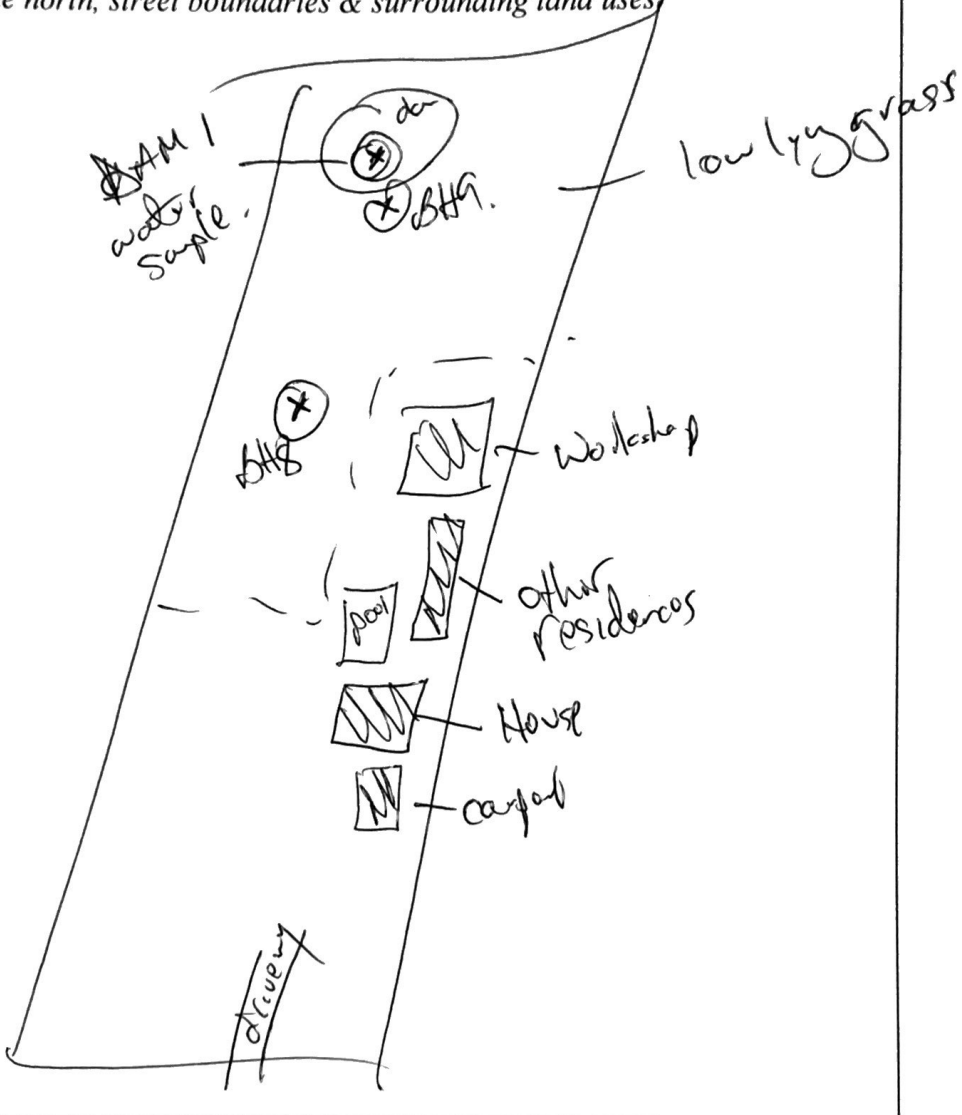
Site Safety Induction	N/A	Stormwater Control	N/A
Dust Suppression	N/A	Traffic Control	N/A
Machinery onsite	N/A	Equipment onsite	Hand Augers PPE
Other Comments		Sample jars, esky, ice bricks	

Description of Site Activities

ECON ENVIRONMENTAL

SKETCH OF SITE PLAN

(include north, street boundaries & surrounding land uses)



SOIL PROFILE

0

Fill - silty clay loam with sand rocks + grass

0-3

LEGEND / NOTES

Borehole sample location

Soil Sampling

ECON ENVIRONMENTAL

SOIL ASSESSMENT AND SAMPLING

Sample No. (show on site plan)	Depth (m)	Material Description Fill / Natural	PID (ppm)
BH8	0.3-0.4	Silty Clay loam (FILL) brown to dk brown + rods + gravel.	
BH9	0.2-0.3	Silty Clay loam (FILL) brown to dk brown.	
DAM 1	surface water from DAM	clear, no oil sheen.	

APPENDIX E: SITE ASSESSMENT CRITERIA

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6 Tabulated investigation and screening levels

ROUNDING APPLIED TO INVESTIGATION AND SCREENING LEVELS

Tables 1A (HILs and interim HILs)

Rounded to 1 or 2 significant figures (see Schedule B7 Appendix C for details)

Tables 1A (HSLs) and 1B (EILs and ESLs) rounding rules

< 1	**to nearest 0.1**
1–<10	**to nearest whole number**
1–< 100	**to nearest 5**
100–<1,000	**to nearest 10**
1,000–<10,000	**to nearest 100**
≥10,000	**to nearest 1,000**

Numbers ending in '5' are rounded up, for example:

0.05 rounded to 0.1

1.5 rounded to 2

115 rounded to 120

Table 1A(1) Health investigation levels for soil contaminants

Chemical	Health-based investigation levels (mg/kg)			
	Residential[1] A	Residential[1] B	Recreational[1] C	Commercial/ industrial[1] D
Metals and Inorganics				
Arsenic[2]	100	500	300	3 000
Beryllium	60	90	90	500
Boron	4500	40 000	20 000	300 000
Cadmium	20	150	90	900
Chromium (VI)	100	500	300	3600
Cobalt	100	600	300	4000
Copper	6000	30 000	17 000	240 000
Lead[3]	300	1200	600	1 500
Manganese	3800	14 000	19 000	60 000
Mercury (inorganic)[5]	40	120	80	730
Methyl mercury[4]	10	30	13	180
Nickel	400	1200	1200	6 000
Selenium	200	1400	700	10 000
Zinc	7400	60 000	30 000	400 000
Cyanide (free)	250	300	240	1 500
Polycyclic Aromatic Hydrocarbons (PAHs)				
Carcinogenic PAHs (as BaP TEQ)[6]	3	4	3	40
Total PAHs[7]	300	400	300	4000
Phenols				
Phenol	3000	45 000	40 000	240 000
Pentachlorophenol	100	130	120	660
Cresols	400	4 700	4 000	25 000
Organochlorine Pesticides				
DDT+DDE+DDD	240	600	400	3600
Aldrin and dieldrin	6	10	10	45
Chlordane	50	90	70	530
Endosulfan	270	400	340	2000
Endrin	10	20	20	100
Heptachlor	6	10	10	50
HCB	10	15	10	80
Methoxychlor	300	500	400	2500
Mirex	10	20	20	100
Toxaphene	20	30	30	160
Herbicides				
2,4,5-T	600	900	800	5000
2,4-D	900	1600	1300	9000
MCPA	600	900	800	5000

Chemical	Health-based investigation levels (mg/kg)			
	Residential[1] A	Residential[1] B	Recreational[1] C	Commercial/ industrial[1] D
MCPB	600	900	800	5000
Mecoprop	600	900	800	5000
Picloram	4500	6600	5700	35000
Other Pesticides				
Atrazine	320	470	400	2500
Chlorpyrifos	160	340	250	2000
Bifenthrin	600	840	730	4500
Other Organics				
PCBs[8]	1	1	1	7
PBDE Flame Retardants (Br1–Br9)	1	2	2	10

Notes:

(1) Generic land uses are described in detail in Schedule B7 Section 3

HIL A – Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry), also includes childcare centres, preschools and primary schools.

HIL B – Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.

HIL C – Public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. This does not include undeveloped public open space where the potential for exposure is lower and where a site-specific assessment may be more appropriate.

HIL D – Commercial/industrial, includes premises such as shops, offices, factories and industrial sites.

(2) Arsenic: HIL assumes 70% oral bioavailability. Site-specific bioavailability may be important and should be considered where appropriate (refer Schedule B7).

(3) Lead: HIL is based on blood lead models (IEUBK for HILs A, B and C and adult lead model for HIL D where 50% oral bioavailability has been considered. Site-specific bioavailability may be important and should be considered where appropriate.

(4) Methyl mercury: assessment of methyl mercury should only occur where there is evidence of its potential source. It may be associated with inorganic mercury and anaerobic microorganism activity in aquatic environments. In addition the reliability and quality of sampling/analysis should be considered.

(5) 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,

(6) Carcinogenic PAHs: HIL is based on the 8 carcinogenic PAHs and their TEFs (potency relative to B(a)P) adopted by CCME 2008 (refer Schedule B7). The B(a)P TEQ is calculated by multiplying the concentration of each carcinogenic PAH in the sample by its B(a)P TEF, given below, and summing these products.

PAH species	TEF	PAH species	TEF
Benzo(a)anthracene	0.1	Benzo(g,h,i)perylene	0.01
Benzo(a)pyrene	1	Chrysene	0.01
Benzo(b+j)fluoranthene	0.1	Dibenz(a,h)anthracene	1
Benzo(k)fluoranthene	0.1	Indeno(1,2,3-c,d)pyrene	0.1

Where the B(a)P occurs in bitumen fragments it is relatively immobile and does not represent a significant health risk.

(7) Total PAHs: HIL is based on the sum of the 16 PAHs most commonly reported for contaminated sites (WHO 1998). The application of the total PAH HIL should consider the presence of carcinogenic PAHs and naphthalene (the most volatile PAH). Carcinogenic PAHs reported in the total PAHs should meet the B(a)P TEQ HIL. Naphthalene reported in the total PAHs should meet the relevant HSL.

(8) PCBs: HIL relates to non-dioxin-like PCBs only. Where a PCB source is known, or suspected, to be present at a site, a site-specific assessment of exposure to all PCBs (including dioxin-like PCBs) should be undertaken.

Table 1A(2) Interim soil vapour health investigation levels for volatile organic chlorinated compounds

Chemical	Interim soil vapour HIL (mg/m^3)			
	Residential[1] A	Residential[1] B	Recreational[1] C	Commercial / Industrial[1] D
TCE	0.02	0.02	0.4	0.08
1,1,1-TCA	60	60	1200	230
PCE	2	2	40	8
cis-1,2-dichloroethene	0.08	0.08	2	0.3
Vinyl chloride	0.03	0.03	0.5	0.1

Notes:

1. Land use settings are equivalent to those described in Table 1A(1) Footnote 1 and Schedule B7, though secondary school buildings should be assessed using residential 'A/B' for vapour intrusion purposes.
2. Interim HILs for VOCCs are conservative soil vapour concentrations that can be adopted for the purpose of screening sites where further investigation is required on a site-specific basis. They are based on the potential for vapour intrusion using an indoor air-to-soil vapour attenuation factor of 0.1 and an outdoor air-to-soil vapour attenuation factor of 0.05.
3. Application of the interim HILs is based on a measurement of shallow (to 1 m depth) soil vapour (or deeper where the values are to be applied to a future building with a basement) or sub-slab soil vapour.
4. The applicability of the interim HILs needs to be further considered when used for other building types such as homes with a crawl-space and no slab, which may require site-specific assessment.
5. Use of the interim HILs requires comparison with data that has been collected using appropriate methods and meets appropriate data quality requirements.
6. Oral and dermal exposure should be considered on a site-specific basis where direct contact exposure is likely to occur.

Table 1A(3) Soil HSLs for vapour intrusion (mg/kg)

	HSL A & HSL B Low – high density residential				HSL C recreational / open space				HSL D Commercial / Industrial				
CHEMICAL	**0 m to <1 m**	**1 m to <2 m**	**2 m to <4m**	**4 m+**	**0 m to <1 m**	**1 m to <2 m**	**2 m to <4 m**	**4 m+**	**0 m to <1 m**	**1 m to <2 m**	**2 m to <4 m**	**4 m+**	**Soil saturation concentration (Csat)**
SAND													
Toluene	160	220	310	540	NL	NL	NL	NL	NL	NL	NL	NL	560
Ethylbenzene	55	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	64
Xylenes	40	60	95	170	NL	NL	NL	NL	230	NL	NL	NL	300
Naphthalene	3	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	9
Benzene	0.5	0.5	0.5	0.5	NL	NL	NL	NL	3	3	3	3	360
F1[9]	45	70	110	200	NL	NL	NL	NL	260	370	630	NL	950
F2[10]	110	240	440	NL	NL	NL	NL	NL	NL	NL	NL	NL	560
SILT													
Toluene	390	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	640
Ethylbenzene	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	69
Xylenes	95	210	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	330

	HSL A & HSL B Low – high density residential				HSL C recreational / open space				HSL D Commercial / Industrial				
Naphthalene	4	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	10
Benzene	0.6	0.7	1	2	NL	NL	NL	NL	4	4	6	10	440
F1[9]	40	65	100	190	NL	NL	NL	NL	250	360	590	NL	910
F2[10]	230	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	570
CLAY													
Toluene	480	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	630
Ethylbenzene	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	68
Xylenes	110	310	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	330
Naphthalene	5	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	10
Benzene	0.7	1	2	3	NL	NL	NL	NL	4	6	9	20	430
F1[9]	50	90	150	290	NL	NL	NL	NL	310	480	NL	NL	850
F2[10]	280	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	560

Notes:

(1) Land use settings are equivalent to those described in Table 1A(1) Footnote 1 and Schedule B7. HSLs for vapour intrusion for high density residential assume residential occupation of the ground floor. If communal car parks or commercial properties occupy the ground floor, HSL D should be used,

(2) The key limitations of the HSLs should be referred to prior to application and are presented in Friebel and Nadebaum (2011b and 2011d).

(3) Detailed assumptions in the derivation of the HSLs and information on how to apply the HSLs are presented in Friebel and Nadebaum (2011a and 2011b).

(4) Soil HSLs for vapour inhalation incorporate an adjustment factor of 10 applied to the vapour phase partitioning to reflect the differences observed between theoretical estimates of soil vapour partitioning and field measurements. Refer Friebel & Nadebaum (2011a) for further information.

(5) The soil saturation concentration (Csat) is defined as the soil concentration at which the porewater phase cannot dissolve any more of an individual chemical. The soil vapour that is in equilibrium with the porewater will be at its maximum. If the derived soil HSL exceeds Csat, a soil vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario. For these scenarios, no HSL is presented for these chemicals and the HSL is shown as 'not limiting' or 'NL'.

(6) The HSLs for TPH C_6-C_{10} in sandy soil are based on a finite source that depletes in less than seven years, and therefore consideration has been given to use of sub-chronic toxicity values. The >C_8-C_{10} aliphatic toxicity has been adjusted to represent sub-chronic exposure, resulting in higher HSLs than if based on chronic toxicity. For further information refer to Section 8.2 and Appendix J in Friebel and Nadebaum (2011a).

(7) The figures in the above table may be multiplied by a factor to account for biodegradation of vapour. A factor of 10 may apply for source depths from 2 m to <4 m or a factor of 100 for source depths of 4 m and deeper. To apply the attenuation factor for vapour degradation, a number of conditions must be satisfied. Firstly the maximum length of the shorter side of the concrete slab and surrounding pavement cannot exceed 15 m, as this would prevent oxygen penetrating to the centre of the slab. Secondly, measurement of oxygen in the subsurface is required to determine the potential for biodegradation. Oxygen must be confirmed to be present at >5% to use these factors.

(8) For soil texture classification undertaken in accord with AS 1726, the classifications of sand, silt and clay may be applied as coarse, fine with liquid limit <50% and fine with liquid limit>50% respectively, as the underlying properties to develop the HSLs may reasonably be selected to be similar. Where there is uncertainty, either a conservative approach may be adopted or laboratory analysis should be carried out.

(9) To obtain F1 subtract the sum of BTEX concentrations from the C_6-C_{10} fraction.

(10) To obtain F2 subtract naphthalene from the >C_{10}-C_{16} fraction.

Table 1A(4) Groundwater HSLs for vapour intrusion (mg/L)

	HSL A & HSL B Low – high density residential			HSL C recreational / open space			HSL D Commercial / industrial			
CHEMICAL	**2 m to <4 m**	**4 m to <8 m**	**8 m+**	**2 m to <4 m**	**4 m to <8 m**	**8 m+**	**2 m to <4 m**	**4 m to <8 m**	**8 m+**	**Solubility limit**
SAND										
Toluene	NL	NL	NL	NL	NL	NL	NL	NL	NL	61
Ethylbenzene	NL	NL	NL	NL	NL	NL	NL	NL	NL	3.9
Xylenes	NL	NL	NL	NL	NL	NL	NL	NL	NL	21
Naphthalene	NL	NL	NL	NL	NL	NL	NL	NL	NL	0.17
Benzene	0.8	0.8	0.9	NL	NL	NL	5	5	5	59
F1[7]	1	1	1	NL	NL	NL	6	6	7	9.0
F2[8]	1	1	1	NL	NL	NL	NL	NL	NL	3.0
SILT										
Toluene	NL	NL	NL	NL	NL	NL	NL	NL	NL	61
Ethylbenzene	NL	NL	NL	NL	NL	NL	NL	NL	NL	3.9
Xylenes	NL	NL	NL	NL	NL	NL	NL	NL	NL	21
Naphthalene	NL	NL	NL	NL	NL	NL	NL	NL	NL	0.17

	HSL A & HSL B Low – high density residential			HSL C recreational / open space			HSL D Commercial / industrial			
Benzene	4	5	5	NL	NL	NL	30	30	30	59
F1[7]	6	6	6	NL	NL	NL	NL	NL	NL	9.0
F2[8]	NL	NL	NL	NL	NL	NL	NL	NL	NL	3.0
CLAY										
Toluene	NL	NL	NL	NL	NL	NL	NL	NL	NL	61
Ethylbenzene	NL	NL	NL	NL	NL	NL	NL	NL	NL	3.9
Xylenes	NL	NL	NL	NL	NL	NL	NL	NL	NL	21
Naphthalene	NL	NL	NL	NL	NL	NL	NL	NL	NL	0.17
Benzene	5	5	5	NL	NL	NL	30	30	35	59
F1[7]	NL	NL	NL	NL	NL	NL	NL	NL	NL	9.0
F2[8]	NL	NL	NL	NL	NL	NL	NL	NL	NL	3.0

Notes:

(1) Land use settings are equivalent to those described in Table 1A(1) Footnote 1 and Schedule B7. HSLs for vapour intrusion for high density residential assume residential occupation of the ground floor. If communal car parks or commercial properties occupy the ground floor, HSL D should be used,

(2) The key limitations of the HSLs are presented in Friebel and Nadebaum (2011d) and should be referred to prior to application.

(3) Detailed assumptions in the derivation of the HSLs and information on the application of the HSLs are presented in Friebel and Nadebaum (2011a and 2011b).

(4) The solubility limit is defined as the groundwater concentration at which the water cannot dissolve any more of an individual chemical based on a petroleum mixture. The soil vapour that is in equilibrium with the groundwater will be at its maximum. If the derived groundwater HSL exceeds the water solubility limit, a soil vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario. For these scenarios, no HSL is presented for these chemicals and the HSL is shown as 'not limiting' or 'NL'.

(5) The figures in the above table may be multiplied by a factor to account for biodegradation of vapour. A factor of 10 may apply for source depths from 2 m to <4 m or a factor of 100 for source depths of 4 m and deeper. To apply the attenuation factor for vapour degradation, a number of conditions must be satisfied. Firstly, the maximum length of the shorter side of the concrete slab and surrounding pavement cannot exceed 15 m, as this would prevent oxygen penetrating to the centre of the slab. Secondly, measurement of oxygen in the subsurface is required to determine the potential for biodegradation. Oxygen must be confirmed to be present at >5% to use these factors.

(6) For soil texture classification undertaken in accord with AS 1726, the classifications of sand, silt and clay may be applied as coarse, fine with liquid limit <50% and fine with liquid limit >50% respectively, as the underlying properties to develop the HSLs may reasonably be selected to be similar. Where there is uncertainty, either a conservative approach may be adopted or laboratory analysis should be carried out.

(7) To obtain F1 subtract the sum of BTEX concentrations from the C_6-C_{10} fraction.

(8) To obtain F2 subtract naphthalene from the >C_{10}-C_{16} fraction.

Table 1A(5) Soil vapour HSLs for vapour intrusion (mg/m³)

	HSL A & HSL B Low – high density residential					HSL C recreational / open space					HSL D Commercial / Industrial				
CHEMICAL	**0 m to <1 m**	**1 m to <2 m**	**2 m to <4 m**	**4 m to <8 m**	**8 m+**	**0 m to <1 m**	**1 m to <2 m**	**2 m to <4 m**	**4 m to <8 m**	**8 m+**	**0 m to <1 m**	**1 m to <2 m**	**2 m to <4 m**	**4 m to <8 m**	**8 m+**
SAND															
Toluene	1300	3800	7300	15 000	29 000	NL	NL	NL	NL	NL	4800	16 000	39 000	84 000	NL
Ethylbenzene	330	1100	2200	4300	8700	NL	NL	NL	NL	NL	1300	4600	11 000	25 000	53 000
Xylenes	220	750	1500	3000	6100	NL	NL	NL	NL	NL	840	3,200	8000	18 000	37 000
Naphthalene	0.8	3	6	10	25	410	NL	NL	NL	NL	3	15	35	75	150
Benzene	1	3	6	10	20	360	2400	4700	9500	19 000	4	10	30	65	130
F1[8]	180	640	1,300	2600	5300	86 000	NL	NL	NL	NL	680	2800	7000	15 000	32 000
F2[9]	130	560	1200	2400	4800	NL	NL	NL	NL	NL	500	2400	NL	NL	NL
SILT															
Toluene	1400	14 000	32 000	69 000	140 000	NL	NL	NL	NL	NL	5700	63 000	NL	NL	NL
Ethylbenzene	380	4200	9700	21 000	43 000	NL	NL	NL	NL	NL	1500	19 000	54 000	NL	NL
Xylenes	260	2900	6800	15 000	30 000	NL	NL	NL	NL	NL	1000	13 000	38 000	NL	NL
Naphthalene	0.9	10	25	60	120	NL	NL	NL	NL	NL	4	50	150	350	750
Benzene	1	10	25	55	110	1800	12 000	24 000	48 000	97 000	4	50	140	320	670
F1[8]	210	2600	6000	13 000	26 000	NL	NL	NL	NL	NL	850	11 000	33 000	77 000	160 000

	HSL A & HSL B Low – high density residential					HSL C recreational / open space					HSL D Commercial / Industrial				
F2[9]	160	2300	5400	NL	NL	NL	NL	NL	NL	NL	670	NL	NL	NL	NL
CLAY															
Toluene	1600	23 000	53 000	110 000	NL	NL	NL	NL	NL	NL	6500	100 000	NL	NL	NL
Ethylbenzene	420	6800	16 000	35 000	NL	NL	NL	NL	NL	NL	1800	31 000	NL	NL	NL
Xylenes	280	4800	11 000	24 000	50 000	NL	NL	NL	NL	NL	1200	21 000	NL	NL	NL
Naphthalene	1	20	45	95	200	NL	NL	NL	NL	NL	4	85	240	560	1200
Benzene	1	15	40	90	180	3000	20 000	40 000	81 000	160 000	5	80	230	530	1100
F1[8]	230	4200	9900	21 000	44 000	NL	NL	NL	NL	NL	1000	19 000	55 000	130 000	270 000
F2[9]	180	3,800	NL	NL	NL	NL	NL	NL	NL	NL	800	NL	NL	NL	NL

1. Land use settings are equivalent to those described in Table 1A(1) Footnote 1 and Schedule B7. HSLs for vapour intrusion for high density residential assume residential occupation of the ground floor. If communal car parks or commercial properties occupy the ground floor, HSL D should be used,
2. The key limitations of the HSLs should be referred to prior to application and are presented in Friebel and Nadebaum (2011b and 2011d).
3. Detailed assumptions in the derivation of the HSLs and information on how to apply the HSLs are presented in Friebel and Nadebaum (2011a and 2011b).
4. The maximum possible soil vapour concentrations have been calculated based on vapour pressures of the pure chemicals. Where soil vapour HSLs exceed these values a soil-specific source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario. For these scenarios, no HSL is presented for these chemicals and the HSL is shown as 'not limiting' or 'NL'.
5. Soil vapour HSLs should be compared with measurements taken as laterally close as possible to the soil or groundwater sources of vapour (i.e. within or above vapour sources). Consideration is required of where the sample is taken, the current condition of the site and the likely future condition of the site. Shallow gas measurements in open space (less than 1 m below ground surface) may be subject to influences of weather conditions and moisture.
6. The figures in the above table may be multiplied by a factor to account for biodegradation of vapour. A factor of 10 may apply for source depths from 2 m to <4 m or a factor of 100 for source depths of 4 m and deeper. To apply the attenuation factor for vapour degradation, a number of conditions must be satisfied. Firstly, the maximum length of the shorter side of the concrete slab and surrounding pavement cannot exceed 15 m, as this would prevent oxygen penetrating to the centre of the slab. Secondly, measurement of oxygen in the subsurface is required to determine the potential for biodegradation. Oxygen must be confirmed to be present at >5% to use these factors.
7. For soil texture classification undertaken in accord with AS 1726, the classifications of sand, silt and clay may be applied as coarse, fine with liquid limit <50% and fine with liquid limit >50% respectively as the underlying properties to develop the HSLs may reasonably be selected to be similar. Where there is uncertainty, either a conservative approach may be adopted or laboratory analysis should be carried out.
8. To obtain F1 subtract the sum of BTEX concentrations from the C_6-C_{10} fraction.

9. To obtain F2 subtract naphthalene from the $>C_{10}$-C_{16} fraction.

Table 1B(1) Soil-specific added contaminant limits for aged zinc in soil

Zn added contaminant limits (ACL, mg added contaminant/kg)						
Areas of ecological significance						
pH[a]	***CEC[b] ($cmol_c/kg$)***					
	5	***10***	***20***	***30***	***40***	***60***
4.0	15	20	20	20	20	20
4.5	20	25	25	25	25	25
5.0	30	40	40	40	40	40
5.5	40	60	60	60	60	60
6.0	50	90	90	90	90	90
6.5	50	90	130	130	130	130
7.0	50	90	150	190	190	190
7.5	50	90	150	210	260	280
Urban residential/public open space[1]						
pH[a]	***CEC[b] ($cmol_c/kg$)***					
	5	***10***	***20***	***30***	***40***	***60***
4.0	70	85	85	85	85	85
4.5	100	120	120	120	120	120
5.0	130	180	180	180	180	180
5.5	180	270	270	270	270	270
6.0	230	400	400	400	400	400
6.5	230	400	590	590	590	590
7.0	230	400	700	880	880	880
7.5	230	400	700	960	1200	1300
Commercial/industrial						
pH[a]	***CEC[b] ($cmol_c/kg$)***					
	5	***10***	***20***	***30***	***40***	***60***
4.0	110	130	130	130	130	130
4.5	150	190	190	190	190	190
5.0	210	290	290	290	290	290
5.5	280	420	420	420	420	420
6.0	360	620	620	620	620	620
6.5	360	620	920	920	920	920
7.0	360	620	1100	1400	1400	1400
7.5	360	620	1100	1500	1900	2000

1. Urban residential/public open space is broadly equivalent to the HIL A, HIL B and HIL C land use scenarios in Table 1A(1) Footnote 1 and as described in Schedule B7.
2. Aged values apply to contamination present in soil for at least two years. For fresh contamination refer to Schedule B5c.
3. The EIL is calculated from summing the ACL and the ABC.

a = pH measured using the $CaCl_2$ method (Rayment & Higginson 1992).

b = CEC measured using the silver thiourea method (Chabra et al. 1972).

Table 1B(2) Soil-specific added contaminant limits for aged copper in soils

Cu added contaminant limits (ACL, mg added contaminant/kg)					
Areas of ecological significance					
CEC ($cmol_c/kg$)[a] based					
5	***10***	***20***	***30***	***40***	***60***
30	65	70	70	75	80
pH[b] based					
4.5	***5.5***	***6***	***6.5***	***7.5***	***8.0***
20	45	65	90	190	270
Urban residential/public open space[1]					
CEC ($cmol_c/kg$)[a] based					
5	***10***	***20***	***30***	***40***	***60***
95	190	210	220	220	230
pH[b] based					
4.5	***5.5***	***6***	***6.5***	***7.5***	***8.0***
60	130	190	280	560	800
Commercial/industrial					
CEC ($cmol_c/kg$)[a] based					
5	***10***	***20***	***30***	***40***	***60***
140	280	300	320	330	340
pH[b] based					
4.5	***5.5***	***6***	***6.5***	***7.5***	***8.0***
85	190	280	400	830	1200

Notes:

1. Urban residential/public open space is broadly equivalent to the HIL A, HIL B and HIL C land use scenarios in Table 1A(1) Footnote 1 and as described in Schedule B7.
2. The lower of the CEC or the pH-based ACLs for the land use and soil conditions is the ACL to be used.
3. Aged values apply to contamination present in soil for at least two years. For fresh contamination refer to Schedule B5c.
4. The EIL is calculated from summing the ACL and the ABC.

a = CEC measured using the silver thiourea method (Chabra et al. 1972).

b = pH measured using the $CaCl_2$ method (Rayment & Higginson 1992).

Table 1B(3) Soil-specific added contaminant limits for aged chromium III and nickel in soil

CHEMICAL	Clay content (% clay)	Added contaminant limits (mg added contaminant/kg) for various land uses		
		Areas of ecological significance	Urban residential and public open space	Commercial and industrial
Chromium III	*1*	60	190	310
	2.5	80	250	420
	5	100	320	530
	≥10	130	400	660
Nickel	CEC[a] ($cmol_c/kg$)	Areas of ecological significance	Urban residential and public open space[1]	Commercial and industrial
	5	5	30	55
	10	30	170	290
	20	45	270	460
	30	60	350	600
	40	70	420	730
	60	95	560	960

Notes:

1. Urban residential/public open space is broadly equivalent to the HIL A, HIL B and HIL C land use scenarios in Table 1A(1) Footnote 1 and as described in Schedule B7.
2. Aged values apply to contamination present in soil for at least two years. For fresh contamination refer to Schedule B5c.
3. The EIL is calculated from summing the ACL and the ABC.

a = CEC measured using the silver thiourea method (Chabra et al. 1972).

Table 1B(4) Generic added contaminant limits for lead in soils irrespective of their physicochemical properties

	Pb added contaminant limit (ACL, mg added contaminant/kg) for various land uses		
CHEMICAL	Areas of ecological significance	Urban residential and public open space[1]	Commercial and industrial
Lead	470	1100	1800

Notes:

1. Urban residential/public open space is broadly equivalent to the HIL A, HIL B and HIL C land use scenarios in Table 1A(1) Footnote 1 and as described in Schedule B7.
2. Aged values are applicable to lead contamination present in soil for at least two years. For fresh contamination refer to Schedule B5c.
3. The EIL is calculated from summing the ACL and the ABC.

Table 1B(5) Generic EILs for aged As, fresh DDT and fresh naphthalene in soils irrespective of their physicochemical properties

	Ecological Investigation Levels (mg total contaminant/kg)		
CHEMICAL	**Areas of ecological significance**	**Urban residential and public open space[1]**	**Commercial and industrial**
Arsenic[2]	40	100	160
DDT[3]	3	180	640
Naphthalene[3]	10	170	370

Notes:

1. Urban residential/public open space is broadly equivalent to the HIL-A, HIL-B and HIL-C land use scenarios in Table 1A(1) Footnote 1 and as described in Schedule B7.
2. Aged values are applicable to arsenic contamination present in soil for at least two years. For fresh contamination refer to Schedule B5c.
3. Insufficient data was available to calculate aged values for DDT and naphthalene, consequently the values for fresh contamination should be used.
4. Insufficient data was available to calculate ACLs for As, DDT and naphthalene. The EIL should be taken directly from Table 1B(5).

Table 1B(6) ESLs for TPH fractions F1 – F4, BTEX and benzo(a)pyrene in soil

CHEMICAL	Soil texture	ESLs (mg/kg dry soil)		
		Areas of ecological significance	Urban residential and public open space	Commercial and industrial
F1 C_6-C_{10}	*Coarse/ Fine*	125*	180*	215*
F2 >C_{10}-C_{16}		25*	120*	170*
F3 >C_{16}-C_{34}	*Coarse*	-	300	1700
	Fine	-	1300	2500
F4 >C_{34}-C_{40}	*Coarse*	-	2800	3300
	Fine	-	5600	6600
Benzene	*Coarse*	10	50	75
	Fine	10	65	95
Toluene	*Coarse*	10	85	135
	Fine	65	105	135
Ethylbenzene	*Coarse*	1.5	70	165
	Fine	40	125	185
Xylenes	*Coarse*	10	105	180
	Fine	1.6	45	95
Benzo(a)pyrene	*Coarse*	0.7	0.7	0.7
	Fine	0.7	0.7	0.7

Notes:

(1) ESLs are of low reliability except where indicated by * which indicates that the ESL is of moderate reliability.

(2) '-' indicates that insufficient data was available to derive a value.

(3) To obtain F1, subtract the sum of BTEX concentrations from C_6-C_{10} fraction and subtract naphthalene from >C_{10}-C_{16} to obtain F2.

Table 1 B(7) Management Limits for TPH fractions F1–F4 in soil

TPH fraction	Soil texture	Management Limits[1] (mg/kg dry soil)	
		Residential, parkland and public open space	Commercial and industrial
F1[2] C_6- C_{10}	*Coarse*	700	700
	Fine	800	800
F2[2] >C_{10}-C_{16}	*Coarse*	1000	1000
	Fine	1000	1000
F3 >C_{16}-C_{34}	*Coarse*	2500	3500
	Fine	3500	5000
F4 >C_{34}-C_{40}	*Coarse*	10 000	10 000
	Fine	10 000	10 000

[1] Management limits are applied after consideration of relevant ESLs and HSLs

[2] Separate management limits for BTEX and naphthalene are not available hence these should not be subtracted from the relevant fractions to obtain F1 and F2.

Table 1C Groundwater Investigation Levels (GILs)

Substance		Groundwater Investigation Levels		
		Fresh Waters[A]	Marine Waters[A]	Drinking Water[B]
		(µg/L)	(µg/L)	(mg/L)
Metals and Metalloids				
Aluminium, Al pH>6.5		55	-	-
Antimony		-	-	0.003
Arsenic		24 as As(III) 13 as As(V)	-	0.01
Barium		-	-	2
Beryllium		-	-	0.06
Boron		370[C]	-	4
Cadmium	H	0.2	0.7[D]	0.002
Chromium, Cr (III)	H	-	27	-
Chromium, Cr (VI)		1[C]	4.4	0.05
Cobalt		-	1	-
Copper	H	1.4	1.3	2
Iron, (Total)		-	-	-
Lead	H	3.4	4.4	0.01
Manganese		1900[C]	-	0.5
Mercury (Total)		0.06[D]	0.1[D]	0.001
Molybdenum		-	-	0.05
Nickel	H	11	7	0.02
Selenium (Total)		5[D]	-	0.01
Silver		0.05	1.4	0.1
Tributyl tin (as Sn)		-	0.006[C]	-
Tributyl tin oxide		-	-	0.001
Uranium		-	-	0.017
Vanadium		-	100	-
Zinc	H	8[C]	15[C]	-
Non-metallic Inorganics				
Ammonia[E] (as NH_3-N at pH 8)		900[C]	910	-
Bromate		-	-	0.02
Chloride		-	-	-
Cyanide (as un-ionised Cn)		7	4	0.08
Fluoride		-	-	1.5
Hydrogen sulphide (un-ionised H_2S measured as S)		1	-	-
Iodide		-	-	0.5

Substance	Groundwater Investigation Levels		
	Fresh Waters[A]	Marine Waters[A]	Drinking Water[B]
	(µg/L)	(µg/L)	(mg/L)
Nitrate (as NO_3)	refer to guideline	refer to guideline	50
Nitrite (as NO_2)	refer to guideline	refer to guideline	3
Nitrogen	refer to guideline	refer to guideline	-
Phosphorus	refer to guideline	refer to guideline	-
Sulphate (as SO_4)	-	-	500
Organic alchohols/other organics			
Ethanol	1400	-	-
Ethylenediamine tetra-acetic acid (EDTA)	-	-	0.25
Formaldehyde	-	-	0.5
Nitrilotriacetic acid	-	-	0.2
Anilines			
Aniline	8	-	-
2,4-Dichloroaniline	7	-	-
3,4-Dichloroaniline	3	150	-
Chlorinated Alkanes			
Dichloromethane	-	-	0.004
Trichloromethane (chloroform)	-	-	0.003
Trihalomethanes (total)	-	-	0.25
Tetrachloromethane (carbon tetrachloride)	-	-	0.003
1,2-Dichloroethane	-	-	0.003
1,1,2-Trichloroethane	6500	1900	-
Hexachloroethane	290[D]	-	-
Chlorinated Alkenes			
Chloroethene (vinyl chloride)	-	-	0.0003
1,1-Dichloroethene	-	-	0.03
1,2-Dichoroethene	-	-	0.06
Tetrachloroethene (PCE) (Perchloroethene)	-	-	0.05
Chlorinated Benzenes			
Chlorobenzene	-	-	0.3
1,2- Dichlorobenzene	160	-	1.5
1,3- Dichlorobenzene	260	-	-

Substance	Groundwater Investigation Levels		
	Fresh Waters[A]	Marine Waters[A]	Drinking Water[B]
	(µg/L)	(µg/L)	(mg/L)
1,4- Dichlorobenzene	60	-	0.04
1,2,3- Trichlorobenzene	3[D]	-	0.03 for individual or total trichlorobenzenes
1,2,4- Trichlorobenzene	85[D]	20[D]	
1,3,5-Trichlorobenzene	-	-	
Polychlorinated Biphenyls (PCBs)			
Aroclor 1242	0.3[D]	-	-
Aroclor 1254	0.01[D]	-	-
Other Chlorinated Compounds			
Epichlorohydrin	-	-	0.1
Hexachlorobutadiene	-	-	0.0007
Monochloramine	-	-	3
Monocyclic Aromatic Hydrocarbons			
Benzene	950	500[C]	0.001
Toluene	-	-	0.8
Ethylbenzene	-	-	0.3
Xylenes	350 (as o-xylene) 200 (as p-xylene)	-	0.6
Styrene (Vinyl benzene)	-	-	0.03
Polycyclic Aromatic Hydrocarbons (PAHs)			
Naphthalene	16	50[C]	-
Benzo[a]pyrene	-	-	0.00001
Phenols			
Phenol	320	400	-
2-Chlorophenol	340[C]	-	0.3
4-Chlorophenol	220	-	-
2,4-Dichlorophenol	120	-	0.2
2,4,6-Trichlorophenol	3[D]	-	0.02
2,3,4,6-Tetrachlorophenol	10[D]	-	-
Pentachlorophenol	3.6[D]	11[D]	0.01
2,4-Dinitrophenol	45	-	-
Phthalates			
Dimethylphthalate	3700	-	-
Diethylphthalate	1000	-	-
Dibutylphthalate	10[D]	-	-
Di(2-ethylhexyl) phthalate	-	-	0.01

Substance	Groundwater Investigation Levels		
	Fresh Waters[A]	Marine Waters[A]	Drinking Water[B]
	(µg/L)	(µg/L)	(mg/L)
Pesticides			
Acephate	-	-	0.008
Aldicarb	-	-	0.004
Aldrin plus Dieldrin	-	-	0.0003
Ametryn	-	-	0.07
Amitraz	-	-	0.009
Amitrole	-	-	0.0009
Asulam	-	-	0.07
Atrazine	13	-	0.02
Azinphos-methyl	-	-	0.03
Benomyl	-	-	0.09
Bentazone	-	-	0.4
Bioresmethrin	-	-	0.1
Bromacil	-	-	0.4
Bromoxynil	-	-	0.01
Captan	-	-	0.4
Carbaryl	-	-	0.03
Carbendazim (Thiophanate-methyl)	-	-	0.09
Carbofuran	0.06	-	0.01
Carboxin	-	-	0.3
Carfentrazone-ethyl	-	-	0.1
Chlorantraniliprole	-	-	6
Chlordane	0.03[D]	-	0.002
Chlorfenvinphos	-	-	0.002
Chlorothalonil	-	-	0.05
Chlorpyrifos	0.01[D]	0.009[D]	0.01
Chlorsulfuron	-	-	0.2
Clopyralid	-	-	2
Cyfluthrin, Beta-cyfluthrin	-	-	0.05
Cypermethrin isomers	-	-	0.2
Cyprodinil	-	-	0.09
1,3-Dichloropropene	-	-	0.1
2,2-DPA	-	-	0.5
2,4-D [2,4-dichlorophenoxy acetic acid]	280	-	0.03
DDT	0.006[D]	-	0.009
Deltramethrin	-	-	0.04

Substance	Groundwater Investigation Levels		
	Fresh Waters[A]	Marine Waters[A]	Drinking Water[B]
	(µg/L)	(µg/L)	(mg/L)
Diazinon	0.01	-	0.004
Dicamba	-	-	0.1
Dichloroprop	-	-	0.1
Dichlorvos	-	-	0.005
Dicofol	-	-	0.004
Diclofop-methyl	-	-	0.005
Dieldrin plus Aldrin	-	-	0.0003
Diflubenzuron	-	-	0.07
Dimethoate	0.15	-	0.007
Diquat	1.4	-	0.007
Disulfoton	-	-	0.004
Diuron	-	-	0.02
Endosulfan	0.03[D]	0.005[D]	0.02
Endothal	-	-	0.1
Endrin	0.01[D]	0.004[D]	-
EPTC	-	-	0.3
Esfenvalerate	-	-	0.03
Ethion	-	-	0.004
Ethoprophos	-	-	0.001
Etridiazole	-	-	0.1
Fenamiphos	-	-	0.0005
Fenarimol	-	-	0.04
Fenitrothion	0.2	-	0.007
Fenthion	-	-	0.007
Fenvalerate	-	-	0.06
Fipronil	-	-	0.0007
Flamprop-methyl	-	-	0.004
Fluometuron	-	-	0.07
Fluproponate	-	-	0.009
Glyphosate	370	-	1
Haloxyfop	-	-	0.001
Heptachlor	0.01[D]	-	-
Heptachlor epoxide	-	-	0.0003
Hexazinone	-	-	0.4
Imazapyr	-	-	9
Iprodione	-	-	0.1
Lindane (γ-HCH)	0.2	-	0.01

Substance	Groundwater Investigation Levels		
	Fresh Waters[A]	Marine Waters[A]	Drinking Water[B]
	(µg/L)	(µg/L)	(mg/L)
Malathion	0.05	-	0.07
Mancozeb (as ETU, ethylene thiourea)	-	-	0.009
MCPA	-	-	0.04
Metaldehyde	-	-	0.02
Metham (as methylisothiocyanate, MITC)	-	-	0.001
Methidathion	-	-	0.006
Methiocarb	-	-	0.007
Methomyl	3.5		0.02
Methyl bromide	-	-	0.001
Metiram (as ETU, ethylene thiourea)	-	-	0.009
Metolachlor/s–Metolachlor	-	-	0.30
Metribuzin	-	-	0.07
Metsulfuron-methyl	-	-	0.04
Mevinphos	-	-	0.006
Molinate	3.4	-	0.004
Napropamide	-	-	0.4
Nicarbazin	-	-	1
Norflurazon	-	-	0.05
Omethoate	-	-	0.001
Oryzalin	-	-	0.4
Oxamyl	-	-	0.007
Paraquat	-	-	0.02
Parathion	0.004[C]	-	0.02
Parathion methyl	-	-	0.0007
Pebulate	-	-	0.03
Pendimethalin	-	-	0.4
Pentachlorophenol	-	-	0.01
Permethrin	-	-	0.2
Picloram	-	-	0.30
Piperonyl butoxide	-	-	0.6
Pirimicarb	-	-	0.007
Pirimiphos methyl	-	-	0.09
Polihexanide	-	-	0.7
Profenofos	-	-	0.0003

Substance	Groundwater Investigation Levels		
	Fresh Waters[A]	Marine Waters[A]	Drinking Water[B]
	(µg/L)	(µg/L)	(mg/L)
Propachlor	-	-	0.07
Propanil	-	-	0.7
Propargite	-	-	0.007
Proparzine	-	-	0.05
Propiconazole	-	-	0.1
Propyzamide	-	-	0.07
Pyrasulfatole	-	-	0.04
Pyrazophos	-	-	0.02
Pyroxsulam	-	-	4
Quintozene	-	-	0.03
Simazine	3.2	-	0.02
Spirotetramat	-	-	0.2
Sulprofos	-	-	0.01
2,4,5-T	36	-	0.1
Tebuthiuron	2.2	-	-
Temephos	-	0.05[D]	0.4
Terbacil	-	-	0.2
Terbufos	-	-	0.0009
Terbuthylazine	-	-	0.01
Terbutryn	-	-	0.4
Thiobencarb	2.8	-	0.04
Thiometon	-	-	0.004
Thiram	0.01	-	0.007
Toltrazuril	-	-	0.004
Toxafene	0.1 [D]	-	-
Triadimefon	-	-	0.09
Trichlorfon	-	-	0.007
Triclopyr	-	-	0.02
Trifluralin	2.6[D]	-	0.09
Vernolate	-	-	0.04
Surfactants			
Linear alkylbenzene sulfonates (LAS)	280	-	-
Alcohol ethoxylated sulfate (AES)	650	-	-
Alcohol ethoxylated surfactants (AE)	140	-	-

Substance	Groundwater Investigation Levels		
	Fresh Waters[A]	Marine Waters[A]	Drinking Water[B]
	(µg/L)	(µg/L)	(mg/L)

A Investigation levels apply to typical slightly-moderately disturbed systems. See ANZECC & ARMCANZ (2000) for guidance on applying these levels to different ecosystem conditions.

B Investigation levels are taken from the health values of the Australian Drinking Water Guidelines (NHMRC 2011).

C Figure may not protect key species from chronic toxicity, refer to ANZECC & ARMCANZ (2000) for further guidance.

D Chemical for which possible bioaccumulation and secondary poisoning effects should be considered, refer to ANZECC & ARMCANZ (2000) for further guidance.

E For changes in GIL with pH refer to ANZECC & ARMCANZ (2000) for further guidance.

H Values have been calculated using a hardness of 30 mg/L $CaCO_3$ refer to ANZECC & ARMCANZ (2000) for further guidance on recalculating for site-specific hardness.

APPENDIX F: SUMMARY OF RESULTS TABLES

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TABLE A
SCHEDULE OF LABORATORY SOIL TESTING

Analyte / Analyte Group		TYPE	SAMPLING DATE	MET-8	TPH & BTEX	PAH	OCP	PCB	PHENOLS	ASBESTOS
Sample	Depth (m)									
BH1	0.1-0.2	F	01.02.2022	✔	✔	✔	✔	✔	✔	✔
BH2	0.1-0.2	F	01.02.2022	✔	✔	✔	✔	✔	✔	✔
BH3	0.0-0.1	F	01.02.2022	✔	✔	✔	✔	✔	✔	✔
BH4	0.1-0.2	F	01.02.2022	✔	✔	✔	✔	✔	✔	✔
BH5	0.1-0.2	F	01.02.2022	✔	✔	✔	✔	✔	✔	✔
BH6	0.2-0.3	F	01.02.2022	✔	✔	✔	✔	✔	✔	✔
BH7	0.2-0.3	F	01.02.2022	✔	✔	✔	✔	✔	✔	✔
BH8	0.3-0.4	F	15.02.2022	✔	✔	✔	✔	✔	✔	✔
BH9	0.2-0.3	F	15.02.2022	✔	✔	✔	✔	✔	✔	✔

Notes
MET-8: arsenic, cadmium, chromium, copper, lead,
OCP : Organochlorine Pesticides
PCB : Polychlorinated Biphenyls
PAH: Polycyclic Aromatic Hydrocarbons
TPH: Total Petroleum Hydrcarbons
BTEX: Benzene, Toluene, Ethyl Benzene, Xylene
F,T,N, W: Fill, Topsoil, Natural, Water

TABLE B

HEAVY METALS TEST RESULTS FOR HILs & ESLs

Analyte / Sample Location	Sample Date	Depth (m)	HEAVY METALS (mg/kg) ARSENIC	CADMIUM	CHROMIUM (VI)	COPPER	MERCURY	NICKEL	LEAD [g]	ZINC
BH1	01.02.2022	0.1-0.2	5	<1	36	22	<0.1	30	20	110
BH2	01.02.2022	0.1-0.2	11	<1	17	25	<0.1	12	22	98
BH3	01.02.2022	0.0-0.1	10	<1	17	35	<0.1	17	48	360
BH4	01.02.2022	0.1-0.2	7	<1	16	52	<0.1	46	72	864
BH5	01.02.2022	0.1-0.2	15	<1	21	22	<0.1	14	23	46
BH6	01.02.2022	0.2-0.3	13	<1	22	21	<0.1	11	38	54
BH7	01.02.2022	0.2-0.3	13	<1	18	37	<0.1	12	22	82
BH8	15.02.2022	0.3-0.4	8	<1	15	37	<0.1	14	20	180
BH9	15.02.2022	0.2-0.3	<5	<1	14	30	<0.1	12	17	73
Practical Quantitation Limits (PQL)			5	1	2	5	0.1	2	5	5
NATIONAL ENVIRONMENT PROTECTION MEASURE (2013)										
Health Investigation Levels (HIL) - Table 1A (1)										
HIL A [a]			100	20	100	6000	40[e] / 10[f]	400	300	7400
HIL B [b]			500	150	500	30,000	120[e] / 30[f]	1200	1200	60,000
HIL C [c]			300	90	300	17,000	80[e] / 13[f]	1200	600	30,000
HIL D [d]			3000	900	3600	240,000	730[e] / 180[f]	6000	1500	400,000
Ecological Investigation Levels (EIL) - Table 1B (5)										
Areas of ecological significance			40[h]							
Urban residential and public open space [i]			100[h]							
Commercial and industrial			160[h]							

Notes

a: Residential with garden/accessible soil (home grown poduce <10% fruit and vegetable intake (no poultry), also includes childcare centres, preschools and primary schools.

b: Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high rise buildings and apartments.

c: Public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. This does not include undeveloped public open space where the potential for exposure is lower and where a site-specific assessment may be more appropriate

d: Commercial/industrial, includes premises such as shops, offices, factories and industrial sites

e: 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,

f: Methyl mercury: assessment of methyl mercury should only occur where there is evidence of its potential source. It may be associated with inorganic mercury and anaerobic microorganism activity in aquatic environments. In addition the reliability and quality of sampling/analysis should be considered.

g: Lead: HIL is based on blood lead models (IEUBK for HILs A, B and C and adult lead model for HIL D where 50% oral bioavailability has been considered. Site-specific bioavailability may be important and should be considered where appropriate.

h: Aged values are applicable to arsenic contamination present in soil for at least two years. For fresh contamination refer to Schedule B5c.

i: Urban residential / public open space is broadly equivalent to the HIL-A, HIL-B and HIL-C land use scenarios in Table 1A(1) Footnote 1 and as described in Schedule B7.

TABLE C
TOTAL RECOVERABLE HYDROCARBONS (TRH), BTEX AND NAPHTHALENE TEST RESULTS FOR HSLs IN CLAY

Analyte / Sample Location	Sample Date	Depth (m)	TRH (mg/kg) F1 [a]	TRH (mg/kg) F2 [b]	BTEX (mg/kg) BENZENE	BTEX (mg/kg) TOLUENE	BTEX (mg/kg) ETHYL BENZENE	BTEX (mg/kg) TOTAL XYLENES	PAH (mg/kg) NAPHTHALENE
BH1	01.02.2022	0.1-0.2	<10	<50	<0.2	<0.5	<0.5	<0.5	<1
BH2	01.02.2022	0.1-0.2	<10	<50	<0.2	<0.5	<0.5	<0.5	<1
BH3	01.02.2022	0.0-0.1	<10	<50	<0.2	<0.5	<0.5	<0.5	<1
BH4	01.02.2022	0.1-0.2	<10	<50	<0.2	<0.5	<0.5	<0.5	<1
BH5	01.02.2022	0.1-0.2	<10	<50	<0.2	<0.5	<0.5	<0.5	<1
BH6	01.02.2022	0.2-0.3	<10	<50	<0.2	<0.5	<0.5	<0.5	<1
BH7	01.02.2022	0.2-0.3	<10	<50	<0.2	<0.5	<0.5	<0.5	<1
BH8	15.02.2022	0.3-0.4	<10	<50	<0.2	<0.5	<0.5	<0.5	<1
BH9	15.02.2022	0.2-0.3	<10	<50	<0.2	<0.5	<0.5	<0.5	<1
Practical Quantitation Limits (PQL)			10	50	0.2	0.5	0.5	0.5	1
NATIONAL ENVIRONMENT PROTECTION MEASURE (2013)									
Health Screening Levels (HSL) - Table 1A (3)									
HSL A & HSL B: Low-high density residential									
Source depth - 0m to <1m			50	280	0.7	480	NL	110	5
Source depth - 1m to <2m			90	NL	1	NL	NL	310	NL
Source depth - 2m to <4m			150	NL	2	NL	NL	NL	NL
Source depth - 4m +			290	NL	3	NL	NL	NL	NL
HSL C: recreational / open space									
Source depth - 0m to <1m			NL	NL	NL	NL	NL	NL	NL
Source depth - 1m to <2m			NL	NL	NL	NL	NL	NL	NL
Source depth - 2m to <4m			NL	NL	NL	NL	NL	NL	NL
Source depth - 4m +			NL	NL	NL	NL	NL	NL	NL
HSL D: Commercial / Industrial									
Source depth - 0m to <1m			310	NL	4	NL	NL	NL	NL
Source depth - 1m to <2m			480	NL	6	NL	NL	NL	NL
Source depth - 2m to <4m			NL	NL	9	NL	NL	NL	NL
Source depth - 4m +			NL	NL	20	NL	NL	NL	NL

Notes
a: To obtain F1 subtract the sum of BTEX concentrations from the C_6-C_{10} fraction.
b: To obtain F2 subtract naphthalene from the >C_{10}-C_{16} fraction.
NL: Not Limiting

TABLE D
TOTAL RECOVERABLE HYDROCARBONS (TRH), BTEX AND BENZO(a)PYRENE TEST RESULTS
ESLs FOR COARSE GRAINED SOIL TEXTURE

Analyte / Sample Location	Sample Date	Depth (m)	TRH (mg/kg) F1 (C_6-C_{10}) [a]	TRH (mg/kg) F2 (>C_{10}-C_{16}) [b]	TRH (mg/kg) F3 (C_{16}-C_{34})	TRH (mg/kg) F4 (C_{34}-C_{40})	BTEX (mg/kg) BENZENE	BTEX (mg/kg) TOLUENE	BTEX (mg/kg) ETHYL BENZENE	BTEX (mg/kg) TOTAL XYLENES	PAH (mg/kg) BENZO(a)PYRENE
BH1	01.02.2022	0.1-0.2	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5
BH2	01.02.2022	0.1-0.2	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5
BH3	01.02.2022	0.0-0.1	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5
BH4	01.02.2022	0.1-0.2	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5
BH5	01.02.2022	0.1-0.2	<10	<50	**580**	320	<0.2	<0.5	<0.5	<0.5	<0.5
BH6	01.02.2022	0.2-0.3	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5
BH7	01.02.2022	0.2-0.3	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5
BH8	15.02.2022	0.3-0.4	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5
BH9	15.02.2022	0.2-0.3	<10	<50	<100	<100	<0.2	<0.5	<0.5	<0.5	<0.5
Practical Quantitation Limits (PQL)			10	50	100	100	0.2	0.5	0.5	5	0.5
NATIONAL ENVIRONMENT PROTECTION MEASURE (2013)											
Ecological Screening Levels (ESL) - Table 1B (6)											
Areas of ecological significance			125*	25*	-	-	10	10	1.5	10	0.7
Urban residential and public open space			180*	120*	300	2800	50	85	70	105	0.7
Commercial and industrial			215*	170*	1700	3300	75	135	165	180	0.7

Notes
a: To obtain F1 subtract the sum of BTEX concentrations from the C_6-C_{10} fraction.
b: To obtain F2 subtract naphthalene from the >C_{10}-C_{16} fraction.
*: ESLs are of low reliability except where indicated by * which indicates that the ESL is of moderate reliability.
"-": "-" indicates that insufficient data was available to derive a value.

TABLE E
TOTAL RECOVERABLE HYDROCARBONS (TRH) TEST RESULTS
MANAGEMENT LIMITS FOR COARSE GRAINED SOIL TEXTURE

Analyte / Sample Location	Date Sampled	Depth (m)	TRH (mg/kg) F1 (C_6-C_{10}) [a]	F2 (>C_{10}-C_{16}) [a]	F3 (C_{16}-C_{34})	F4 (C_{34}-C_{40})
BH1	01.02.2022	0.1-0.2	<10	<50	<100	<100
BH2	01.02.2022	0.1-0.2	<10	<50	<100	<100
BH3	01.02.2022	0.0-0.1	<10	<50	<100	<100
BH4	01.02.2022	0.1-0.2	<10	<50	<100	<100
BH5	01.02.2022	0.1-0.2	<10	<50	580	320
BH6	01.02.2022	0.2-0.3	<10	<50	<100	<100
BH7	01.02.2022	0.2-0.3	<10	<50	<100	<100
BH8	15.02.2022	0.3-0.4	<10	<50	<100	<100
BH9	15.02.2022	0.2-0.3	<10	<50	<100	<100
Practical Quantitation Limits (PQL)			10	50	100	100
NATIONAL ENVIRONMENT PROTECTION MEASURE (2013)						
Management Limits - Table 1B (7)						
Residential parkland and public open space			700	1000	2500	10,000
Commercial and industrial			700	1000	3500	10,000

Notes
a: Separate management limits for BTEX and naphthalene are not available hence these should not be subtracted from the relevant fractions to obtain F1 and F2.
b: Management limits are applied after consideration of relevant ESLs and HSLs.

TABLE F

POLYCYCLIC AROMATIC HYDROCARBONS (PAH), ORGANOCHLORINE PESTICIDES (OCP), POLYCHLORINATED BIPHENYLS (PCB), PHENOLS TEST RESULTS FOR HILs, EILs & ESLs

Analyte			PAH (mg/kg)				Organochlorine Pesticides (mg/kg)									Phenols (mg/kg)	
Sample Location	Sample Date	Depth (m)	Carcinogenic PAHs (as BaP TEQ) [e]	TOTAL PAHs [f]	BENZO(a)PYRENE	NAPHTHALENE	DDT + DDE + DDD	ALDRIN & DIELDRIN	CHLORDANE	ENDOSULFAN	ENDRIN	HEPTACHLOR	HCB	METHOXYCHLOR	PCB [j]	PHENOL	PENTACHLOROPHENOL
BH1	01.02.2022	0.1-0.2	0.6	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.5	<2
BH2	01.02.2022	0.1-0.2	0.6	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.5	<2
BH3	01.02.2022	0.0-0.1	0.6	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.5	<2
BH4	01.02.2022	0.1-0.2	0.6	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.5	<2
BH5	01.02.2022	0.1-0.2	0.6	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.5	<2
BH6	01.02.2022	0.2-0.3	0.6	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.5	<2
BH7	01.02.2022	0.2-0.3	0.6	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.5	<2
BH8	15.02.2022	0.3-0.4	0.6	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.5	<2
BH9	15.02.2022	0.2-0.3	0.6	<0.5	<0.5	<0.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.5	<2
Practical Quantitation Limits (PQL)			0.5	0.5	0.5	0.5	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.1	0.5	2
NATIONAL ENVIRONMENT PROTECTION MEASURE (2013)																	
Health Investigation Levels (HIL) - Table 1A (1)																	
HIL A [a]			3	300			240	6	50	270	10	6	10	300	1	3000	100
HIL B [b]			4	400			600	10	90	400	20	10	15	500	1	45,000	130
HIL C [c]			3	300			400	10	70	340	20	10	10	400	1	40,000	120
HIL D [d]			40	4000			3600	45	530	2000	100	50	80	2500	7	240,000	660
Ecological Investigation Levels (EIL) - Table 1B (5)																	
Areas of ecological significance						10 [g]	3 [g, k]										
Urban residential and public open space [h]						170 [g]	180 [g, k]										
Commercial and industrial						370 [g]	640 [g, k]										
Ecological Screening Levels (ESL) - Table 1B (6)																	
Areas of ecological significance					0.7 [i]												
Urban residential and public open space					0.7 [i]												
Commercial and industrial					0.7 [i]												

Notes

a: Residential with garden/accessible soil (home grown poduce <10% fruit and vegetable intake (no poultry), also includes childcare centres, preschools and primary schools.

b: Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high rise buildings and apartments.

c: Public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. This does not include undeveloped public open space where the potential for exposure is lower and where a site-specific assessment may be more appropriate.

d: Commercial/industrial, includes premises such as shops, offices, factories and industrial sites

e: Carcinogenic PAHs: HIL is based on the 8 carcinogenic PAHs and their TEFs (potency relative to B(a)P) adopted by CCME 2008 (refer Schedule B7). The B(a)P TEQ is calculated by multiplying the concentration of each carcinogenic PAH in the sample by its B(a)P TEF, given below, and summing these products.

PAH species	TEF	PAH species	TEF
Benzo(a)anthracen	0.1	Benzo(g,h,i)perylene	0.01
Benzo(a)pyrene	1	Chrysene	0.01
Benzo(b+j)fluoranthe	0.1	Dibenz(a,h)anthracene	1
Benzo(k)fluoranthe	0.1	Indeno(1,2,3-c,d)pyrene	0.1

Where the B(a)P occurs in bitumen fragments it is relatively immobile and does not represent a significant health risk.

f: Total PAHs: HIL is based on the sum of the 16 PAHs most commonly reported for contaminated sites (WHO 1998). The application of the total PAH HIL should consider the presence of carcinogenic PAHs and naphthalene (the most volatile PAH). Carcinogenic PAHs reported in the total PAHs should meet the B(a)P TEQ HIL. Naphthalene reported in the total PAHs should meet

g: Insufficient data was available to calculate aged values for DDT and naphthalene, consequently the values for fresh contamination should be used.

h: Urban residential / public open space is broadly equivalent to the HIL-A, HIL-B and HIL-C land use scenarios in Table 1A(1) Footnote 1 and as described in Schedule B7.

i: For coarse and fine grained texture soils.

j: PCBs: HIL relates to non-dioxin-like PCBs only. Where a PCB source is known, or suspected, to be present at a site, a site-specific assessment of exposure to all PCBs (including dioxin-like PCBs) should be undertaken.

k: For DDT only.

QUALITY CONTROL REPORT

Work Order	: **ES2203239**	Page	: 1 of 12
Client	: **ECON Environmental Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: Con Kariotoglou	Contact	: Customer Services ES
Address	: PO Box 85 Oatlands 2117	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: MOUNT VERNON	Date Samples Received	: 01-Feb-2022
Order number	: 22-1294	Date Analysis Commenced	: 03-Feb-2022
C-O-C number	: ----	Issue Date	: 08-Feb-2022
Sampler	: Con Kariotoglou		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 8		
No. of samples analysed	: 8		

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, unless the sampling was conducted by ALS. 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 Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 4154383)									
ES2203194-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	11	11	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	13	10	22.7	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	6	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	33	34	4.8	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	16	18	9.8	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	54	68	23.5	0% - 50%
ES2203263-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	32	# 72	76.7	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	6	8	32.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	12	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	34	28	18.8	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	59	57	3.8	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4154390)									
ES2203233-002	Anonymous	EA055: Moisture Content	----	0.1	%	25.0	26.1	4.1	0% - 20%
ES2203263-002	Anonymous	EA055: Moisture Content	----	0.1	%	2.0	2.7	27.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 4154384)									
ES2203194-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2203263-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 4150132)									
ES2203239-001	BH1 (0.1-0.2m)	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2203263-002	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 4150131)									
ES2203239-001	BH1 (0.1-0.2m)	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
ES2203263-002	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.25	<0.25	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 4150131) - continued									
ES2203263-002	Anonymous	EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<1.0	<1.0	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<1.0	<1.0	0.0	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 4150131)									
ES2203239-001	BH1 (0.1-0.2m)	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
ES2203263-002	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.25	<0.25	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<1.0	<1.0	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<1.0	<1.0	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 4150131) - continued									
ES2203263-002	Anonymous	EP068: Parathion	56-38-2	0.2	mg/kg	<1.0	<1.0	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 4150129)									
ES2203239-001	BH1 (0.1-0.2m)	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES2203263-002	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4150129)									
ES2203239-001	BH1 (0.1-0.2m)	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4150129) - continued									
ES2203239-001	BH1 (0.1-0.2m)	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES2203263-002	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	0.6	0.6	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	0.6	0.6	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	1.2	1.2	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4150130)									
ES2203239-001	BH1 (0.1-0.2m)	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2203263-002	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	1990	1660	17.9	0% - 50%
		EP071: C29 - C36 Fraction	----	100	mg/kg	890	860	3.6	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4152556)									
ES2203233-002	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES2203241-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4150130)									
ES2203239-001	BH1 (0.1-0.2m)	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4150130) - continued									
ES2203239-001	BH1 (0.1-0.2m)	EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2203263-002	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	2750	2370	14.6	0% - 20%
		EP071: >C34 - C40 Fraction	----	100	mg/kg	190	250	27.2	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4152556)									
ES2203233-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES2203241-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080: BTEXN (QC Lot: 4152556)									
ES2203233-002	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES2203241-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (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 Sample (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 (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4154383)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	88.0	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	76.9	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	96.8	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	92.0	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	89.4	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	88.7	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	81.7	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4154384)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	102	70.0	125
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4150132)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	84.6	62.0	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 4150131)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	97.1	69.0	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	90.2	65.0	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	98.8	67.0	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	92.8	68.0	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	89.1	65.0	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	92.2	67.0	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	96.8	69.0	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	76.7	62.0	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.0	63.0	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	102	66.0	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	95.0	64.0	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	100	66.0	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	94.6	67.0	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	98.9	67.0	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	102	69.0	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.9	69.0	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	96.2	56.0	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	100.0	62.0	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	99.5	66.0	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	98.6	64.0	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	98.8	54.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4150131)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4150131) - continued								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	77.7	59.0	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	86.3	62.0	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	88.4	54.0	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	90.6	67.0	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	102	70.0	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	87.6	72.0	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	84.9	68.0	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	83.6	68.0	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	87.8	69.0	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	93.0	76.0	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	85.0	64.0	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	87.7	70.0	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	100	69.0	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	80.1	66.0	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	87.6	68.0	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	92.5	62.0	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	89.6	68.0	120
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	99.7	65.0	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	74.8	41.0	123
EP075(SIM)A: Phenolic Compounds (QCLot: 4150129)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	6 mg/kg	95.2	71.0	125
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	6 mg/kg	99.6	72.0	124
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	6 mg/kg	92.2	71.0	123
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	12 mg/kg	98.4	67.0	127
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	6 mg/kg	84.8	54.0	114
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	6 mg/kg	91.8	68.0	126
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	6 mg/kg	98.5	66.0	120
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	6 mg/kg	96.5	70.0	120
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	6 mg/kg	92.3	70.0	116
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	6 mg/kg	93.2	54.0	114
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	6 mg/kg	92.4	60.0	114
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	12 mg/kg	55.4	10.0	57.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4150129)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	96.1	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	97.2	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	90.6	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	102	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	85.1	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	79.9	77.0	127

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4150129) - continued								
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	91.7	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	88.7	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	97.6	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	93.7	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	98.0	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	95.8	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	86.1	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	92.5	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	89.1	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	93.1	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4150130)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	116	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	118	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	116	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4152556)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	82.4	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4150130)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	117	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	117	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	118	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4152556)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	75.7	68.4	128
EP080: BTEXN (QCLot: 4152556)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	87.0	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	84.0	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	81.5	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	80.6	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	84.7	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	91.4	63.0	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**

Matrix Spike (MS) Report		
Spike	SpikeRecovery(%)	Acceptable Limits (%)

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4154383)							
ES2203194-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	96.2	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.3	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	101	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	97.8	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	96.1	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	88.9	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	80.8	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4154384)							
ES2203194-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	103	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4150132)							
ES2203239-001	BH1 (0.1-0.2m)	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	103	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 4150131)							
ES2203239-001	BH1 (0.1-0.2m)	EP068: gamma-BHC	58-89-9	0.5 mg/kg	113	70.0	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	92.0	70.0	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	102	70.0	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	106	70.0	130
		EP068: Endrin	72-20-8	2 mg/kg	108	70.0	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	108	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4150131)							
ES2203239-001	BH1 (0.1-0.2m)	EP068: Diazinon	333-41-5	0.5 mg/kg	104	70.0	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	90.9	70.0	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	95.8	70.0	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	90.0	70.0	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	85.0	70.0	130
EP075(SIM)A: Phenolic Compounds (QCLot: 4150129)							
ES2203239-001	BH1 (0.1-0.2m)	EP075(SIM): Phenol	108-95-2	10 mg/kg	83.1	70.0	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	91.1	70.0	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	81.8	60.0	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	86.3	70.0	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	58.0	20.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4150129)							
ES2203239-001	BH1 (0.1-0.2m)	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	91.0	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	100	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4150130)							
ES2203239-001	BH1 (0.1-0.2m)	EP071: C10 - C14 Fraction	----	480 mg/kg	118	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	115	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	116	52.0	132

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4152556)							
ES2203233-002	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	118	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4150130)							
ES2203239-001	BH1 (0.1-0.2m)	EP071: >C10 - C16 Fraction	----	860 mg/kg	109	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	117	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	107	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4152556)							
ES2203233-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	103	70.0	130
EP080: BTEXN (QCLot: 4152556)							
ES2203233-002	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	85.7	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	81.1	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	84.5	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	82.0	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	83.8	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	92.9	70.0	130

TABLE G
ASBESTOS TEST RESULTS

Analyte / Sample Location	Sample Date	Depth (m)	Field Observations*	Laboratory Results Asbestos Type Present / Absent	Laboratory Results Asbestos %w/w
BH1	**01.02.2022**	**0.1-0.2**	**No visible ACM fragments observed**	**Chrysotile Asbestos and Amosite Asbestos detected**	**0.033**
BH2	01.02.2022	0.1-0.2	No visible ACM fragments observed	No Asbestos detected	<0.001
BH3	01.02.2022	0.0-0.1	No visible ACM fragments observed	No Asbestos detected	<0.001
BH4	01.02.2022	0.1-0.2	No visible ACM fragments observed	No Asbestos detected	<0.001
BH5	01.02.2022	0.1-0.2	No visible ACM fragments observed	No Asbestos detected	<0.001
BH6	01.02.2022	0.2-0.3	No visible ACM fragments observed	No Asbestos detected	<0.001
BH7	01.02.2022	0.2-0.3	No visible ACM fragments observed	No Asbestos detected	<0.001
BH8	15.02.2022	0.3-0.4	No visible ACM fragments observed	No Asbestos detected	<0.001
BH9	15.02.2022	0.2-0.3	No visible ACM fragments observed	No Asbestos detected	<0.001

WA Guidelines for the Assessment, Remediation and Management of Asbestos - Contaminated Sites in Western Australia - May 2009 **National Environment Protection (Assessment of Site Contamination) Measure 2013 Schedule B1**	
%w/w asbestos for FA and AF	0.001%
%w/w asbestos for ACM - Residential use, childcare centres, preschools etc.	0.01%
%w/w asbestos for ACM - Residential, minimal soil access (fully sealed surfaces)	0.04%
%w/w asbestos for ACM - Parks, public open spaces, playing fields etc.	0.02%
%w/w asbestos for ACM - Commercial / Industrial	0.05%

TABLE H
DUPLICATE SAMPLE

ANALYTE	BH4 0.0-0.1 mg/kg	DUPLICATE D1 mg/kg	RELATIVE PERCENTAGE DIFFERENCE %
HEAVY METALS			
Arsenic	7	6	0
Cadmium	<1	<1	0
Chromium	16	19	17
Copper	52	64	21
Nickel	46	57	21
Lead	72	65	10
Zinc	864	705	20
Mercury	<0.1	<0.1	0
TOTAL PETROLEUM HYDROCARBONS (TPH)			
C6 - C9	<10	<10	0
C10 - C14	<50	<50	0
C15 - C28	<100	<100	0
C29-C36	<100	<100	0
BTEX			
Benzene	<0.2	<0.2	0
Toluene	<0.5	<0.5	0
Ethyl Benzene	<0.5	<0.5	0
Total Xylenes	<0.5	<0.5	0
POLYCYCLIC AROMATIC HYDROCARBONS (PAH)			
BENZO(a)PYRENE	<0.5	<0.5	0
Total PAH	<0.5	<0.5	0
ORGANOCHLORINE PESTICIDES (OCP)			
Heptachlor	<0.05	<0.05	0
Aldrin	<0.05	<0.05	0
Dieldrin	<0.05	<0.05	0
DDD	<0.05	<0.05	0
DDE	<0.05	<0.05	0
DDT	<0.2	<0.2	0
Chlordane (trans & cis)	<0.05	<0.05	0
POLYCHLORINATED BIPHENYLS (PCB)			
Total PCB	<0.1	<0.1	0
PHENOLS			
Total Phenols	<0.5	<0.5	0

95% UCL 22-1294 Mount Vernon

Borehole	Depth	TRH F3
BH1	0.1-0.2	100
BH2	0.1-0.2	100
BH3	0.0-0.1	100
BH4	0.1-0.2	100
BH5	0.1-0.2	580
BH6	0.2-0.3	100
BH7	0.2-0.3	100
BH8	0.3-0.4	100
BH9	0.2-0.3	100

Std.Dev.	160.0
Average	153.3
No. of Samples	38.0000
	6.1644
t-factor	2.5700
UCL	**220.0**

APPENDIX G: LABORATRY CERTIFICATES

ECON Environmental Pty Ltd | ABN 25 641 106 783 | PO Box 85 Oatlands NSW 2117
M: 0452 654 962 | **E:** info@econenvironmental.com.au | **W:** www.econenvironmental.com.au

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2203239**	Page	: 1 of 14
Client	: **ECON Environmental Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: Con Kariotoglou	Contact	: Customer Services ES
Address	: PO Box 85 Oatlands 2117	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ---	Telephone	[redacted]
Project	: MOUNT VERNON	Date Samples Received	: 01-Feb-2022 13:30
Order number	: 22-1294	Date Analysis Commenced	: 03-Feb-2022
C-O-C number	: ---	Issue Date	: 08-Feb-2022 16:50
Sampler	: Con Kariotoglou		
Site	: ---		
Quote number	: EN/222		
No. of samples received	: 8		
No. of samples analysed	: 8		

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, unless the sampling was conducted by ALS. 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 Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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

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

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

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

- 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.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EG005T: Poor precision was obtained for Chromium on sample ES2203263 # 001. Confirmed by redigestion and reanalysis.
- 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 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- 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: 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.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH1 (0.1-0.2m)	BH2 (0.1-0.2m)	BH3 (0.0-0.1m)	BH4 (0.1-0.2m) BH4 (0.0-0.1m)	BH5 (0.1-0.2m)
			Sampling date / time	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00
Compound	CAS Number	LOR	Unit	ES2203239-001	ES2203239-002	ES2203239-003	ES2203239-004	ES2203239-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	8.7	18.2	16.4	7.7	18.3
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	Yes	No	No	No	No
Asbestos Type	1332-21-4	-	--	Ch + Am	-	-	-	-
Asbestos (Trace)	1332-21-4	5	Fibres	No	No	No	No	No
Sample weight (dry)	----	0.01	g	744	500	507	684	504
Synthetic Mineral Fibre	----	0.1	g/kg	No	No	No	No	No
Organic Fibre	----	0.1	g/kg	No	No	No	No	No
APPROVED IDENTIFIER:	----	-	--	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE	A. SMYLIE
EA200N: Asbestos Quantification (non-NATA)								
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g	0.249	<0.0004	<0.0004	<0.0004	<0.0004
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	0.033	<0.001	<0.001	<0.001	<0.001
ø Weight Used for % Calculation	----	0.0001	kg	0.744	0.500	0.507	0.684	0.504
ø Fibrous Asbestos >7mm	----	0.0004	g	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	5	11	10	7	15
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	36	17	17	16	21
Copper	7440-50-8	5	mg/kg	22	25	35	52	22
Lead	7439-92-1	5	mg/kg	20	22	48	72	23
Nickel	7440-02-0	2	mg/kg	30	12	17	46	14
Zinc	7440-66-6	5	mg/kg	110	98	360	864	46
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<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	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<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	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH1 (0.1-0.2m)	BH2 (0.1-0.2m)	BH3 (0.0-0.1m)	BH4 (0.1-0.2m) BH4 (0.0-0.1m)	BH5 (0.1-0.2m)
				Sampling date / time	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00
Compound	CAS Number	LOR	Unit		ES2203239-001	ES2203239-002	ES2203239-003	ES2203239-004	ES2203239-005
					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	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<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	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<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	<0.05
Dieldrin	60-57-1	0.05	mg/kg		<0.05	<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	<0.05
Endrin	72-20-8	0.05	mg/kg		<0.05	<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	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	<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	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<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	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	<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	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<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	<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	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	<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	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg		<0.05	<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	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	<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	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH1 (0.1-0.2m)	BH2 (0.1-0.2m)	BH3 (0.0-0.1m)	BH4 (0.1-0.2m) BH4 (0.0-0.1m)	BH5 (0.1-0.2m)
				Sampling date / time	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00
Compound	CAS Number	LOR	Unit		ES2203239-001	ES2203239-002	ES2203239-003	ES2203239-004	ES2203239-005
					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)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	<1	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg		<2	<2	<2	<2	<2
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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH1 (0.1-0.2m)	BH2 (0.1-0.2m)	BH3 (0.0-0.1m)	BH4 (0.1-0.2m) BH4 (0.0-0.1m)	BH5 (0.1-0.2m)
				Sampling date / time	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00
Compound	CAS Number	LOR	Unit		ES2203239-001	ES2203239-002	ES2203239-003	ES2203239-004	ES2203239-005
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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	**290**
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	**440**
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	**730**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	**580**
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	**320**
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	**900**
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**116**	**96.8**	**100.0**	**120**	**83.8**
EP068S: Organochlorine Pesticide Surrogate									

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	BH1 (0.1-0.2m)	BH2 (0.1-0.2m)	BH3 (0.0-0.1m)	BH4 (0.1-0.2m) BH4 (0.0-0.1m)	BH5 (0.1-0.2m)
				Sampling date / time	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00
					ES2203239-001	ES2203239-002	ES2203239-003	ES2203239-004	ES2203239-005
					Result	Result	Result	Result	Result
EP068S: Organochlorine Pesticide Surrogate - Continued									
Dibromo-DDE	21655-73-2	0.05	%		**113**	**95.8**	**137**	**122**	**89.8**
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**82.9**	**82.3**	**124**	**117**	**96.4**
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**79.1**	**80.7**	**79.6**	**76.6**	**76.3**
2-Chlorophenol-D4	93951-73-6	0.5	%		**82.3**	**84.7**	**82.7**	**80.1**	**82.0**
2.4.6-Tribromophenol	118-79-6	0.5	%		**66.9**	**72.4**	**70.4**	**68.7**	**71.4**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**91.8**	**93.9**	**92.4**	**90.3**	**93.0**
Anthracene-d10	1719-06-8	0.5	%		**100**	**102**	**100**	**97.4**	**102**
4-Terphenyl-d14	1718-51-0	0.5	%		**90.0**	**91.5**	**90.3**	**88.8**	**89.1**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**88.6**	**93.8**	**86.6**	**96.8**	**85.5**
Toluene-D8	2037-26-5	0.2	%		**101**	**105**	**97.3**	**106**	**95.1**
4-Bromofluorobenzene	460-00-4	0.2	%		**104**	**108**	**99.8**	**106**	**96.4**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH6 (0.2-0.3m)	BH7 (0.2-0.3m)	D1	----	----
			Sampling date / time	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00	----	----
Compound	CAS Number	LOR	Unit	ES2203239-006	ES2203239-007	ES2203239-008	--------	--------
				Result	Result	Result	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**17.4**	**18.9**	**6.4**	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	**No**	**No***	----	----
Asbestos Type	1332-21-4	-	--	**-**	**-**	**Ch + Am**	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	**No**	**No**	**No**	----	----
Sample weight (dry)	----	0.01	g	**541**	**519**	**707**	----	----
Synthetic Mineral Fibre	----	0.1	g/kg	**No**	**No**	**No**	----	----
Organic Fibre	----	0.1	g/kg	**No**	**No**	**No**	----	----
APPROVED IDENTIFIER:	----	-	--	**A. SMYLIE**	**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	**0.0326**	----	----
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)	<0.001	<0.001	**0.005**	----	----
ø Weight Used for % Calculation	----	0.0001	kg	**0.541**	**0.519**	**0.707**	----	----
ø Fibrous Asbestos >7mm	----	0.0004	g	<0.0004	<0.0004	<0.0004	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**13**	**13**	**6**	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	**22**	**18**	**19**	----	----
Copper	7440-50-8	5	mg/kg	**21**	**37**	**64**	----	----
Lead	7439-92-1	5	mg/kg	**38**	**22**	**65**	----	----
Nickel	7440-02-0	2	mg/kg	**11**	**12**	**57**	----	----
Zinc	7440-66-6	5	mg/kg	**54**	**82**	**705**	----	----
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)				Sample ID	BH6 (0.2-0.3m)	BH7 (0.2-0.3m)	D1	----	----
				Sampling date / time	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2203239-006	ES2203239-007	ES2203239-008	--------	--------
					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)				Sample ID	BH6 (0.2-0.3m)	BH7 (0.2-0.3m)	D1	----	----
				Sampling date / time	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2203239-006	ES2203239-007	ES2203239-008	--------	--------
					Result	Result	Result	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued									
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Ethion	563-12-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1	<1	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Pentachlorophenol	87-86-5	2	mg/kg		<2	<2	<2	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH6 (0.2-0.3m)	BH7 (0.2-0.3m)	D1	----	----
				Sampling date / time	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2203239-006	ES2203239-007	ES2203239-008	--------	--------
					Result	Result	Result	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	**200**	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	**320**	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	**520**	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	----	----
^ 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	**430**	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	**180**	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	**610**	----	----
^ >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	%		**105**	**115**	**107**	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**98.7**	**107**	**96.4**	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH6 (0.2-0.3m)	BH7 (0.2-0.3m)	D1	----	----
				Sampling date / time	01-Feb-2022 00:00	01-Feb-2022 00:00	01-Feb-2022 00:00	----	----
Compound	CAS Number	LOR	Unit		ES2203239-006	ES2203239-007	ES2203239-008	--------	--------
					Result	Result	Result	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		87.5	106	109	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		75.3	76.5	77.8	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		79.1	79.8	82.7	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		66.6	64.2	73.6	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		87.8	89.6	91.6	----	----
Anthracene-d10	1719-06-8	0.5	%		95.7	96.8	100	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		86.5	87.3	89.0	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		87.4	91.0	96.0	----	----
Toluene-D8	2037-26-5	0.2	%		94.0	89.6	101	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		97.2	102	110	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	BH1 (0.1-0.2m) - 01-Feb-2022 00:00	Soil sample containing many fragments of asbestos cement sheeting debris.
EA200: Description	BH2 (0.1-0.2m) - 01-Feb-2022 00:00	Soil sample.
EA200: Description	BH3 (0.0-0.1m) - 01-Feb-2022 00:00	Soil sample.
EA200: Description	BH4 (0.1-0.2m)BH4 (0.0-0.1m) - 01-Feb-2022 00:00	Soil sample.
EA200: Description	BH5 (0.1-0.2m) - 01-Feb-2022 00:00	Soil sample.
EA200: Description	BH6 (0.2-0.3m) - 01-Feb-2022 00:00	Soil sample.
EA200: Description	BH7 (0.2-0.3m) - 01-Feb-2022 00:00	Soil sample.
EA200: Description	D1 - 01-Feb-2022 00:00	Soil sample containing one piece of asbestos cement sheeting approximately 5x5x2mm.

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

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(SOIL) EA200N: Asbestos Quantification (non-NATA)

(SOIL) EA200: AS 4964 - 2004 Identification of Asbestos in Soils

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2203239**	Page	: 1 of 7
Client	: **ECON Environmental Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: Con Kariotoglou	Telephone	: +61-2-8784 8555
Project	: MOUNT VERNON	Date Samples Received	: 01-Feb-2022
Site	: ----	Issue Date	: 08-Feb-2022
Sampler	: Con Kariotoglou	No. of samples received	: 8
Order number	: 22-1294	No. of samples analysed	: 8

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 Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Duplicate 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
Duplicate (DUP) RPDs							
EG005(ED093)T: Total Metals by ICP-AES	ES2203263--001	Anonymous	**Chromium**	7440-47-3	76.7 %	0% - 20%	**RPD exceeds LOR based limits**

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)								
BH1 (0.1-0.2m),	BH2 (0.1-0.2m),	**01-Feb-2022**	**----**	----	----	**04-Feb-2022**	15-Feb-2022	✓
BH3 (0.0-0.1m),	BH4 (0.1-0.2m) - BH4 (0.0-0.1m),							
BH5 (0.1-0.2m),	BH6 (0.2-0.3m),							
BH7 (0.2-0.3m),	D1							
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200)								
BH1 (0.1-0.2m),	BH2 (0.1-0.2m),	**01-Feb-2022**	**----**	----	----	**03-Feb-2022**	31-Jul-2022	✓
BH3 (0.0-0.1m),	BH4 (0.1-0.2m) - BH4 (0.0-0.1m),							
BH5 (0.1-0.2m),	BH6 (0.2-0.3m),							
BH7 (0.2-0.3m),	D1							
EA200N: Asbestos Quantification (non-NATA)								
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200N)								
BH1 (0.1-0.2m),	BH2 (0.1-0.2m),	**01-Feb-2022**	**----**	----	----	**03-Feb-2022**	31-Jul-2022	✓
BH3 (0.0-0.1m),	BH4 (0.1-0.2m) - BH4 (0.0-0.1m),							
BH5 (0.1-0.2m),	BH6 (0.2-0.3m),							
BH7 (0.2-0.3m),	D1							
EG005(ED093)T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T)								
BH1 (0.1-0.2m),	BH2 (0.1-0.2m),	**01-Feb-2022**	**04-Feb-2022**	31-Jul-2022	✓	**07-Feb-2022**	31-Jul-2022	✓
BH3 (0.0-0.1m),	BH4 (0.1-0.2m) - BH4 (0.0-0.1m),							
BH5 (0.1-0.2m),	BH6 (0.2-0.3m),							
BH7 (0.2-0.3m),	D1							

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)							
BH1 (0.1-0.2m), BH2 (0.1-0.2m), BH3 (0.0-0.1m), BH4 (0.1-0.2m) - BH4 (0.0-0.1m), BH5 (0.1-0.2m), BH6 (0.2-0.3m), BH7 (0.2-0.3m), D1	**01-Feb-2022**	**04-Feb-2022**	01-Mar-2022	✓	**07-Feb-2022**	01-Mar-2022	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066)							
BH1 (0.1-0.2m), BH2 (0.1-0.2m), BH3 (0.0-0.1m), BH4 (0.1-0.2m) - BH4 (0.0-0.1m), BH5 (0.1-0.2m), BH6 (0.2-0.3m), BH7 (0.2-0.3m), D1	**01-Feb-2022**	**04-Feb-2022**	15-Feb-2022	✓	**07-Feb-2022**	16-Mar-2022	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
BH1 (0.1-0.2m), BH2 (0.1-0.2m), BH3 (0.0-0.1m), BH4 (0.1-0.2m) - BH4 (0.0-0.1m), BH5 (0.1-0.2m), BH6 (0.2-0.3m), BH7 (0.2-0.3m), D1	**01-Feb-2022**	**04-Feb-2022**	15-Feb-2022	✓	**07-Feb-2022**	16-Mar-2022	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068)							
BH1 (0.1-0.2m), BH2 (0.1-0.2m), BH3 (0.0-0.1m), BH4 (0.1-0.2m) - BH4 (0.0-0.1m), BH5 (0.1-0.2m), BH6 (0.2-0.3m), BH7 (0.2-0.3m), D1	**01-Feb-2022**	**04-Feb-2022**	15-Feb-2022	✓	**07-Feb-2022**	16-Mar-2022	✓
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved (EP075(SIM))							
BH1 (0.1-0.2m), BH2 (0.1-0.2m), BH3 (0.0-0.1m), BH4 (0.1-0.2m) - BH4 (0.0-0.1m), BH5 (0.1-0.2m), BH6 (0.2-0.3m), BH7 (0.2-0.3m), D1	**01-Feb-2022**	**04-Feb-2022**	15-Feb-2022	✓	**05-Feb-2022**	16-Mar-2022	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
BH1 (0.1-0.2m), BH2 (0.1-0.2m), BH3 (0.0-0.1m), BH4 (0.1-0.2m) - BH4 (0.0-0.1m), BH5 (0.1-0.2m), BH6 (0.2-0.3m), BH7 (0.2-0.3m), D1	**01-Feb-2022**	**04-Feb-2022**	15-Feb-2022	✓	**05-Feb-2022**	16-Mar-2022	✓

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 Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
BH1 (0.1-0.2m), BH2 (0.1-0.2m), BH3 (0.0-0.1m), BH4 (0.1-0.2m) - BH4 (0.0-0.1m), BH5 (0.1-0.2m), BH6 (0.2-0.3m), BH7 (0.2-0.3m), D1	**01-Feb-2022**	**03-Feb-2022**	15-Feb-2022	✓	**07-Feb-2022**	15-Feb-2022	✓
Soil Glass Jar - Unpreserved (EP071)							
BH1 (0.1-0.2m), BH2 (0.1-0.2m), BH3 (0.0-0.1m), BH4 (0.1-0.2m) - BH4 (0.0-0.1m), BH5 (0.1-0.2m), BH6 (0.2-0.3m), BH7 (0.2-0.3m), D1	**01-Feb-2022**	**04-Feb-2022**	15-Feb-2022	✓	**05-Feb-2022**	16-Mar-2022	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
BH1 (0.1-0.2m), BH2 (0.1-0.2m), BH3 (0.0-0.1m), BH4 (0.1-0.2m) - BH4 (0.0-0.1m), BH5 (0.1-0.2m), BH6 (0.2-0.3m), BH7 (0.2-0.3m), D1	**01-Feb-2022**	**03-Feb-2022**	15-Feb-2022	✓	**07-Feb-2022**	15-Feb-2022	✓
Soil Glass Jar - Unpreserved (EP071)							
BH1 (0.1-0.2m), BH2 (0.1-0.2m), BH3 (0.0-0.1m), BH4 (0.1-0.2m) - BH4 (0.0-0.1m), BH5 (0.1-0.2m), BH6 (0.2-0.3m), BH7 (0.2-0.3m), D1	**01-Feb-2022**	**04-Feb-2022**	15-Feb-2022	✓	**05-Feb-2022**	16-Mar-2022	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
BH1 (0.1-0.2m), BH2 (0.1-0.2m), BH3 (0.0-0.1m), BH4 (0.1-0.2m) - BH4 (0.0-0.1m), BH5 (0.1-0.2m), BH6 (0.2-0.3m), BH7 (0.2-0.3m), D1	**01-Feb-2022**	**03-Feb-2022**	15-Feb-2022	✓	**07-Feb-2022**	15-Feb-2022	✓

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	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	20	10.00	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	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	20	10.00	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)							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.00	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	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	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)							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.00	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	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	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)							
PAH/Phenols (SIM)	EP075(SIM)	1	20	5.00	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	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	5.00	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
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Asbestos Classification and Quantitation per NEPM 2013	* EA200N	SOIL	Asbestos Classification and Quantitation per NEPM with Confirmation of Identification by AS 4964 - 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 Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3).
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.

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 Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2203239**

Client	: **ECON Environmental Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: Con Kariotoglou	Contact	: Customer Services ES
Address	: PO Box 85 Oatlands 2117	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: info@econenvironmental.com.au	E-mail	: ALSEnviro.Sydney@ALSGlobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: MOUNT VERNON	Page	: 1 of 2
Order number	: 22-1294	Quote number	: ES2020ECONEV0001 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: Con Kariotoglou		

Dates

Date Samples Received	: 01-Feb-2022 13:30	Issue Date	: 01-Feb-2022
Client Requested Due Date	: 08-Feb-2022	Scheduled Reporting Date	: **08-Feb-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 11.2'C - Ice Bricks present
Receipt Detail	:	No. of samples received / analysed	: 8 / 8

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
- **ES2203239-004 ID on the COC is BH4 (0.1-0.2m), but received as BH4 (0.0-0.1m), Please confirm which is the correct ID**
- **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 laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

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

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

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

ES2203239-004 : [01-Feb-2022] : BH4 (0.1-0.2m) - BH4 (0.0-0.1m)

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	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EA200F Asbestos Quantitation (FA+AF) in Soil by	SOIL - S-19 TRH/BTEXN/PAH/Ph/OC/OP/PCB/8 metals
ES2203239-001	01-Feb-2022 00:00	BH1 (0.1-0.2m)	✓	✓	✓
ES2203239-002	01-Feb-2022 00:00	BH2 (0.1-0.2m)	✓	✓	✓
ES2203239-003	01-Feb-2022 00:00	BH3 (0.0-0.1m)	✓	✓	✓
ES2203239-004	01-Feb-2022 00:00	BH4 (0.1-0.2m) BH4 ...	✓	✓	✓
ES2203239-005	01-Feb-2022 00:00	BH5 (0.1-0.2m)	✓	✓	✓
ES2203239-006	01-Feb-2022 00:00	BH6 (0.2-0.3m)	✓	✓	✓
ES2203239-007	01-Feb-2022 00:00	BH7 (0.2-0.3m)	✓	✓	✓
ES2203239-008	01-Feb-2022 00:00	D1	✓	✓	✓

Proactive Holding Time Report

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

Requested Deliverables

Con Kariotoglou

- *AU Certificate of Analysis - NATA (COA)	Email	info@econenvironmental.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	info@econenvironmental.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	info@econenvironmental.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	info@econenvironmental.com.au
- A4 - AU Tax Invoice (INV)	Email	info@econenvironmental.com.au
- Chain of Custody (CoC) (COC)	Email	info@econenvironmental.com.au
- EDI Format - ESDAT (ESDAT)	Email	info@econenvironmental.com.au
- EDI Format - XTab (XTAB)	Email	info@econenvironmental.com.au

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

BRISBANE 32 Shand... Ph: 07 3243 7222 E: ...
MACKAY 79 Hedges Road Mackay QLD 4740
SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
GOLDCOAST 35 Delamere St... Ph: 07 5477 5020 E: gladstone@alsglobal.com
MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
LAVERTON 98 Lanny Street Wollongong NSW 2500 Ph: 07 4796 0600 E: ...

CLIENT: ECON Environmental Pty Ltd	**TURNAROUND REQUIREMENTS :** ☐ Standard TAT **(List due date):** 08.02.2022		**FOR LABORATORY USE ONLY (Circle)**
OFFICE: 1 St Aidans Avenue, Oatlands NSW 2117	(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: MOUNT VERNON	**ALS QUOTE NO.:** ECONEV	**COC SEQUENCE NUMBER (Circle)**	Free ice / frozen ice bricks present upon receipt? Yes / No / N/A
ORDER NUMBER: 22-1294		COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Con Kariotoglou	**CONTACT PH:** 0452 654 962	OF: 1 2 3 4 5 6 7	Other comment:

SAMPLER: Con Kariotoglou	**SAMPLER MOBILE:** 0452 654 962	**RELINQUISHED BY:**	**RECEIVED BY:**	**RELINQUISHED BY:** / **RECEIVED BY:**
COC emailed to ALS? (YES)	**EDD FORMAT (or default):**	*Con Kariotoglou*	Sarin	
Email Reports to (will default to PM if no other addresses are listed): **info@econenvironmental.com.au**		DATE/TIME:	DATE/TIME: 1/2/22 1330	DATE/TIME: / DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed): **info@econenvironmental.com.au**		01.02.2022		

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

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).

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION				Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL CONTAINERS	S-19	Asbestos EA200F (%w/w)	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	BH1 (0.1-0.2m)	01.02.2022	S		2	√	√	sieved on site
2	BH2 (0.1-0.2m)	01.02.2022	S		2	√	√	sieved on site
3	BH3 (0.0-0.1m)	01.02.2022	S		2	√	√	sieved on site
4	BH4 (0.1-0.2m)	01.02.2022	S		2	√	√	sieved on site
5	BH5 (0.1-0.2m)	01.02.2022	S		2	√	√	sieved on site
6	BH6 (0.2-0.3m)	01.02.2022	S		2	√	√	sieved on site
7	BH7 (0.2-0.3m)	01.02.2022	S		2	√	√	sieved on site
8	D1	01.02.2022	S		2	√	√	sieved on site
				TOTAL	16	8	8	

Subcon / Forward Lab / Split WO
Lab / Analysis: Asbestos - Newcastle
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

Environmental Division Sydney
Work Order Reference
ES2203239

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

d Plastic; F = Formaldehyde Preserved Glass;

CERTIFICATE OF ANALYSIS

Work Order	: **ES2205036**	Page	: 1 of 12
Client	: **ECON Environmental Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: Con Kariotoglou	Contact	: Customer Services ES
Address	: PO Box 85 Oatlands 2117	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: MOUNT VERNON	Date Samples Received	: 15-Feb-2022 11:40
Order number	: 22-1294	Date Analysis Commenced	: 15-Feb-2022
C-O-C number	: ----	Issue Date	: 23-Feb-2022 09:30
Sampler	: Con Kariotoglou		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 3		
No. of samples analysed	: 3		

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, unless the sampling was conducted by ALS. 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	Team Leader - Asbestos	Newcastle - Asbestos, Mayfield West, NSW
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Somlok Chai	Microbiologist	Sydney Microbiology, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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

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

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

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

- MF = membrane filtration
- CFU = colony forming unit
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EG005T: Poor precision was obtained for Chromium on sample ES2205384 # 001. Confirmed by redigestion and reanalysis.
- Microbiological Comment: In accordance with ALS work instruction QWI-MIC/04, membrane filtration result is reported an approximate (~) when the count of colonies on the filtered membrane is outside the range of 10 - 100cfu.
- Membrane filtration results for MW006 and MW007 are reported as an estimate (~) due to the presence of many non-target organism colonies that may have inhibited the growth of the target organisms on the filter membrane. It may be informative to record this fact.
- 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.
- MW006 is ALS's internal code and is equivalent to AS4276.7.
- MW007 is ALS's internal code and is equivalent to AS4276.5.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)

- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- 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: 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.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH8	BH9	----	----	----
			Sampling date / time	15-Feb-2022 00:00	15-Feb-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2205036-001	ES2205036-002	--------	--------	--------
				Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**23.4**	**20.4**	----	----	----
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	-	--	**-**	**-**	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	**No**	**No**	----	----	----
Sample weight (dry)	----	0.01	g	**486**	**494**	----	----	----
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 Asbestos Containing Material	1332-21-4	0.1	g	<0.1	<0.1	----	----	----
ø Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	% (w/w)	<0.01	<0.01	----	----	----
ø Weight Used for % Calculation	----	0.0001	kg	**0.486**	**0.494**	----	----	----
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	**8**	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	**15**	**14**	----	----	----
Copper	7440-50-8	5	mg/kg	**37**	**30**	----	----	----
Lead	7439-92-1	5	mg/kg	**20**	**17**	----	----	----
Nickel	7440-02-0	2	mg/kg	**14**	**12**	----	----	----
Zinc	7440-66-6	5	mg/kg	**180**	**73**	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH8	BH9	----	----	----
			Sampling date / time	15-Feb-2022 00:00	15-Feb-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2205036-001	ES2205036-002	--------	--------	--------
				Result	Result	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg	<0.05	<0.05	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	----	----	----
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	----	----	----
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH8	BH9	----	----	----
			Sampling date / time	15-Feb-2022 00:00	15-Feb-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES2205036-001	ES2205036-002	--------	--------	--------
				Result	Result	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued								
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	----	----	----
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH8	BH9	----	----	----
				Sampling date / time	15-Feb-2022 00:00	15-Feb-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2205036-001	ES2205036-002	--------	--------	--------
					Result	Result	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		<0.5	<0.5	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		<0.5	<0.5	----	----	----
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		**0.6**	**0.6**	----	----	----
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		**1.2**	**1.2**	----	----	----
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	----	----	----
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	----	----	----
EP066S: PCB Surrogate									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH8	BH9	----	----	----
				Sampling date / time	15-Feb-2022 00:00	15-Feb-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2205036-001	ES2205036-002	--------	--------	--------
					Result	Result	----	----	----
EP066S: PCB Surrogate - Continued									
Decachlorobiphenyl	2051-24-3	0.1	%		**90.8**	**116**	**----**	**----**	**----**
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**76.6**	**94.9**	**----**	**----**	**----**
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**67.2**	**86.4**	**----**	**----**	**----**
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**90.2**	**90.9**	**----**	**----**	**----**
2-Chlorophenol-D4	93951-73-6	0.5	%		**90.8**	**92.8**	**----**	**----**	**----**
2.4.6-Tribromophenol	118-79-6	0.5	%		**73.8**	**74.7**	**----**	**----**	**----**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**96.6**	**99.0**	**----**	**----**	**----**
Anthracene-d10	1719-06-8	0.5	%		**99.4**	**101**	**----**	**----**	**----**
4-Terphenyl-d14	1718-51-0	0.5	%		**98.6**	**98.3**	**----**	**----**	**----**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**75.5**	**98.3**	**----**	**----**	**----**
Toluene-D8	2037-26-5	0.2	%		**74.6**	**98.5**	**----**	**----**	**----**
4-Bromofluorobenzene	460-00-4	0.2	%		**82.5**	**104**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DAM1	----	----	----	----
				Sampling date / time	15-Feb-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2205036-003	--------	--------	--------	--------
					Result	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		**921**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L		<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L		<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	----	----	----	----
EP030: Biochemical Oxygen Demand (BOD)									
Biochemical Oxygen Demand	----	2	mg/L		**5**	----	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	1.0	µg/L		<1.0	----	----	----	----
2-Chlorophenol	95-57-8	1.0	µg/L		<1.0	----	----	----	----
2-Methylphenol	95-48-7	1.0	µg/L		<1.0	----	----	----	----
3- & 4-Methylphenol	1319-77-3	2.0	µg/L		<2.0	----	----	----	----
2-Nitrophenol	88-75-5	1.0	µg/L		<1.0	----	----	----	----
2.4-Dimethylphenol	105-67-9	1.0	µg/L		<1.0	----	----	----	----
2.4-Dichlorophenol	120-83-2	1.0	µg/L		<1.0	----	----	----	----
2.6-Dichlorophenol	87-65-0	1.0	µg/L		<1.0	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	1.0	µg/L		<1.0	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L		<1.0	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L		<1.0	----	----	----	----
Pentachlorophenol	87-86-5	2.0	µg/L		<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1.0	µg/L		<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L		<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L		<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L		<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L		<1.0	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DAM1	----	----	----	----
				Sampling date / time	15-Feb-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2205036-003	--------	--------	--------	--------
					Result	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Anthracene	120-12-7	1.0	µg/L		<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L		<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L		<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L		<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L		<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L		<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L		<1.0	----	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	µg/L		<0.5	----	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	µg/L		<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C10 - C14 Fraction	----	50	µg/L		<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
>C10 - C16 Fraction	----	100	µg/L		<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	----	----	----	----
MW006: Faecal Coliforms & E.coli by MF									
Faecal Coliforms	----	1	CFU/100mL		**~25**	----	----	----	----
MW007: Coliforms by MF									
Coliforms	----	1	CFU/100mL		**~160**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		**24.6**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1.0	%		**54.0**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	1.0	%		**65.2**	----	----	----	----
EP075(SIM)T: PAH Surrogates									

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	DAM1	----	----	----	----
				Sampling date / time	15-Feb-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2205036-003	--------	--------	--------	--------
					Result	----	----	----	----
EP075(SIM)T: PAH Surrogates - Continued									
2-Fluorobiphenyl	321-60-8	1.0	%		**62.8**	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%		**85.8**	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		**69.5**	----	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	BH8 - 15-Feb-2022 00:00	Soil sample.
EA200: Description	BH9 - 15-Feb-2022 00:00	Soil sample.

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

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(SOIL) EA200N: Asbestos Quantification (non-NATA)

(SOIL) EA200: AS 4964 - 2004 Identification of Asbestos in Soils

QUALITY CONTROL REPORT

Work Order	: **ES2205036**	Page	: 1 of 13
Client	: **ECON Environmental Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: Con Kariotoglou	Contact	: Customer Services ES
Address	: PO Box 85 Oatlands 2117	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: MOUNT VERNON	Date Samples Received	: 15-Feb-2022
Order number	: 22-1294	Date Analysis Commenced	: 15-Feb-2022
C-O-C number	: ----	Issue Date	: 23-Feb-2022
Sampler	: Con Kariotoglou		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 3		
No. of samples analysed	: 3		

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, unless the sampling was conducted by ALS. 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	Team Leader - Asbestos	Newcastle - Asbestos, Mayfield West, NSW
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW
Somlok Chai	Microbiologist	Sydney Microbiology, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 4181610)									
ES2205016-004	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	6	<5	0.0	No Limit
ES2205384-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	87	# 69	23.6	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	74	63	16.5	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	60	50	17.8	0% - 50%
		EG005T: Copper	7440-50-8	5	mg/kg	55	56	0.0	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	35	27	24.6	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	150	126	17.2	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4181615)									
ES2205317-001	Anonymous	EA055: Moisture Content	----	0.1	%	19.1	19.0	1.0	0% - 50%
ES2205598-005	Anonymous	EA055: Moisture Content	----	0.1	%	23.6	23.3	1.2	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 4181613)									
ES2205016-004	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2205384-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	0.1	0.0	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 4175887)									
ES2205036-001	BH8	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 4175886)									

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 4175886) - continued									
ES2205036-001	BH8	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 4175886)									
ES2205036-001	BH8	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 4175886) - continued									
ES2205036-001	BH8	EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 4175885)									
ES2205036-001	BH8	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4175885)									
ES2205036-001	BH8	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4175596)									
ES2204973-003	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES2205016-004	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4175884)									
ES2204777-001	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4175884) - continued									
ES2204777-001	Anonymous	EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2205036-001	BH8	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4175596)									
ES2204973-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES2205016-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4175884)									
ES2204777-001	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2205036-001	BH8	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080: BTEXN (QC Lot: 4175596)									
ES2204973-003	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES2205016-004	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 4180675)									
ES2205036-003	DAM1	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	921	930	0.9	0% - 20%
ES2205391-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	216	214	0.5	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 4177888)									
ES2205079-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0002	0.0002	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.002	0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.008	0.007	19.8	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG020F: Dissolved Metals by ICP-MS (QC Lot: 4177888) - continued									
ES2205079-001	Anonymous	EG020A-F: Copper	7440-50-8	0.001	mg/L	0.011	0.011	0.0	0% - 50%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.005	0.005	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.014	0.014	0.0	0% - 50%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.050	0.047	6.0	No Limit
ES2204536-042	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.004	0.004	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 4177891)									
ES2204620-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.1 µg/L	<0.0001	0.0	No Limit
ES2205053-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP030: Biochemical Oxygen Demand (BOD) (QC Lot: 4174870)									
ES2204868-001	Anonymous	EP030: Biochemical Oxygen Demand	----	2	mg/L	5	2	85.7	No Limit
ES2204980-003	Anonymous	EP030: Biochemical Oxygen Demand	----	2	mg/L	3	5	50.0	No Limit

Method Blank (MB) and Laboratory Control Sample (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 Sample (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 (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4181610)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	88.1	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	74.4	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	78.8	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	89.1	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	83.4	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	80.1	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	76.8	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4181613)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	74.7	70.0	125
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4175887)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	81.8	62.0	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 4175886)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	86.9	69.0	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	86.3	65.0	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	83.1	67.0	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.0	68.0	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	86.5	65.0	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	82.6	67.0	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	85.0	69.0	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	89.8	62.0	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	86.9	63.0	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	81.9	66.0	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	97.0	64.0	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	103	66.0	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	96.1	67.0	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	106	67.0	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	98.2	69.0	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	81.7	69.0	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	81.2	56.0	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	102	62.0	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	95.4	66.0	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	108	64.0	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	95.4	54.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4175886)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4175886) - continued								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	78.5	59.0	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	76.7	62.0	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	97.5	54.0	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	83.0	67.0	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	92.1	70.0	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	85.4	72.0	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	81.2	68.0	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	85.7	68.0	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	92.3	69.0	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	82.6	76.0	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	93.0	64.0	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	82.9	70.0	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	79.5	69.0	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	87.3	66.0	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	78.0	68.0	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	93.6	62.0	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	93.6	68.0	120
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	86.0	65.0	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	77.5	41.0	123
EP075(SIM)A: Phenolic Compounds (QCLot: 4175885)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	6 mg/kg	98.4	71.0	125
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	6 mg/kg	100	72.0	124
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	6 mg/kg	96.6	71.0	123
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	12 mg/kg	102	67.0	127
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	6 mg/kg	79.1	54.0	114
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	6 mg/kg	88.3	68.0	126
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	6 mg/kg	91.4	66.0	120
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	6 mg/kg	94.4	70.0	120
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	6 mg/kg	87.8	70.0	116
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	6 mg/kg	82.9	54.0	114
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	6 mg/kg	85.2	60.0	114
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	12 mg/kg	36.4	10.0	57.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4175885)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	103	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	91.3	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	96.0	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	100	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	101	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	90.9	77.0	127

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4175885) - continued								
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	98.9	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	98.0	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	92.1	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	96.4	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	90.8	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	93.8	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	76.0	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	83.3	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	81.7	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	84.0	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4175596)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	91.8	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4175884)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	94.6	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	98.8	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	97.9	71.0	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4175596)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	94.7	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4175884)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	97.9	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	98.6	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	91.9	63.0	131
EP080: BTEXN (QCLot: 4175596)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	99.4	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	99.8	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	98.7	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	100	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	99.6	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	90.0	63.0	119

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 4180675)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	2000 mg/L	101	87.0	109
				<10	293 mg/L	103	75.2	126
				<10	2835 mg/L	109	83.0	124

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 4177888)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	89.8	85.0	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.4	84.0	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	94.7	85.0	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	87.9	81.0	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	93.0	83.0	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	87.2	82.0	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	92.9	81.0	117
EG035F: Dissolved Mercury by FIMS (QCLot: 4177891)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	94.9	83.0	105
EP020: Oil and Grease (O&G) (QCLot: 4182151)								
EP020: Oil & Grease	----	5	mg/L	<5	5000 mg/L	102	81.0	121
EP030: Biochemical Oxygen Demand (BOD) (QCLot: 4174870)								
EP030: Biochemical Oxygen Demand	----	2	mg/L	<2	200 mg/L	91.0	74.0	112
EP075(SIM)A: Phenolic Compounds (QCLot: 4174268)								
EP075(SIM): Phenol	108-95-2	1	µg/L	<1.0	5 µg/L	33.3	24.5	61.9
EP075(SIM): 2-Chlorophenol	95-57-8	1	µg/L	<1.0	5 µg/L	57.9	52.0	90.0
EP075(SIM): 2-Methylphenol	95-48-7	1	µg/L	<1.0	5 µg/L	52.8	51.0	91.0
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	10 µg/L	54.9	44.0	88.0
EP075(SIM): 2-Nitrophenol	88-75-5	1	µg/L	<1.0	5 µg/L	80.0	48.0	100
EP075(SIM): 2.4-Dimethylphenol	105-67-9	1	µg/L	<1.0	5 µg/L	56.7	49.0	99.0
EP075(SIM): 2.4-Dichlorophenol	120-83-2	1	µg/L	<1.0	5 µg/L	72.5	53.0	105
EP075(SIM): 2.6-Dichlorophenol	87-65-0	1	µg/L	<1.0	5 µg/L	62.2	57.0	105
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	1	µg/L	<1.0	5 µg/L	72.1	53.0	99.0
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	1	µg/L	<1.0	5 µg/L	72.3	50.0	106
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	1	µg/L	<1.0	5 µg/L	79.4	51.0	105
EP075(SIM): Pentachlorophenol	87-86-5	2	µg/L	<2.0	10 µg/L	38.2	10.0	95.0
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4174268)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	62.4	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	83.3	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	64.0	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	73.6	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	86.1	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	83.2	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	94.4	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	94.5	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	87.8	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	88.5	62.5	116

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4174268) - continued								
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	91.0	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	83.0	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	71.6	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	73.9	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	79.6	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	80.0	59.1	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4174267)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	81.2	55.8	112
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	88.0	71.6	113
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	84.7	56.0	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4174267)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	75.8	57.9	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	92.8	62.5	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	68.2	61.5	121

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	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4181610)							
ES2205016-004	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	108	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	100	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	99.1	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	104	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	102	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	101	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	103	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4181613)							
ES2205016-004	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	99.9	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 4175887)							
ES2205036-001	BH8	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	96.5	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 4175886)							
ES2205036-001	BH8	EP068: gamma-BHC	58-89-9	0.5 mg/kg	84.5	70.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 4175886) - continued							
ES2205036-001	BH8	EP068: Heptachlor	76-44-8	0.5 mg/kg	82.6	70.0	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	98.0	70.0	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	104	70.0	130
		EP068: Endrin	72-20-8	2 mg/kg	76.2	70.0	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	84.4	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4175886)							
ES2205036-001	BH8	EP068: Diazinon	333-41-5	0.5 mg/kg	104	70.0	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	88.9	70.0	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	86.1	70.0	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	107	70.0	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	88.6	70.0	130
EP075(SIM)A: Phenolic Compounds (QCLot: 4175885)							
ES2205036-001	BH8	EP075(SIM): Phenol	108-95-2	10 mg/kg	88.8	70.0	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	92.7	70.0	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	77.5	60.0	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	84.6	70.0	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	53.2	20.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4175885)							
ES2205036-001	BH8	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	91.0	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	93.5	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4175596)							
ES2204973-003	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	124	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4175884)							
ES2205036-001	BH8	EP071: C10 - C14 Fraction	----	480 mg/kg	92.5	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	104	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	101	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4175596)							
ES2204973-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	126	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4175884)							
ES2205036-001	BH8	EP071: >C10 - C16 Fraction	----	860 mg/kg	86.2	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	106	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	88.7	52.0	132
EP080: BTEXN (QCLot: 4175596)							
ES2204973-003	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	109	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	118	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	122	70.0	130

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EP080: BTEXN (QCLot: 4175596) - continued							
ES2204973-003	Anonymous	EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	120	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	119	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	107	70.0	130

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	Matrix Spike (MS) Report: SpikeRecovery(%) MS	Acceptable Limits (%) Low	Acceptable Limits (%) High
EG020F: Dissolved Metals by ICP-MS (QCLot: 4177888)							
ES2204575-001	Anonymous	EG020A-F: Arsenic	7440-38-2	10 mg/L	104	70.0	130
		EG020A-F: Cadmium	7440-43-9	2.5 mg/L	104	70.0	130
		EG020A-F: Chromium	7440-47-3	10 mg/L	100	70.0	130
		EG020A-F: Copper	7440-50-8	10 mg/L	99.0	70.0	130
		EG020A-F: Lead	7439-92-1	10 mg/L	95.8	70.0	130
		EG020A-F: Nickel	7440-02-0	10 mg/L	98.8	70.0	130
		EG020A-F: Zinc	7440-66-6	10 mg/L	99.5	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 4177891)							
ES2204575-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	99.7	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2205036**	Page	: 1 of 9
Client	: **ECON Environmental Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: Con Kariotoglou	Telephone	: +61-2-8784 8555
Project	: MOUNT VERNON	Date Samples Received	: 15-Feb-2022
Site	: ----	Issue Date	: 23-Feb-2022
Sampler	: Con Kariotoglou	No. of samples received	: 3
Order number	: 22-1294	No. of samples analysed	: 3

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 Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Duplicate 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

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005(ED093)T: Total Metals by ICP-AES	ES2205384--001	Anonymous	**Chromium**	7440-47-3	23.6 %	0% - 20%	**RPD exceeds LOR based limits**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	4	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

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

Method / *Container* / Client Sample ID(s)	*Sample Date*	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
BH8, BH9	**15-Feb-2022**	**----**	----	----	**18-Feb-2022**	01-Mar-2022	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200)							
BH8, BH9	**15-Feb-2022**	**----**	----	----	**16-Feb-2022**	14-Aug-2022	✓
EA200N: Asbestos Quantification (non-NATA)							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200N)							
BH8, BH9	**15-Feb-2022**	**----**	----	----	**16-Feb-2022**	14-Aug-2022	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
BH8, BH9	**15-Feb-2022**	**18-Feb-2022**	14-Aug-2022	✓	**18-Feb-2022**	14-Aug-2022	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
BH8, BH9	**15-Feb-2022**	**18-Feb-2022**	15-Mar-2022	✓	**18-Feb-2022**	15-Mar-2022	✓

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)							
BH8, BH9	**15-Feb-2022**	**17-Feb-2022**	01-Mar-2022	✓	**18-Feb-2022**	29-Mar-2022	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
BH8, BH9	**15-Feb-2022**	**17-Feb-2022**	01-Mar-2022	✓	**18-Feb-2022**	29-Mar-2022	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068)							
BH8, BH9	**15-Feb-2022**	**17-Feb-2022**	01-Mar-2022	✓	**18-Feb-2022**	29-Mar-2022	✓
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved (EP075(SIM))							
BH8, BH9	**15-Feb-2022**	**17-Feb-2022**	01-Mar-2022	✓	**18-Feb-2022**	29-Mar-2022	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
BH8, BH9	**15-Feb-2022**	**17-Feb-2022**	01-Mar-2022	✓	**18-Feb-2022**	29-Mar-2022	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
BH8, BH9	**15-Feb-2022**	**16-Feb-2022**	01-Mar-2022	✓	**18-Feb-2022**	01-Mar-2022	✓
Soil Glass Jar - Unpreserved (EP071)							
BH8, BH9	**15-Feb-2022**	**17-Feb-2022**	01-Mar-2022	✓	**18-Feb-2022**	29-Mar-2022	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
BH8, BH9	**15-Feb-2022**	**16-Feb-2022**	01-Mar-2022	✓	**18-Feb-2022**	01-Mar-2022	✓
Soil Glass Jar - Unpreserved (EP071)							
BH8, BH9	**15-Feb-2022**	**17-Feb-2022**	01-Mar-2022	✓	**18-Feb-2022**	29-Mar-2022	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
BH8, BH9	**15-Feb-2022**	**16-Feb-2022**	01-Mar-2022	✓	**18-Feb-2022**	01-Mar-2022	✓

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
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
DAM1	**15-Feb-2022**	**----**	----	----	**18-Feb-2022**	22-Feb-2022	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F)							
DAM1	**15-Feb-2022**	**----**	----	----	**17-Feb-2022**	14-Aug-2022	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F)							
DAM1	**15-Feb-2022**	**----**	----	----	**18-Feb-2022**	15-Mar-2022	✓

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
EP020: Oil and Grease (O&G)							
Amber Jar - Sulfuric Acid or Sodium Bisulfate (EP020)							
DAM1	**15-Feb-2022**	**----**	----	----	**18-Feb-2022**	15-Mar-2022	✓
EP030: Biochemical Oxygen Demand (BOD)							
Clear Plastic Bottle - Natural (EP030)							
DAM1	**15-Feb-2022**	**----**	----	----	**15-Feb-2022**	17-Feb-2022	✓
EP075(SIM)A: Phenolic Compounds							
Clear Plastic Bottle - Natural (EP075(SIM))							
DAM1	**15-Feb-2022**	**16-Feb-2022**	22-Feb-2022	✓	**18-Feb-2022**	28-Mar-2022	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Clear Plastic Bottle - Natural (EP075(SIM))							
DAM1	**15-Feb-2022**	**16-Feb-2022**	22-Feb-2022	✓	**18-Feb-2022**	28-Mar-2022	✓
EP080/071: Total Petroleum Hydrocarbons							
Clear Plastic Bottle - Natural (EP071)							
DAM1	**15-Feb-2022**	**16-Feb-2022**	22-Feb-2022	✓	**18-Feb-2022**	28-Mar-2022	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Clear Plastic Bottle - Natural (EP071)							
DAM1	**15-Feb-2022**	**16-Feb-2022**	22-Feb-2022	✓	**18-Feb-2022**	28-Mar-2022	✓
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006)							
DAM1	**15-Feb-2022**	**----**	----	----	**15-Feb-2022**	16-Feb-2022	✓
MW007: Coliforms by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW007)							
DAM1	**15-Feb-2022**	**----**	----	----	**15-Feb-2022**	16-Feb-2022	✓

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	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	20	**10.00**	**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)							
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**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)							
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**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)							
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**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: **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	

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)							
Biochemical Oxygen Demand (BOD)	EP030	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	**0.00**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Biochemical Oxygen Demand (BOD)	EP030	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Oil and Grease	EP020	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	20	**15.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Biochemical Oxygen Demand (BOD)	EP030	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Oil and Grease	EP020	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	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
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	4	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	4	**0.00**	**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
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Asbestos Classification and Quantitation per NEPM 2013	* EA200N	SOIL	Asbestos Classification and Quantitation per NEPM with Confirmation of Identification by AS 4964 - 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 Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3).
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Oil and Grease	EP020	WATER	In house: Referenced to APHA 5520 B. Oil & grease is a gravimetric procedure to determine the amount of oil & grease residue in an aqueous sample. The sample is serially extracted three times n-hexane. The resultant extracts are combined, dehydrated and concentrated prior to gravimetric determination. This method is compliant with NEPM Schedule B(3)
Biochemical Oxygen Demand (BOD)	EP030	WATER	In house: Referenced to APHA 5210 B. The 5-Day BOD test provides an empirical measure of the oxygen consumption capacity of a given water. A portion of the sample is diluted into oxygenated, nutrient rich water, and a seed added to begin biological decay. The initial dissolved oxygen content is measured, then the bottle is sealed and incubated for five days. The remaining dissolved oxygen is measured, and from the difference, the demand for oxygen, by biological decay, is determined. This method is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	AS 4276.7
Coliforms by Membrane Filtration	MW007	WATER	AS 4276.5

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2205036**

Client	: **ECON Environmental Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: Con Kariotoglou	Contact	: Customer Services ES
Address	: PO Box 85 Oatlands 2117	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: info@econenvironmental.com.au	E-mail	: ALSEnviro.Sydney@ALSGlobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: MOUNT VERNON	Page	: 1 of 3
Order number	: 22-1294	Quote number	: ES2020ECONEV0001 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: Con Kariotoglou		

Dates

Date Samples Received	: 15-Feb-2022 11:40	Issue Date	: 15-Feb-2022
Client Requested Due Date	: 22-Feb-2022	Scheduled Reporting Date	: **22-Feb-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 14.3
Receipt Detail	: ESKY	No. of samples received / analysed	: 3 / 3

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
- **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 laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

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

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EA200N Asbestos in Soils - (<1kg samples ONLY)	SOIL - S-19 TRH/BTEXN/PAH/Ph/OC/OP/PCB/8 metals
ES2205036-001	15-Feb-2022 00:00	BH8	✓	✓	✓
ES2205036-002	15-Feb-2022 00:00	BH9	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP020 Oil & Grease (O&G)	WATER - EP030 BOD	WATER - M1 - ES/EB/FM TC & FC by MF	WATER - W-27 TRH/BTEXN/PAH/Phenols/8 Metals
ES2205036-003	15-Feb-2022 00:00	DAM1	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA015H Total Dissolved Solids - Standard Level
ES2205036-003	15-Feb-2022 00:00	DAM1	✓

Proactive Holding Time Report

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

Requested Deliverables

Con Kariotoglou

- *AU Certificate of Analysis - NATA (COA)	Email	info@econenvironmental.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	info@econenvironmental.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	info@econenvironmental.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	info@econenvironmental.com.au
- A4 - AU Tax Invoice (INV)	Email	info@econenvironmental.com.au
- Chain of Custody (CoC) (COC)	Email	info@econenvironmental.com.au
- EDI Format - ESDAT (ESDAT)	Email	info@econenvironmental.com.au
- EDI Format - XTab (XTAB)	Email	info@econenvironmental.com.au

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2205036**

Client	: **ECON Environmental Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: Con Kariotoglou	Contact	: Customer Services ES
Address	: PO Box 85 Oatlands 2117	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: info@econenvironmental.com.au	E-mail	: ALSEnviro.Sydney@ALSGlobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: MOUNT VERNON	Page	: 1 of 3
Order number	: 22-1294	Quote number	: ES2020ECONEV0001 (EN/222)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: Con Kariotoglou		

Dates

Date Samples Received	: 15-Feb-2022 11:40	Issue Date	: 17-Feb-2022
Client Requested Due Date	: 22-Feb-2022	Scheduled Reporting Date	: **22-Feb-2022**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 14.3
Receipt Detail	: ESKY	No. of samples received / analysed	: 3 / 3

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
- **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 laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **17/02/22: This is an updated SRN for this work order. VOC Vial not received therefore volatiles analysis cannot be conducted.**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

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

Method Sample ID	Sample Container Received	Preferred Sample Container for Analysis
PAH/Phenols (GC/MS - SIM) : EP075(SIM)		
DAM1	- Clear Plastic Bottle - Natural	- Amber Glass Bottle - Unpreserved
TRH - Semivolatile Fraction : EP071		
DAM1	- Clear Plastic Bottle - Natural	- Amber Glass Bottle - Unpreserved

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	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EA200N Asbestos in Soils - (<1kg samples ONLY)	SOIL - S-19 TRH/BTEXN/PAH/Ph/OC/OP/PCB/8 metals
ES2205036-001	15-Feb-2022 00:00	BH8	✓	✓	✓
ES2205036-002	15-Feb-2022 00:00	BH9	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EP020 Oil & Grease (O&G)	WATER - EP030 BOD	WATER - M1 - ES/EB/FM TC & FC by MF	WATER - W-27 TRH/BTEXN/PAH/Phenols/8 Metals
ES2205036-003	15-Feb-2022 00:00	DAM1	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA015H Total Dissolved Solids - Standard Level
ES2205036-003	15-Feb-2022 00:00	DAM1	✓

Proactive Holding Time Report

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

Requested Deliverables

Con Kariotoglou

- *AU Certificate of Analysis - NATA (COA)	Email	info@econenvironmental.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	info@econenvironmental.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	info@econenvironmental.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	info@econenvironmental.com.au
- A4 - AU Tax Invoice (INV)	Email	info@econenvironmental.com.au
- Chain of Custody (CoC) (COC)	Email	info@econenvironmental.com.au
- EDI Format - ESDAT (ESDAT)	Email	info@econenvironmental.com.au
- EDI Format - XTab (XTAB)	Email	info@econenvironmental.com.au

HAIN OF JSTODY

ALS Laboratory: please tick →

❑BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

❑ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com

❑MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

❑MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com

❑NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com

❑NEWCASTLE 5 Rose Gum Road Warabrook NSW 2304 Ph: 02 4968 9433 E: samples.newcastle@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: townesville.environmental@alsglobal.com

❑GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com

❑MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

❑PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com

❑WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: ECON Environmental Pty Ltd	**TURNAROUND REQUIREMENTS :**	☐ Standard TAT **(List due date):**	**22.02.2022**
OFFICE: 1 St Aidans Avenue, Oatlands NSW 2117	(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☐ Non Standard or urgent TAT **(List due date):**	
PROJECT: MOUNT VERNON	**ALS QUOTE NO.:**	**ECONEV**	
ORDER NUMBER: 22-1294			
PROJECT MANAGER: Con Kariotoglou	**CONTACT PH: 0452 654 962**		
SAMPLER: Con Kariotoglou	**SAMPLER MOBILE: 0452 654 962**		
COC emailed to ALS? (YES)	**EDD FORMAT (or default):**		
Email Reports to (will default to PM if no other addresses are listed): **info@econenvironmental.com.au**			
Email Invoice to (will default to PM if no other addresses are listed): **info@econenvironmental.com.au**			

COC SEQUENCE NUMBER (Circle)

COC:	1	2	3	4	5	6	7
OF:	1	2	3	4	5	6	7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		˚C	
Other comment:			

RELINQUISHED BY:	**RECEIVED BY:**	**RELINQUISHED BY:**	**RECEIVED BY:**
Con Kariotoglou			
DATE/TIME:	DATE/TIME:	DATE/TIME:	DATE/TIME:
15.02.2022			

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	**SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)**			**CONTAINER INFORMATION**		**ANALYSIS REQUIRED including SUITES** (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).								**Additional Information**
LAB ID	**SAMPLE ID**	**DATE / TIME**	**MATRIX**	**TYPE & PRESERVATIVE** *(refer to codes below)*	**TOTAL CONTAINERS**	**S-19**	**Asbestos EA200F (%w/w)**	**W27**	**EP030 (BOD)**	**EP020 (OIL & GREASE)**	**EA015H (TDS)**	**M1 (TOTAL & FEACAL COLIFORMS)**		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	BH8	**15.02.2022**	**S**		**2**	**√**	**√**							unsieved
	BH9	**15.02.2022**	**S**		**2**	**√**	**√**							unsieved
	DAM1	**15.02.2022**	**W**		**6**			**√**	**√**	**√**	**√**	**√**		
				TOTAL	**16**	**4**	**4**	**2**	**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.

APPENDIX H: LOTSEARCH

ECON Environmental Pty Ltd | ABN 25 641 106 783 | PO Box 85 Oatlands NSW 2117
M: 0452 654 962 | **E:** info@econenvironmental.com.au | **W:** www.econenvironmental.com.au

LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 01 Feb 2022 11:16:18

Reference: LS028804 EP

Address: 116-123 Kerrs Road, Mount Vernon, NSW 2178

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 On-site	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	NSW Department of Finance, Services & Innovation	04/01/2022	04/01/2022	Quarterly	-	-	-	-
Topographic Data	NSW Department of Finance, Services & Innovation	25/06/2019	25/06/2019	Annually	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	10/12/2021	09/12/2021	Monthly	1000m	0	0	0
Contaminated Land Records of Notice	Environment Protection Authority	11/01/2022	11/01/2022	Monthly	1000m	0	0	0
Former Gasworks	Environment Protection Authority	07/01/2022	11/10/2017	Quarterly	1000m	0	0	0
National Waste Management Facilities Database	Geoscience Australia	12/05/2021	07/03/2017	Annually	1000m	0	0	0
National Liquid Fuel Facilities	Geoscience Australia	15/02/2021	13/07/2012	Annually	1000m	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	24/01/2022	14/07/2021	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Investigation Sites	Department of Defence	28/01/2022	28/01/2022	Monthly	2000m	0	0	0
Defence PFAS Investigation & Management Program - Management Sites	Department of Defence	28/01/2022	28/01/2022	Monthly	2000m	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	06/01/2022	06/01/2022	Monthly	2000m	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Department of Defence	06/01/2022	06/01/2022	Quarterly	2000m	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	02/02/2021	13/12/2018	Annually	1000m	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	19/01/2022	19/01/2022	Monthly	1000m	0	0	0
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority	19/01/2022	19/01/2022	Monthly	1000m	0	0	0
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	19/01/2022	19/01/2022	Monthly	1000m	3	3	4
UBD Business Directories (Premise & Intersection Matches)	Hardie Grant			Not required	150m	0	0	0
UBD Business Directories (Road & Area Matches)	Hardie Grant			Not required	150m	-	0	0
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500m	0	0	0
UBD Business Directory Dry Cleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500m	-	0	0
Points of Interest	NSW Department of Finance, Services & Innovation	19/08/2021	19/08/2021	Quarterly	1000m	0	0	2
Tanks (Areas)	NSW Department of Customer Service - Spatial Services	19/08/2021	19/08/2021	Quarterly	1000m	0	0	0
Tanks (Points)	NSW Department of Customer Service - Spatial Services	19/08/2021	19/08/2021	Quarterly	1000m	0	0	0
Major Easements	NSW Department of Finance, Services & Innovation	19/08/2021	19/08/2021	Quarterly	1000m	0	1	6
State Forest	Forestry Corporation of NSW	25/02/2021	14/02/2021	Annually	1000m	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	22/01/2021	11/12/2020	Annually	1000m	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000m	1	1	1
Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018	NSW Department of Planning, Industry and Environment	26/10/2020	21/02/2018	Annually	1000m	0	0	0
Groundwater Boreholes	NSW Dept. of Primary Industries - Water NSW; Commonwealth of Australia (Bureau of Meteorology)	24/07/2018	23/07/2018	Annually	2000m	0	0	10

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features On-site	No. Features within 100m	No. Features within Buffer
Geological Units 1:100,000	NSW Department of Planning, Industry and Environment	20/08/2014		Annually	1000m	1	1	2
Geological Structures 1:100,000	NSW Department of Planning, Industry and Environment	20/08/2014		Annually	1000m	0	0	0
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000m	0	0	0
Atlas of Australian Soils	Australian Bureau of Agriculture and Resource Economics and Sciences (ABARES)	19/05/2017	17/02/2011	As required	1000m	1	1	2
Soil Landscapes of Central and Eastern NSW	NSW Department of Planning, Industry and Environment	14/10/2020	27/07/2020	Annually	1000m	1	1	3
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning, Industry and Environment	07/01/2022	17/12/2021	Monthly	500m	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000m	1	1	1
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1000m	1	1	2
Dryland Salinity Potential of Western Sydney	NSW Department of Planning, Industry and Environment	12/05/2017	01/01/2002	None planned	1000m	1	1	4
Mining Subsidence Districts	NSW Department of Customer Service - Subsidence Advisory NSW	19/08/2021	05/08/2021	Quarterly	1000m	0	0	0
Current Mining Titles	NSW Department of Industry	07/01/2022	07/01/2022	Monthly	1000m	0	0	0
Mining Title Applications	NSW Department of Industry	07/01/2022	07/01/2022	Monthly	1000m	0	0	0
Historic Mining Titles	NSW Department of Industry	07/01/2022	07/01/2022	Monthly	1000m	9	9	10
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning, Industry and Environment	15/11/2021	07/12/2018	Monthly	1000m	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning, Industry and Environment	15/11/2021	05/11/2021	Monthly	1000m	1	2	10
Commonwealth Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/05/2021	20/11/2019	Annually	1000m	0	0	0
National Heritage List	Australian Government Department of the Agriculture, Water and the Environment	18/05/2021	20/11/2019	Annually	1000m	0	0	0
State Heritage Register - Curtilages	NSW Department of Planning, Industry and Environment	19/08/2021	25/06/2021	Quarterly	1000m	0	0	0
Environmental Planning Instrument Local Heritage	NSW Department of Planning, Industry and Environment	07/01/2022	17/12/2021	Monthly	1000m	0	0	1
Bush Fire Prone Land	NSW Rural Fire Service	31/01/2022	08/12/2021	Weekly	1000m	0	2	3
Remnant Vegetation of the Cumberland Plain	NSW Office of Environment & Heritage	07/10/2014	04/08/2011	Unknown	1000m	2	2	6
Ramsar Wetlands of Australia	Australian Government Department of Agriculture, Water and the Environment	24/02/2021	19/03/2020	Annually	1000m	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	14/08/2017	15/05/2017	Annually	1000m	1	1	2
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000m	1	1	1
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	31/01/2022	31/01/2022	Weekly	10000m	-	-	-

Site Diagram

116-123 Kerrs Road, Mount Vernon, NSW 2178

Legend

- Site Boundary
- Internal Parcel Boundaries

Total Area: 20249m²

Total Perimeter: 738m

Scale: 0 25 50 Meters

Data Source Aerial Imagery:
© Aerometrex Pty Ltd

Disclaimers:

Measurements are approximate only and may have been simplified or smaller lengths removed for readability.

Parcels that make up a small percentage of the total site area have not been labelled for increased legibility.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 01 February 2022

Contaminated Land

116-123 Kerrs Road, Mount Vernon, NSW 2178

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	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

Contaminated Land

116-123 Kerrs Road, Mount Vernon, NSW 2178

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

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

Waste Management & Liquid Fuel Facilities

116-123 Kerrs Road, Mount Vernon, NSW 2178

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	Direction
N/A	No records in buffer											

Waste Management Facilities Data Source: Geoscience Australia

National Liquid Fuel Facilities

National Liquid Fuel Facilties within the dataset buffer:

Map Id	Owner	Name	Address	Suburb	Class	Operational Status	Operator	Revision Date	Loc Conf	Dist	Direction
N/A	No records in buffer										

National Liquid Fuel Facilities Data Source: Geoscience Australia

PFAS Investigation & Management Programs

116-123 Kerrs Road, Mount Vernon, NSW 2178

EPA PFAS Investigation Program

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

Map ID	Site	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

EPA PFAS Investigation Program: Environment Protection Authority

Defence PFAS Investigation Program

Sites being investigated by the Department of Defence for PFAS contamination within the dataset buffer:

Map ID	Base Name	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

Defence PFAS Investigation Program Data Custodian: Department of Defence, Australian Government

Defence PFAS Management Program

Sites being managed by the Department of Defence for PFAS contamination within the dataset buffer:

Map ID	Base Name	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

Defence PFAS Management Program Data Custodian: Department of Defence, Australian Government

Airservices Australia National PFAS Management Program

Sites being investigated or managed by Airservices Australia for PFAS contamination within the dataset buffer:

Map ID	Site Name	Impacts	Loc Conf	Dist	Dir
N/A	No records in buffer				

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

Defence Sites

116-123 Kerrs Road, Mount Vernon, NSW 2178

Defence 3 Year Regional Contamination Investigation Program

Sites which have been assessed as part of the Defence 3 Year Regional Contamination Investigation Program within the dataset buffer:

Property ID	Base Name	Address	Known Contamination	Loc Conf	Dist	Dir
N/A	No records in buffer					

Defence 3 Year Regional Contamination Investigation Program, Data Custodian: Department of Defence, Australian Government

EPA Other Sites with Contamination Issues

116-123 Kerrs Road, Mount Vernon, NSW 2178

EPA Other Sites with Contamination Issues

This dataset contains other sites identified on the EPA website as having contamination issues. This dataset currently includes:

- James Hardie asbestos manufacturing and waste disposal sites
- Radiological investigation sites in Hunter's Hill
- Pasminco Lead Abatement Strategy Area

Sites within the dataset buffer:

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

EPA Other Sites with Contamination Issues: Environment Protection Authority

EPA Activities

116-123 Kerrs Road, Mount Vernon, NSW 2178

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

Delicensed & Former Licensed EPA Activities

116-123 Kerrs Road, Mount Vernon, NSW 2178

EPA Activities

116-123 Kerrs Road, Mount Vernon, NSW 2178

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
N/A	No records in buffer							

Delicensed Activities Data Source: 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	06/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered	07/09/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered	09/11/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	On-site
5150	FAIRFIELD CITY COUNCIL	WATERWAYS OF FAIRFIELD CITY COUNCIL - FAIRFIELD NSW 2165	Surrendered	17/08/2000	Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	836m	East

Former Licensed Activities Data Source: Environment Protection Authority

Historical Business Directories

116-123 Kerrs Road, Mount Vernon, NSW 2178

Business Directory Records 1950-1991
Premise or Road Intersection Matches

Universal Business Directory records from years 1991, 1986, 1982, 1970, 1961 & 1950, mapped to a premise or road intersection within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
N/A	No records in buffer						

Business Directory Records 1950-1991
Road or Area Matches

Universal Business Directory records from years 1991, 1986, 1982, 1970, 1961 & 1950, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

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

Historical Business Directories

116-123 Kerrs Road, Mount Vernon, NSW 2178

Dry Cleaners, Motor Garages & Service Stations 1948-1993 Premise or Road Intersection Matches

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a premise or road intersection, within the dataset buffer.

Note: The Universal Business Directories were published between 1948 and 1993. Dry Cleaners, Motor Garages & Service Stations have been extracted from all of these directories except the following years 1951, 1955, 1957, 1960, 1963, 1973, 1974, 1977, 1987.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
N/A	No records in buffer						

Dry Cleaners, Motor Garages & Service Stations 1948-1993 Road or Area Matches

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

Note: The Universal Business Directories were published between 1948 and 1993. Dry Cleaners, Motor Garages & Service Stations have been extracted from all of these directories except the following years 1951, 1955, 1957, 1960, 1963, 1973, 1974, 1977, 1987.

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

Aerial Imagery 2021

116-123 Kerrs Road, Mount Vernon, NSW 2178

Aerial Imagery 2016

116-123 Kerrs Road, Mount Vernon, NSW 2178

Aerial Imagery 2011

116-123 Kerrs Road, Mount Vernon, NSW 2178

Aerial Imagery 2005

116-123 Kerrs Road, Mount Vernon, NSW 2178

Aerial Imagery 2000

116-123 Kerrs Road, Mount Vernon, NSW 2178

Aerial Imagery 1994

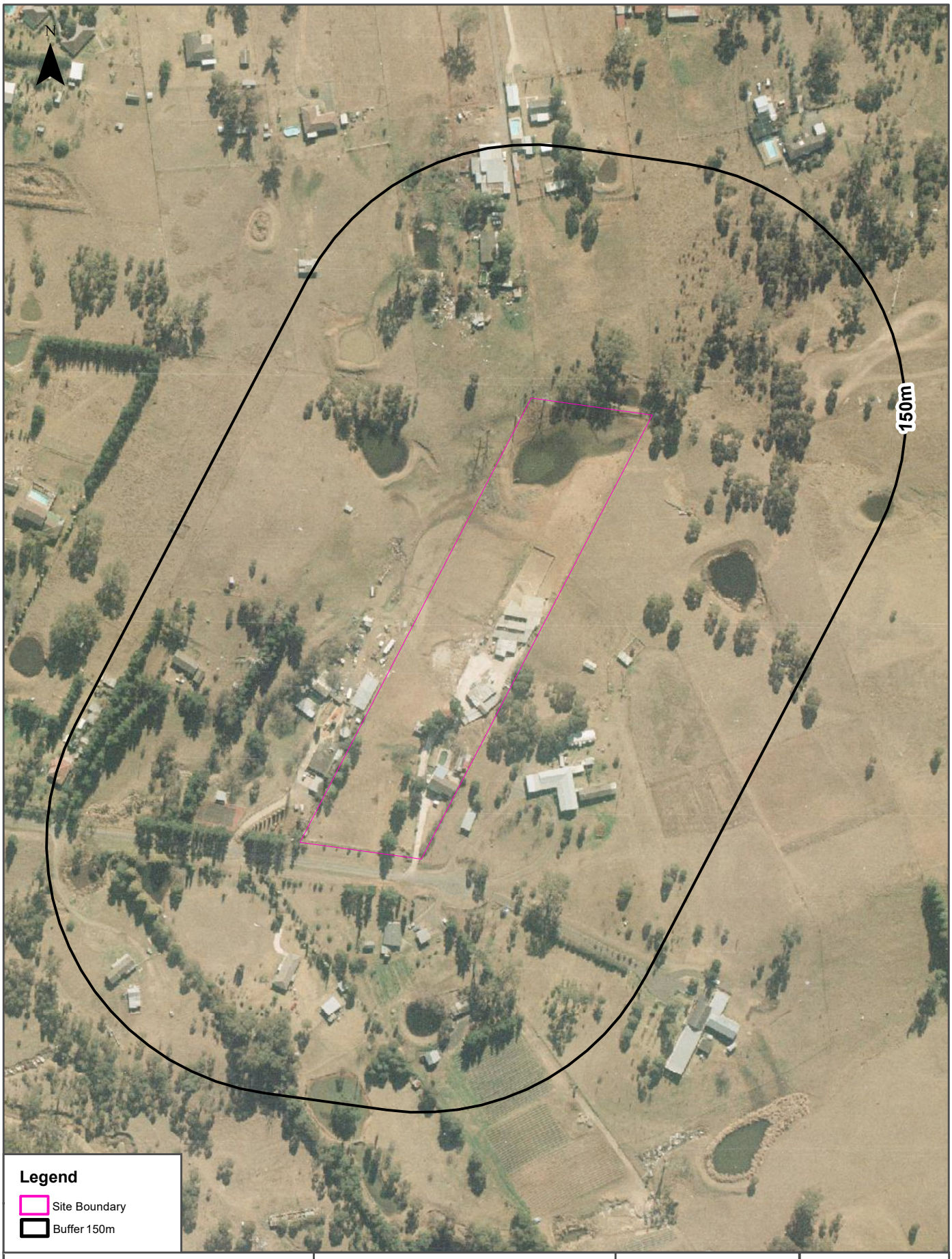
116-123 Kerrs Road, Mount Vernon, NSW 2178

Aerial Imagery 1991

116-123 Kerrs Road, Mount Vernon, NSW 2178

Aerial Imagery 1986

116-123 Kerrs Road, Mount Vernon, NSW 2178

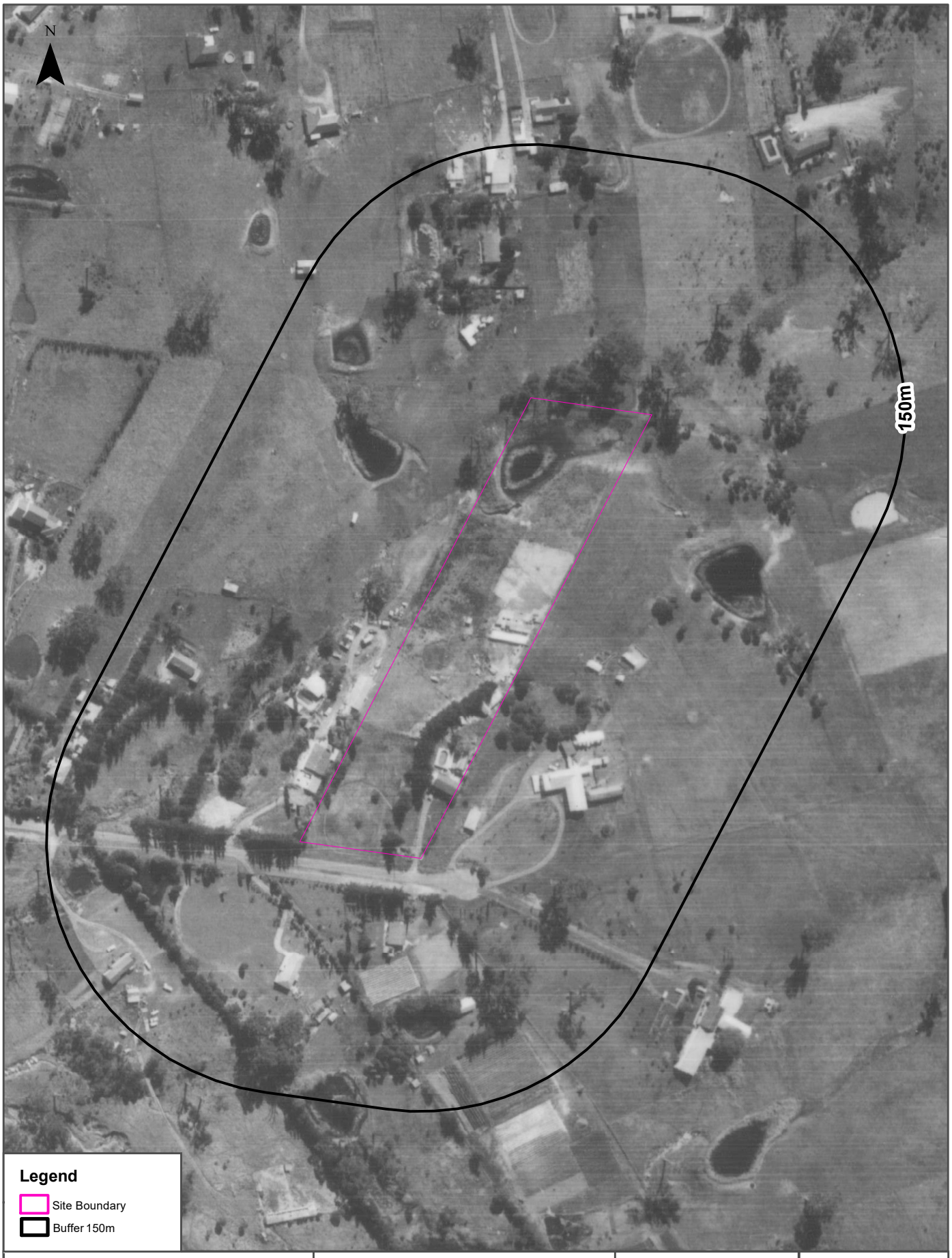


Aerial Imagery 1982

116-123 Kerrs Road, Mount Vernon, NSW 2178

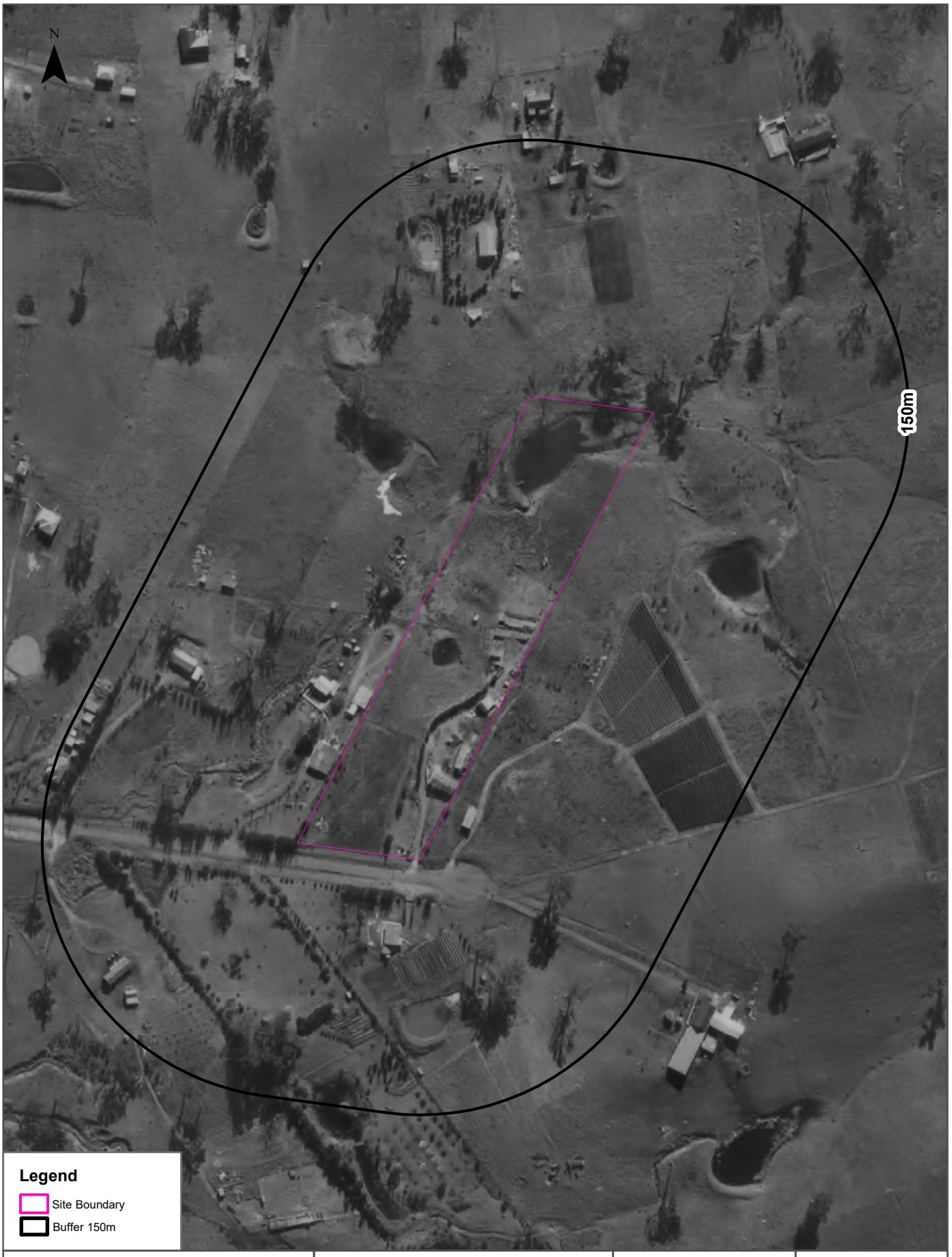
Aerial Imagery 1978

116-123 Kerrs Road, Mount Vernon, NSW 2178



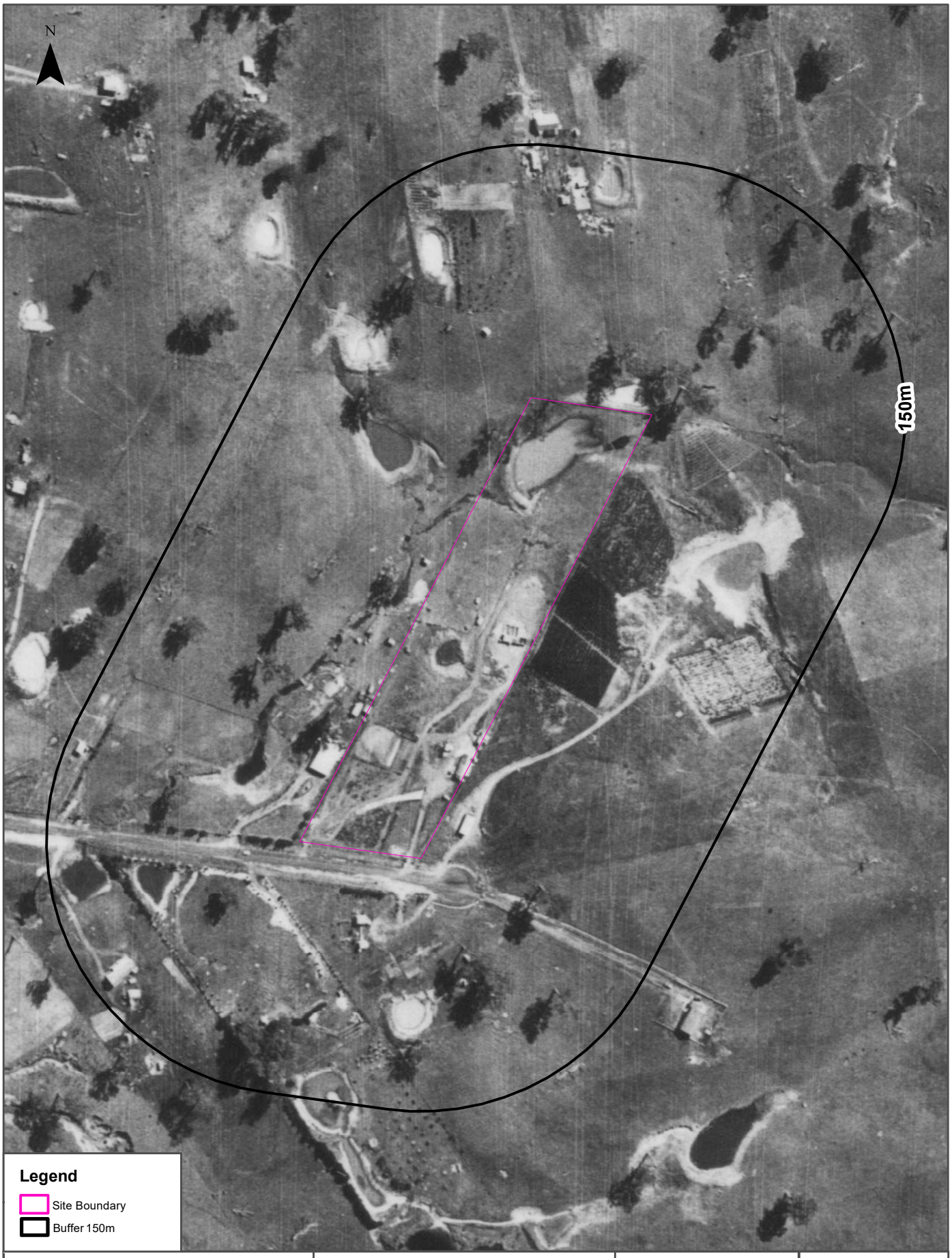
Aerial Imagery 1970

116-123 Kerrs Road, Mount Vernon, NSW 2178



Aerial Imagery 1965

116-123 Kerrs Road, Mount Vernon, NSW 2178

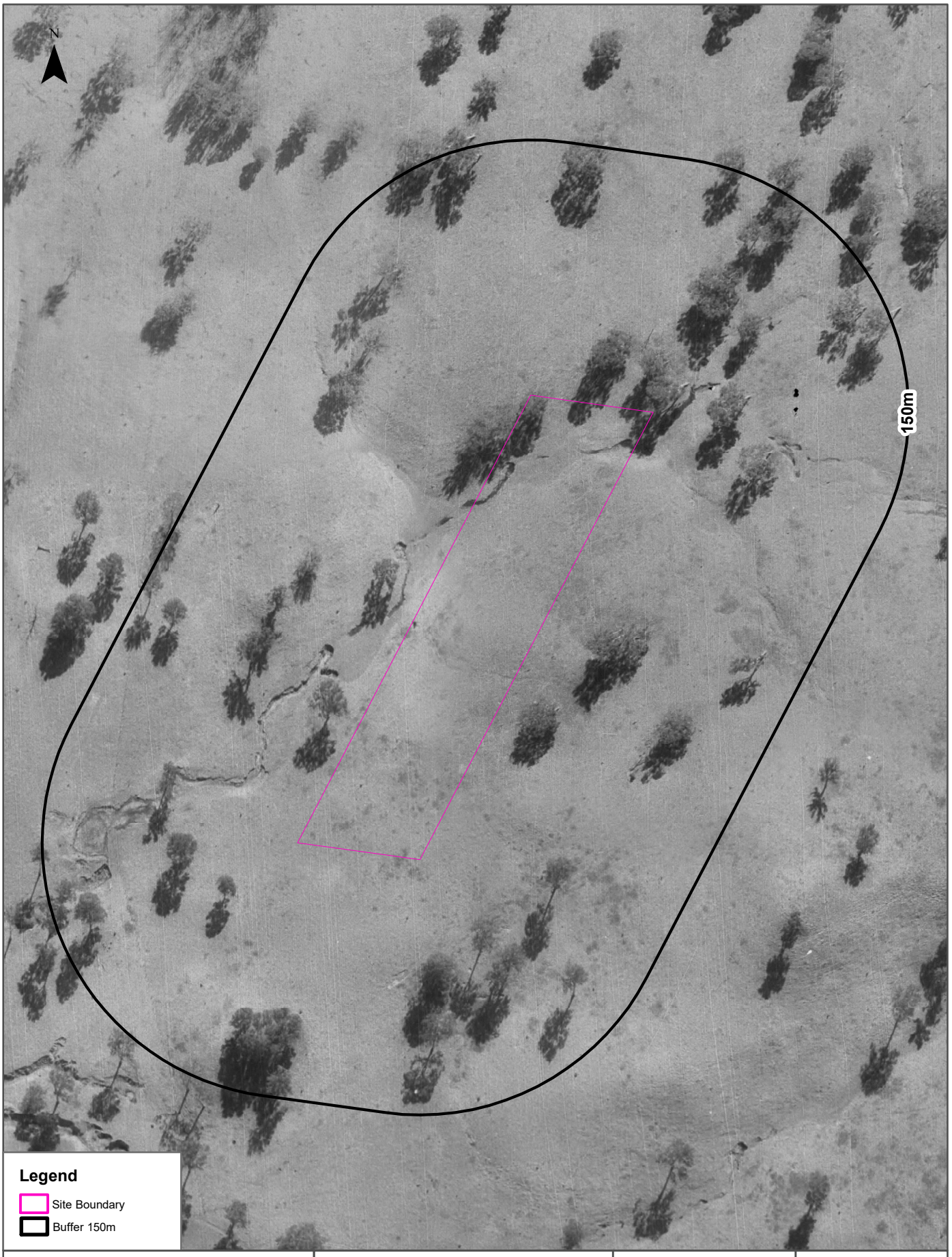


Aerial Imagery 1961

116-123 Kerrs Road, Mount Vernon, NSW 2178

Aerial Imagery 1955, 1956

116-123 Kerrs Road, Mount Vernon, NSW 2178

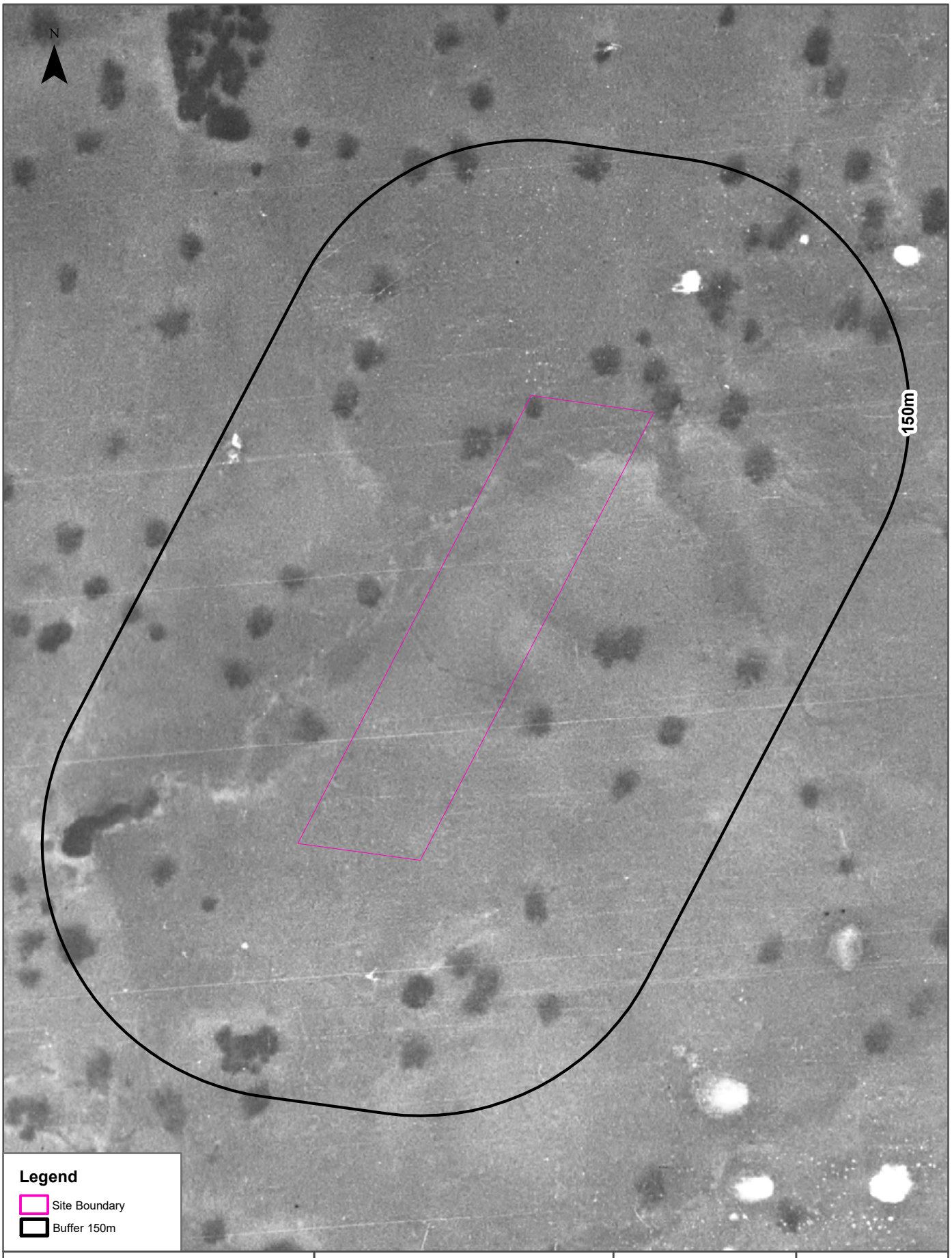


Aerial Imagery 1949

116-123 Kerrs Road, Mount Vernon, NSW 2178

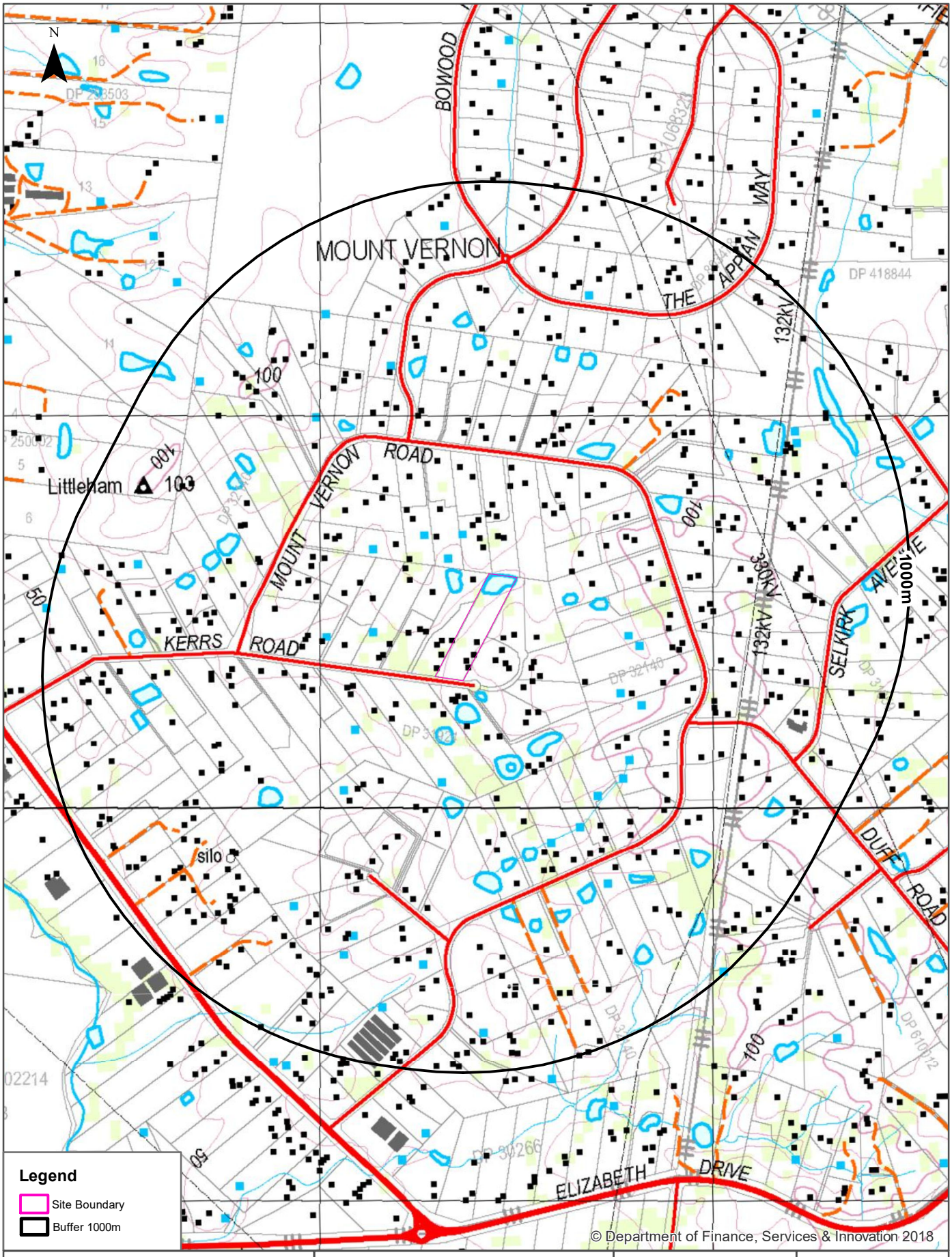
Aerial Imagery 1930

116-123 Kerrs Road, Mount Vernon, NSW 2178



Topographic Map 2015

116-123 Kerrs Road, Mount Vernon, NSW 2178



Scale: 0 150 300 450 600 Meters

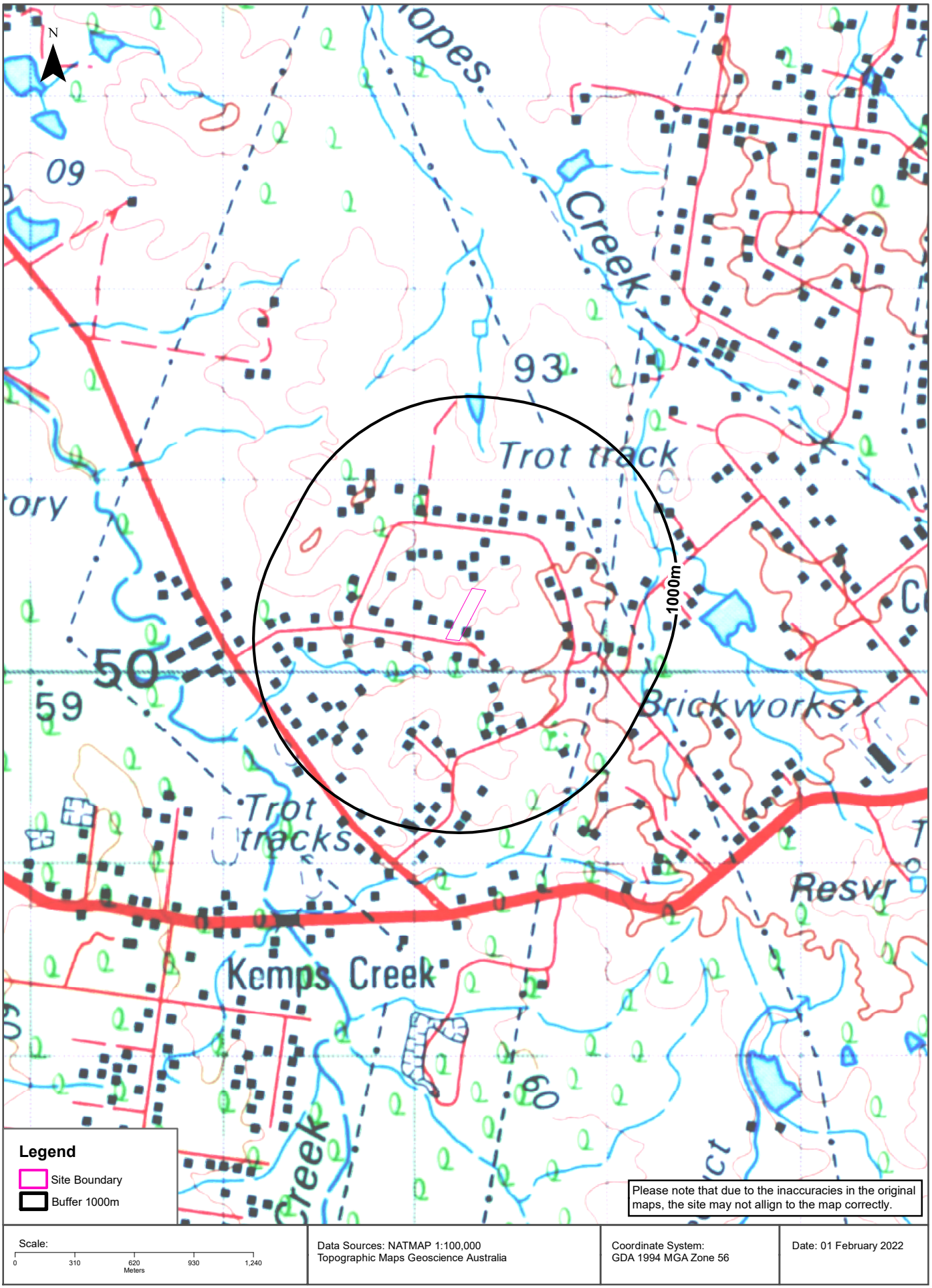
Data Sources: Topographic Map Data
© NSW Land and Property Information

Coordinate System:
GDA 1994 MGA Zone 56

Date: 01 February 2022

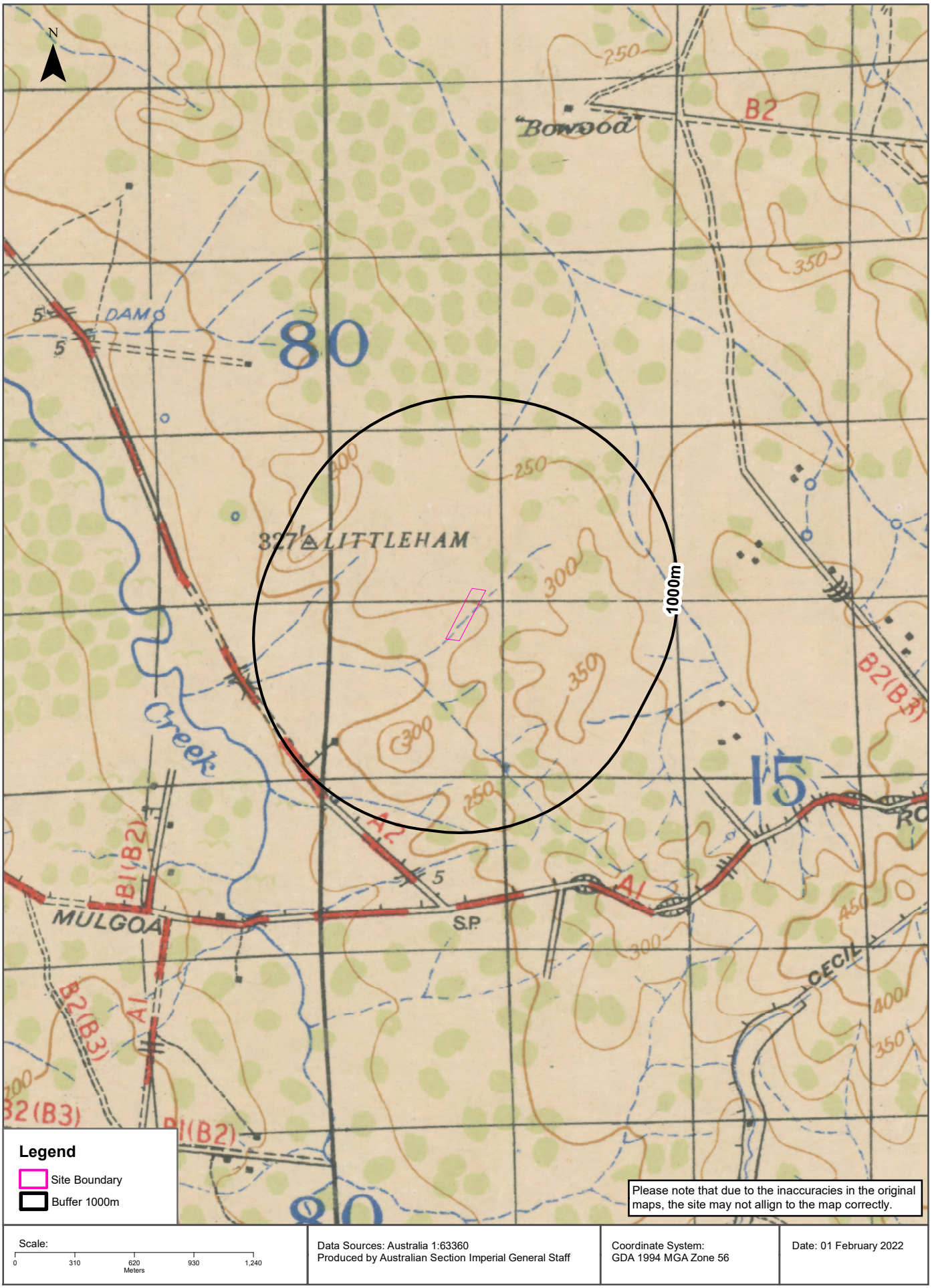
Historical Map 1975

116-123 Kerrs Road, Mount Vernon, NSW 2178



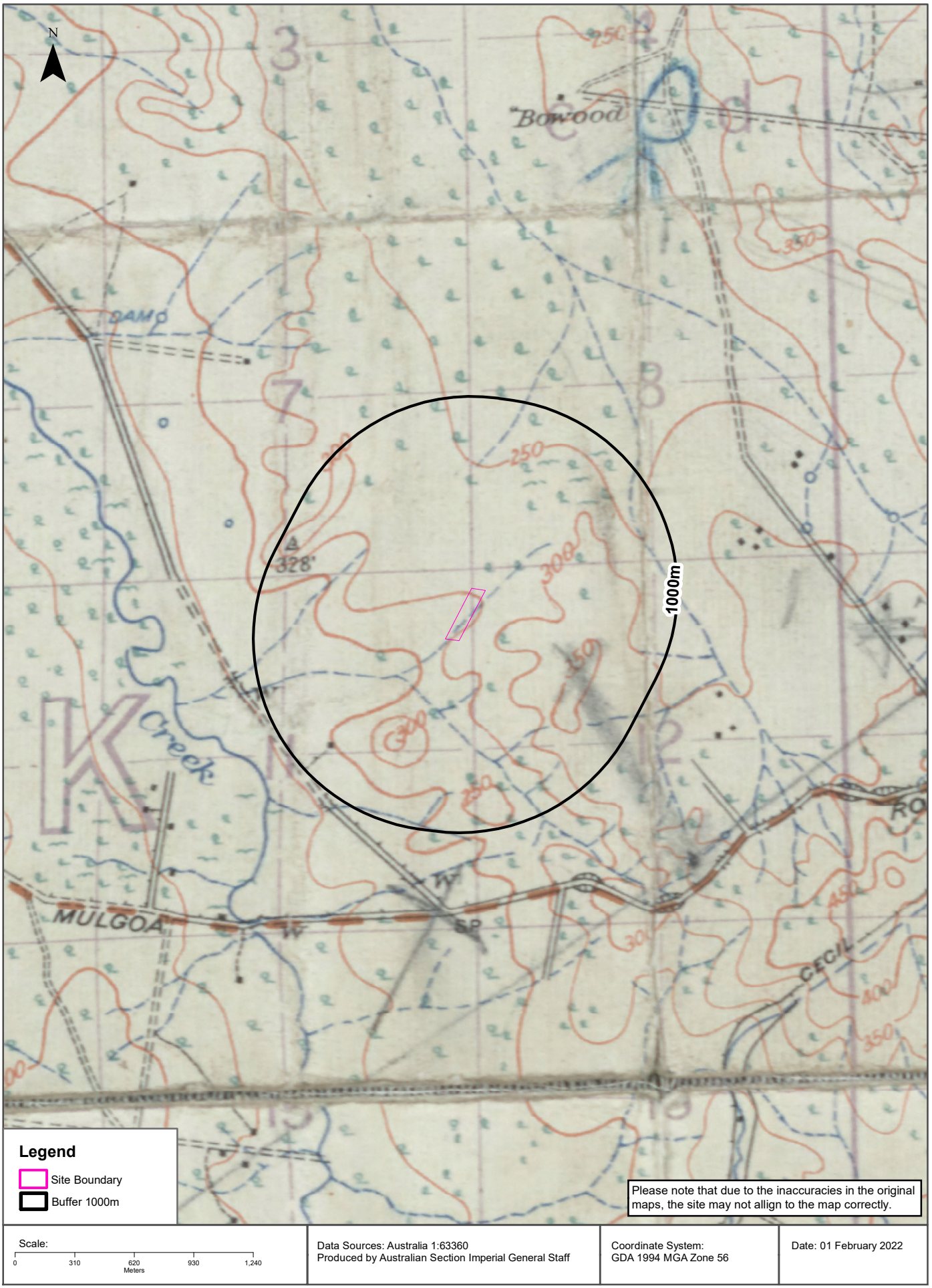
Historical Map c.1942

116-123 Kerrs Road, Mount Vernon, NSW 2178



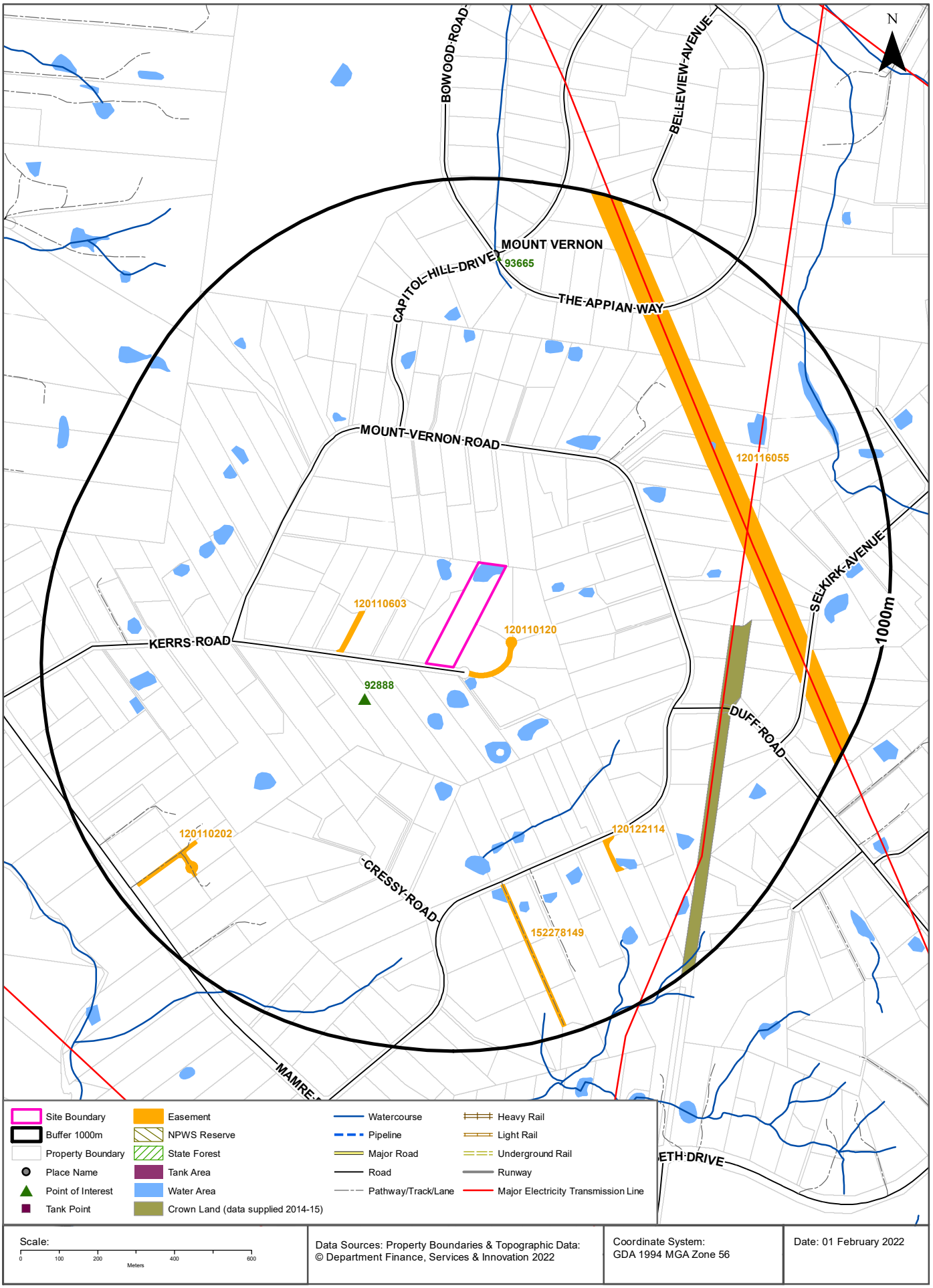
Historical Map c.1929

116-123 Kerrs Road, Mount Vernon, NSW 2178



Topographic Features

116-123 Kerrs Road, Mount Vernon, NSW 2178



Topographic Features

116-123 Kerrs Road, Mount Vernon, NSW 2178

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
92888	Child Care Centre	DO RE MI PRE-SCHOOL	184m	South West
93665	Suburb	MOUNT VERNON	803m	North

Topographic Features

116-123 Kerrs Road, Mount Vernon, NSW 2178

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
N/A	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
N/A	No records in buffer					

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
120110120	Primary	Undefined		43m	South East
120110603	Primary	Undefined		205m	West
152278149	Primary	Right of way	8 metres	581m	South
120116055	Primary	Undefined		587m	North East
120122114	Primary	Undefined		597m	South East
120110202	Primary	Undefined		757m	South West

Topographic Features

116-123 Kerrs Road, Mount Vernon, NSW 2178

State Forest

What State Forest exist within the dataset buffer?

State Forest Number	State Forest Name	Distance	Direction
N/A	No records in buffer		

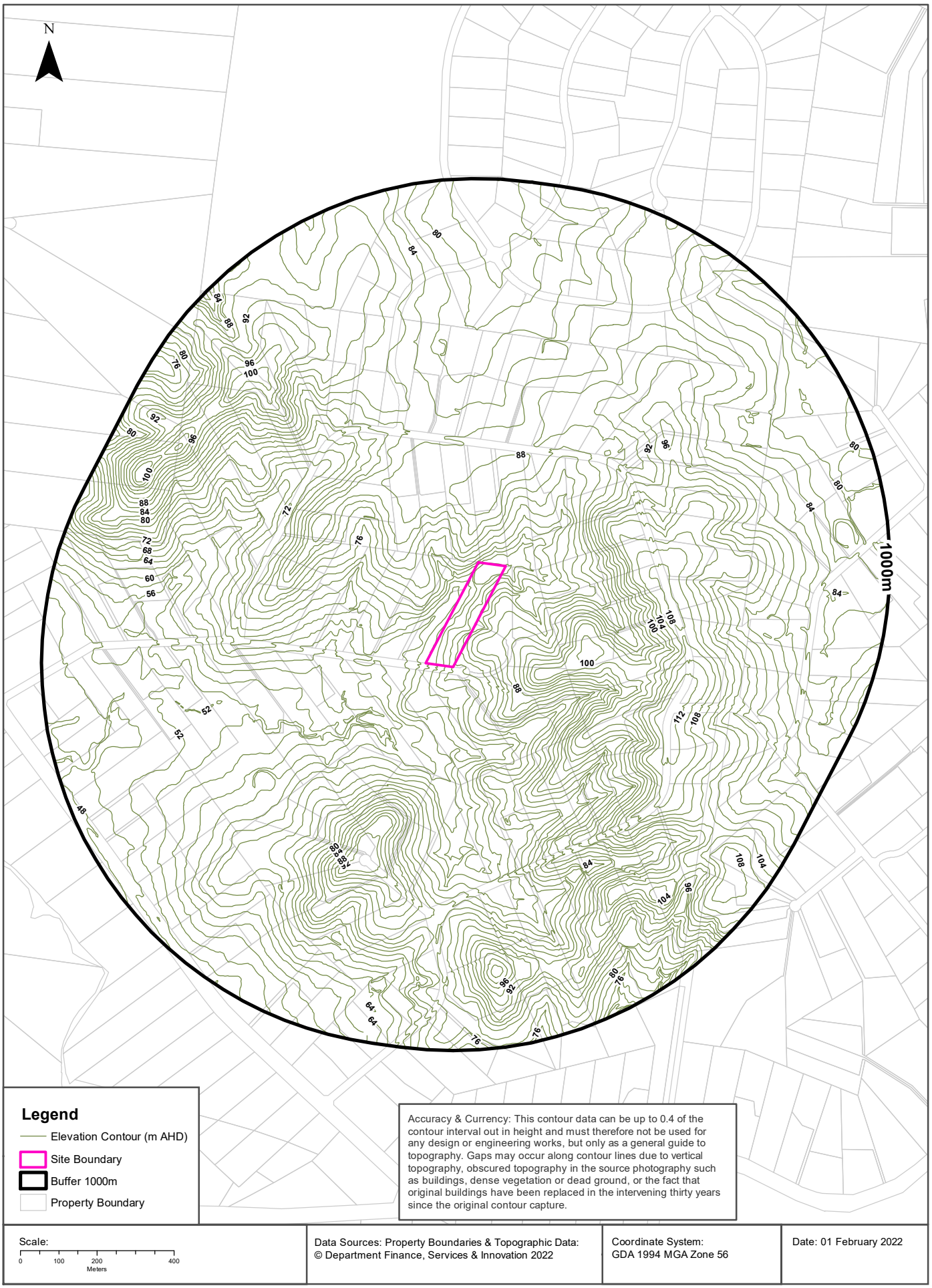
National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the dataset buffer?

Reserve Number	Reserve Type	Reserve Name	Gazetted Date	Distance	Direction
N/A	No records in buffer				

Elevation Contours (m AHD)

116-123 Kerrs Road, Mount Vernon, NSW 2178



Hydrogeology & Groundwater

116-123 Kerrs Road, Mount Vernon, NSW 2178

Hydrogeology

Description of aquifers within the dataset buffer:

Description	Distance	Direction
Porous, extensive aquifers of low to moderate productivity	0m	On-site

Hydrogeology Map of Australia : Commonwealth of Australia (Geoscience Australia)

Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018

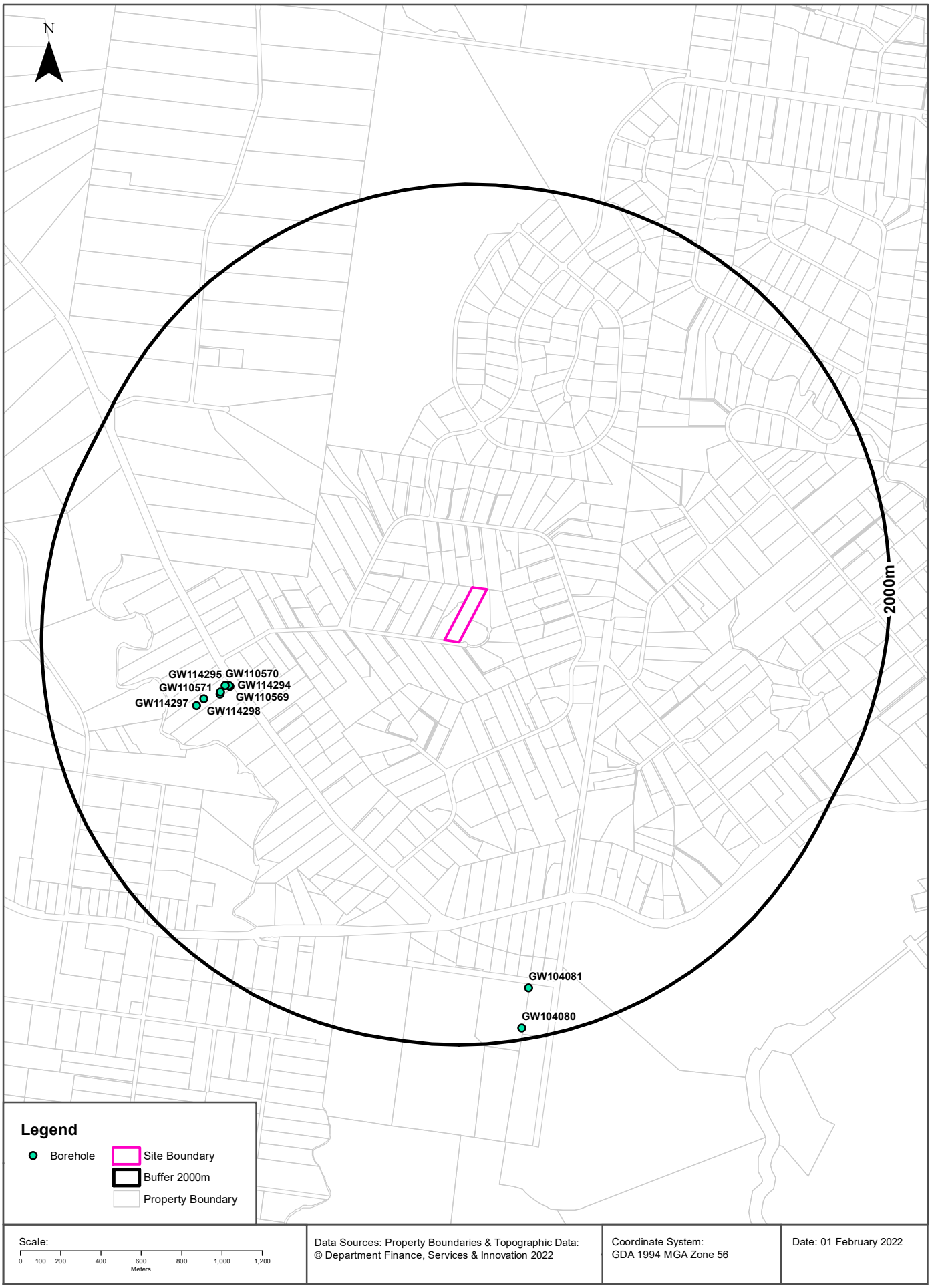
Temporary water restrictions relating to the Botany Sands aquifer within the dataset buffer:

Prohibition Area No.	Prohibition	Distance	Direction
N/A	No records in buffer		

Temporary Water Restriction (Botany Sands Groundwater Source) Order 2018 Data Source : NSW Department of Primary Industries

Groundwater Boreholes

116-123 Kerrs Road, Mount Vernon, NSW 2178



Hydrogeology & Groundwater

116-123 Kerrs Road, Mount Vernon, NSW 2178

Groundwater Boreholes

Boreholes within the dataset buffer:

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m bgl)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW110569	10BL603558	Bore	Private	Monitoring Bore	Monitoring Bore		25/08/2009	6.00	12.00		4.40			1089m	West
GW114294	10BL604605	Bore	Private	Monitoring Bore	Monitoring Bore		28/04/2011	6.00	6.00					1091m	West
GW110570	10BL603558	Bore	Private	Monitoring Bore	Monitoring Bore		25/08/2009	12.00	6.00		4.40			1112m	West
GW114295	10BL604605	Bore	Private	Monitoring Bore	Monitoring Bore		28/04/2011	6.00	6.00					1112m	West
GW114296	10BL604605	Bore	Private	Monitoring Bore	Monitoring Bore		28/04/2011	6.00	6.00					1140m	West
GW110571	10BL603558	Bore	Private	Monitoring Bore	Monitoring Bore		25/08/2009	12.00	6.00		4.40			1146m	West
GW114298	10BL604605	Bore	Private	Monitoring Bore	Monitoring Bore		28/04/2011	7.00	7.00					1230m	West
GW114297	10BL604605	Bore	Private	Monitoring Bore	Monitoring Bore		28/04/2011	8.00	8.00					1272m	West
GW104081	10BL160288	Bore		Monitoring Bore	Monitoring Bore		06/10/2001	30.00	30.00					1752m	South
GW104080	10BL160288	Bore		Monitoring Bore	Monitoring Bore		05/10/2001	30.00	30.00					1942m	South

Hydrogeology & Groundwater

116-123 Kerrs Road, Mount Vernon, NSW 2178

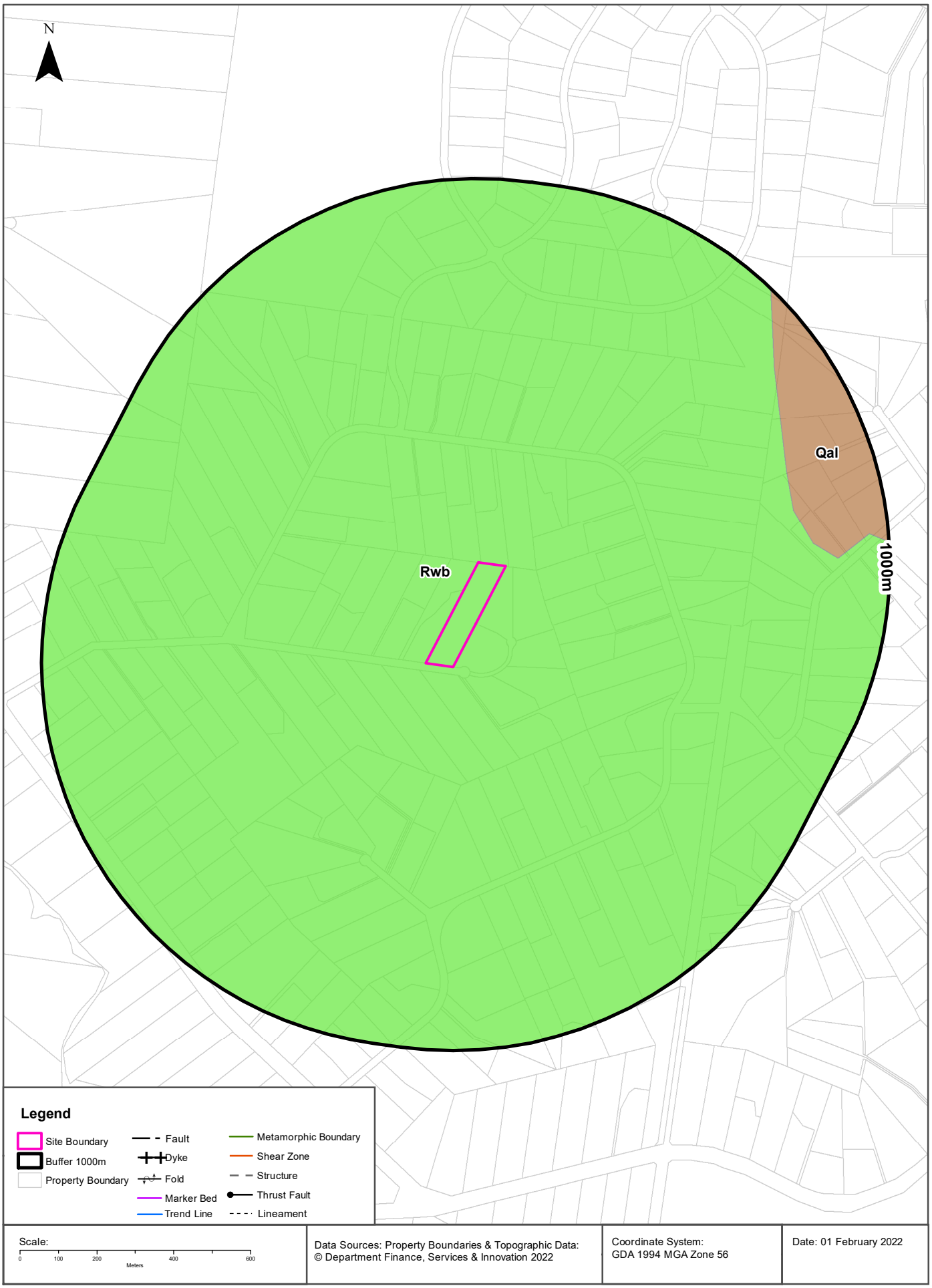
Driller's Logs

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

Groundwater No	Drillers Log	Distance	Direction
GW110569	0.00m-1.00m FILL, SILTY CLAY BROWN 1.00m-6.00m CLAY SILTY, BROWN	1089m	West
GW110570	0.00m-1.00m FILL,SILTY CLAY,BROWN 1.00m-6.00m CLAY SILTY,BROWN	1112m	West
GW110571	0.00m-1.00m FILL,SILTY CLAY,BROWN 1.00m-6.00m CLAY SILTY,BROWN	1146m	West
GW104081	0.00m-4.00m BROWN CLAY 4.00m-5.00m WHEATERED SHALE 5.00m-30.00m SHALE	1752m	South
GW104080	0.00m-6.00m BROWN CLAY 6.00m-7.00m WHEATERED SHALE 7.00m-30.00m SHALE	1942m	South

Geology

116-123 Kerrs Road, Mount Vernon, NSW 2178



Geology

116-123 Kerrs Road, Mount Vernon, NSW 2178

Geological Units 1:100,000

What are the Geological Units within the dataset buffer?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dist	Dir
Rwb	Shale, carbonaceous claystone,claystone, laminate, fine to medium-grained lithic sandstone, rare coal and tuff	Bringelly Shale	Wianamatta Group (undifferentiated)		Middle Triassic		Penrith	0m	On-site
Qal	Fine-grained sand, silt and clay				Quaternary		Penrith	762m	North East

Geological Structures 1:100,000

What are the Geological Structures within the dataset buffer?

Feature	Name	Description	Map Sheet	Distance	Direction
N/A	No records in buffer				

Geological Data Source : NSW Department of Industry, Resources & Energy

Naturally Occurring Asbestos Potential

116-123 Kerrs Road, Mount Vernon, NSW 2178

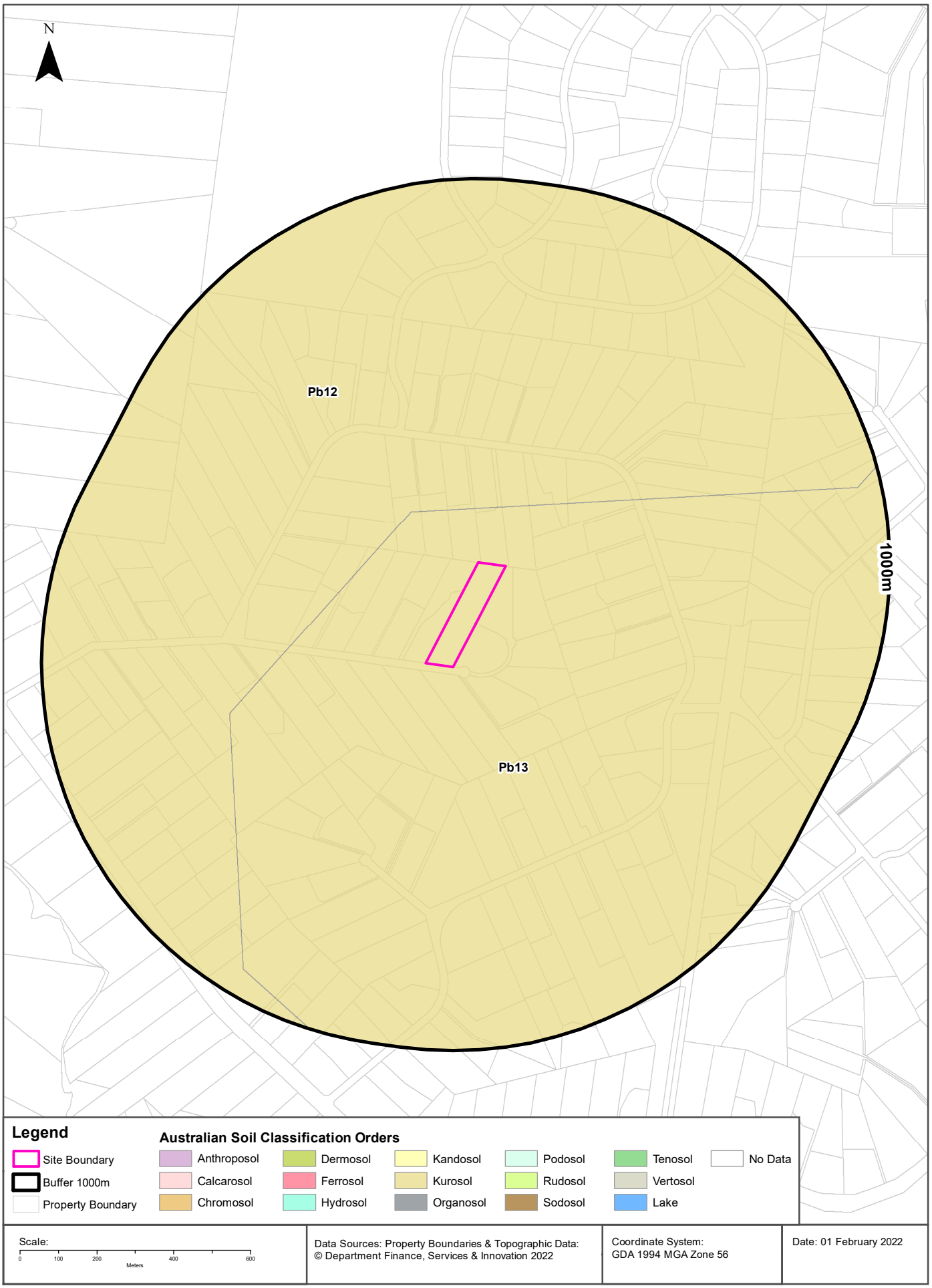
Naturally Occurring Asbestos Potential

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												

Atlas of Australian Soils

116-123 Kerrs Road, Mount Vernon, NSW 2178



Soils

116-123 Kerrs Road, Mount Vernon, NSW 2178

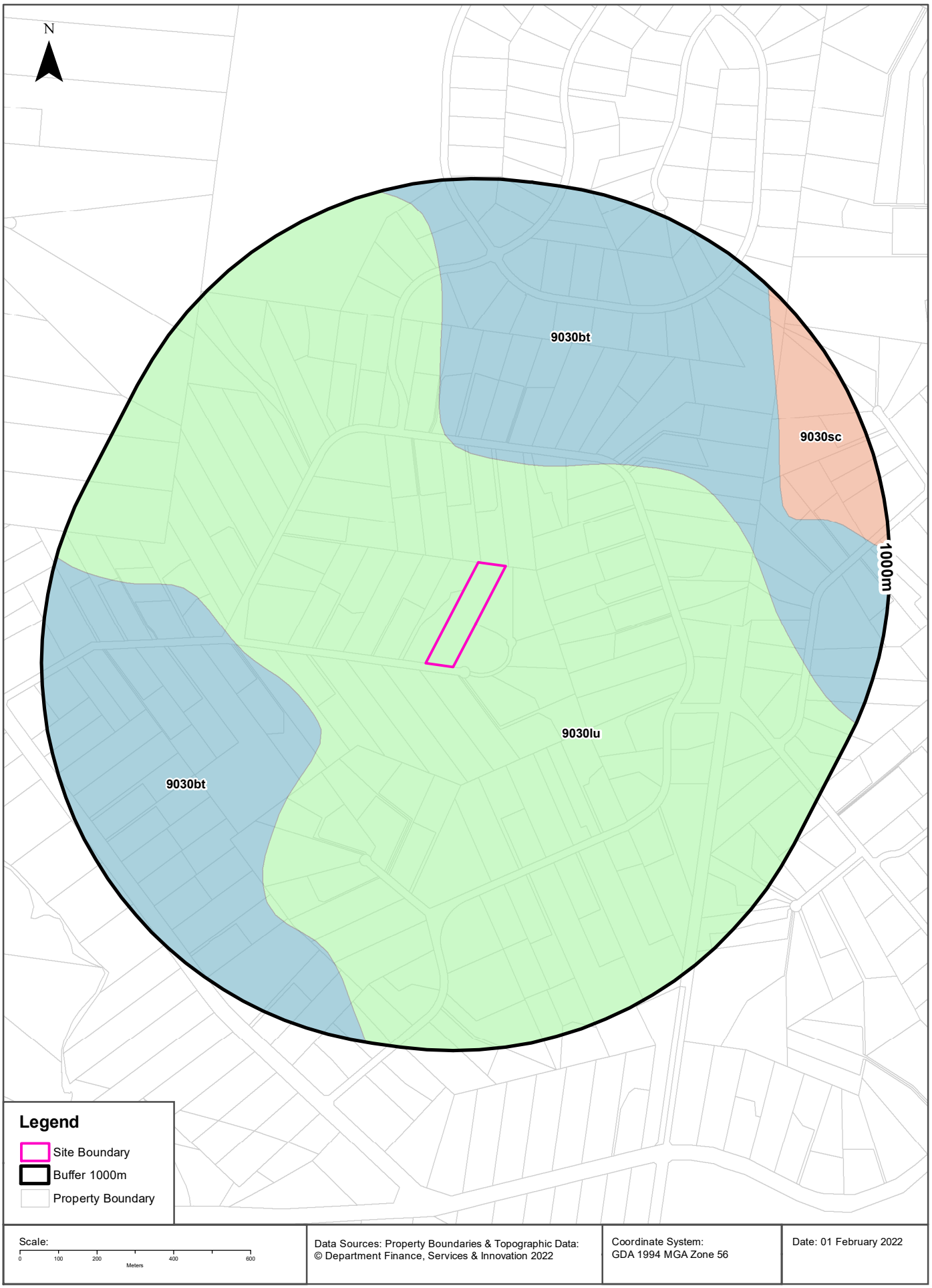
Atlas of Australian Soils

Soil mapping units and Australian Soil Classification orders within the dataset buffer:

Map Unit Code	Soil Order	Map Unit Description	Distance	Direction
Pb13	Kurosol	Ridge and valley country of gently undulating ridge tops and steep side slopes often with slumping, also rounded hilly to steep hilly areas and relatively narrow valleys: chief soils are hard acidic red soils (Dr2.21) with hard acidic yellow mottled soils (Dy3.41); in places some ironstone gravels occur in both these soils. Associated are hard neutral and alkaline red soils (Dr2.22 and Dr2.23) in saddles and some mid-slope positions; (Dy3.42 and Dy3.43) soils, usually in depressions; and small areas of undescribed soils in wet soaks and valley areas. Small areas of other soils are likely throughout.	0m	On-site
Pb12	Kurosol	Gently rolling to rounded hilly country with some steep slopes and broad valleys: chief soils are hard acidic red soils (Dr2.21) with hard neutral and acidic yellow mottled soils (Dy3.42 and Dy3.41) on lower slopes and in valleys. Associated are small areas of various soils including (Gn3.54) on some ridges, (Dr3.31) on some slopes; (Dr2.23) in saddles and some mid-slope positions, and some low- lying swampy areas of (Uf6) soils and (Uc1.2) soils with peaty surfaces. Small areas of other soils such as (Db1.2) are likely throughout.	142m	North West

Soil Landscapes of Central and Eastern NSW

116-123 Kerrs Road, Mount Vernon, NSW 2178



Soils

116-123 Kerrs Road, Mount Vernon, NSW 2178

Soil Landscapes of Central and Eastern NSW

Soil Landscapes of Central and Eastern NSW within the dataset buffer:

Soil Code	Name	Distance	Direction
9030lu	Luddenham	0m	On-site
9030bt	Blacktown	271m	North
9030sc	South Creek	736m	North East

Acid Sulfate Soils

116-123 Kerrs Road, Mount Vernon, NSW 2178

Environmental Planning Instrument - Acid Sulfate Soils

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

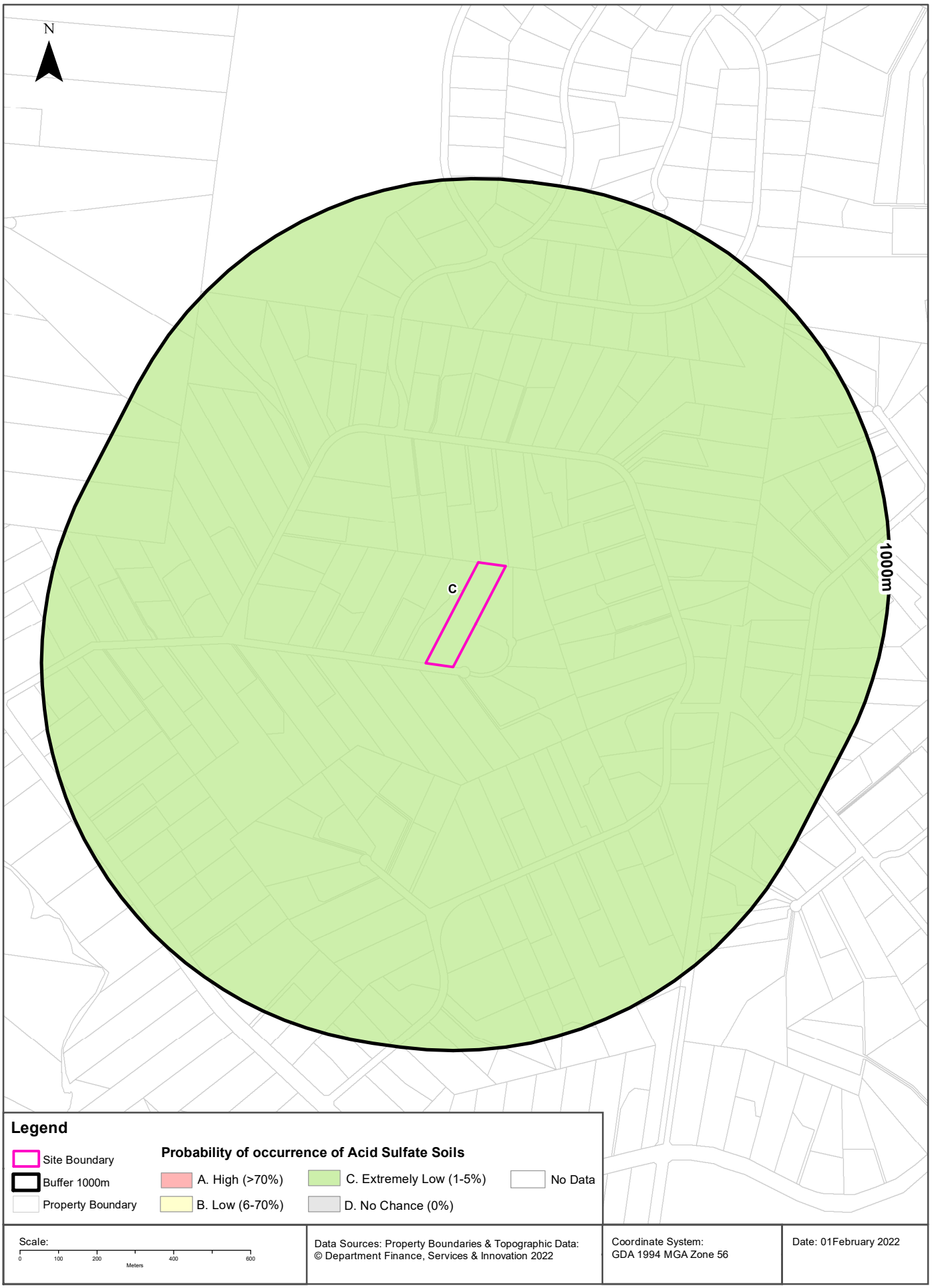
Soil Class	Description	EPI Name
N/A		

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

Soil Class	Description	EPI Name	Distance	Direction
N/A				

Atlas of Australian Acid Sulfate Soils

116-123 Kerrs Road, Mount Vernon, NSW 2178



Acid Sulfate Soils

116-123 Kerrs Road, Mount Vernon, NSW 2178

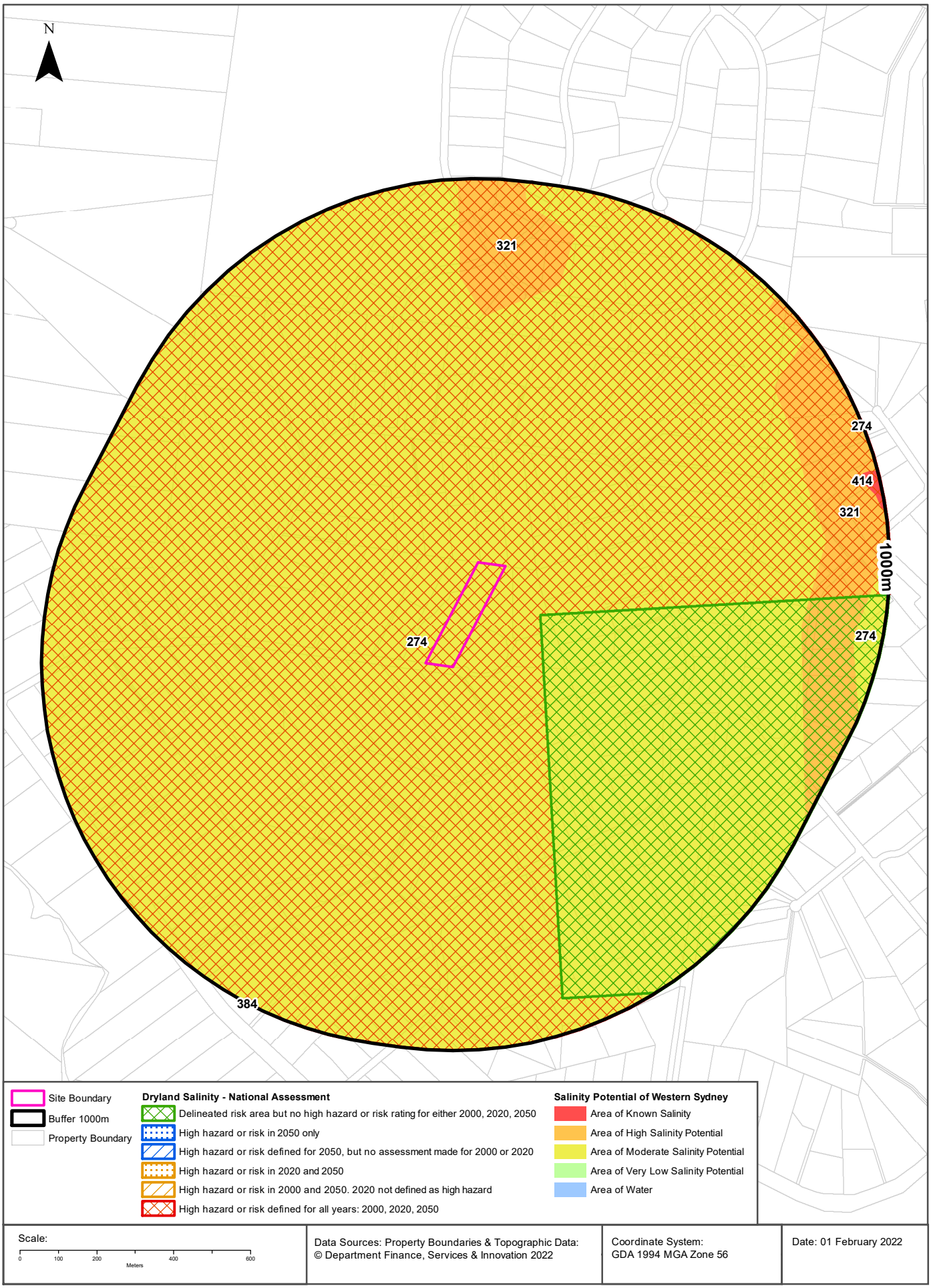
Atlas of Australian Acid Sulfate Soils

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

Class	Description	Distance	Direction
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	0m	On-site

Dryland Salinity

116-123 Kerrs Road, Mount Vernon, NSW 2178



Dryland Salinity

116-123 Kerrs Road, Mount Vernon, NSW 2178

Dryland Salinity - National Assessment

Is there Dryland Salinity - National Assessment data onsite?

Yes

Is there Dryland Salinity - National Assessment data within the dataset buffer?

Yes

What Dryland Salinity assessments are given?

Assessment 2000	Assessment 2020	Assessment 2050	Distance	Direction
High hazard or risk	High hazard or risk	High hazard or risk	0m	On-site
Delineated risk area but no high hazard or risk rating	Delineated risk area but no high hazard or risk rating	Delineated risk area but no high hazard or risk rating	137m	South East

Dryland Salinity Data Source : National Land and Water Resources Audit
The Commonwealth and all suppliers of source data used to derive the maps of "Australia, Forecast Areas Containing Land of High Hazard or Risk of Dryland Salinity from 2000 to 2050" do not warrant the accuracy or completeness of information in this product. Any person using or relying upon such information does so on the basis that the Commonwealth and data suppliers shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information. Any persons using this information do so at their own risk.
In many cases where a high risk is indicated, less than 100% of the area will have a high hazard or risk.

Dryland Salinity Potential of Western Sydney

Dryland Salinity Potential of Western Sydney within the dataset buffer?

Feature Id	Classification	Description	Distance	Direction
274	MODERATE	Area of Moderate Salinity Potential	0m	On-site
321	HIGH	Area of High Salinity Potential	643m	North East
414	SALT	Area of Known Salinity	954m	East
384	HIGH	Area of High Salinity Potential	999m	South West

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

Mining

116-123 Kerrs Road, Mount Vernon, NSW 2178

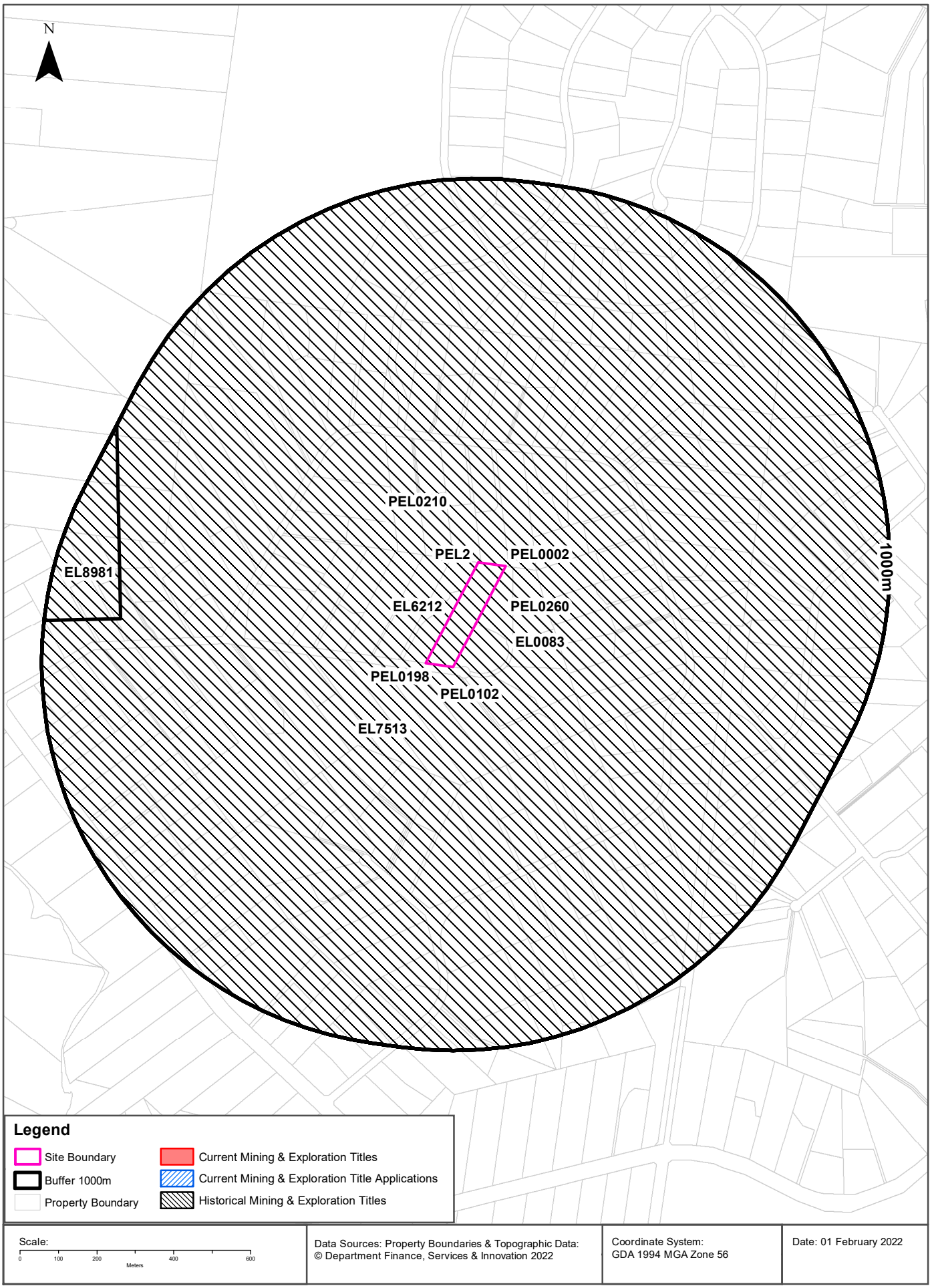
Mining Subsidence Districts

Mining Subsidence Districts within the dataset buffer:

District	Distance	Direction
There are no Mining Subsidence Districts within the report buffer		

Mining & Exploration Titles

116-123 Kerrs Road, Mount Vernon, NSW 2178



Mining

116-123 Kerrs Road, Mount Vernon, NSW 2178

Current Mining & Exploration Titles

Current Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Grant Date	Expiry Date	Last Renewed	Operation	Resource	Minerals	Dist	Dir
N/A	No records in buffer								

Current Mining & Exploration Titles Data Source: © State of New South Wales through NSW Department of Industry

Current Mining & Exploration Title Applications

Current Mining & Exploration Title Applications within the dataset buffer:

Application Ref	Applicant	Application Date	Operation	Resource	Minerals	Dist	Dir
N/A	No records in buffer						

Current Mining & Exploration Title Applications Data Source: © State of New South Wales through NSW Department of Industry

Mining

116-123 Kerrs Road, Mount Vernon, NSW 2178

Historical Mining & Exploration Titles

Historical Mining & Exploration Titles within the dataset buffer:

Title Ref	Holder	Start Date	End Date	Resource	Minerals	Dist	Dir
PEL0210	THE AUSTRALIAN GAS LIGHT COMPANY (AGL), NORTH BULLI COLLIERIES PTY LTD			PETROLEUM	Petroleum	0m	On-site
PEL0002	AGL UPSTREAM INVESTMENTS PTY LIMITED	29/03/1993	6/07/2015	PETROLEUM	Petroleum	0m	On-site
PEL2	AGL UPSTREAM INVESTMENTS PTY LIMITED			MINERALS		0m	On-site
PEL0260	NORTH BULLI COLLIERIES PTY LTD, AGL PETROLEUM OPERATIONS PTY LTD, THE AUSTRALIAN GAS LIGHT CO.	9/09/1981	8/03/1993	PETROLEUM	Petroleum	0m	On-site
PEL0198	JOHN STREVENS (TERRIGAL) NL			PETROLEUM	Petroleum	0m	On-site
PEL0102	AUSTRALIAN OIL AND GAS CORPORATION LTD			PETROLEUM	Petroleum	0m	On-site
EL6212	HOT ROCK ENERGY PTY LTD,LONGREACH OIL LIMITED	4 Mar 2004	3 Mar 2013	MINERALS	Geothermal	0m	On-site
EL7513	GRADIENT ENERGY LIMITED	7 Apr 2010	15 Apr 2011	MINERALS	Geothermal	0m	On-site
EL0083	CONTINENTAL OIL CO OF AUSTRALIA LIMITED	01 Feb 1967	01 Feb 1968	MINERALS		0m	On-site
EL8981	THE AUSTRAL BRICK CO PTY LTD			MINERALS		802m	West

State Environmental Planning Policy

116-123 Kerrs Road, Mount Vernon, NSW 2178

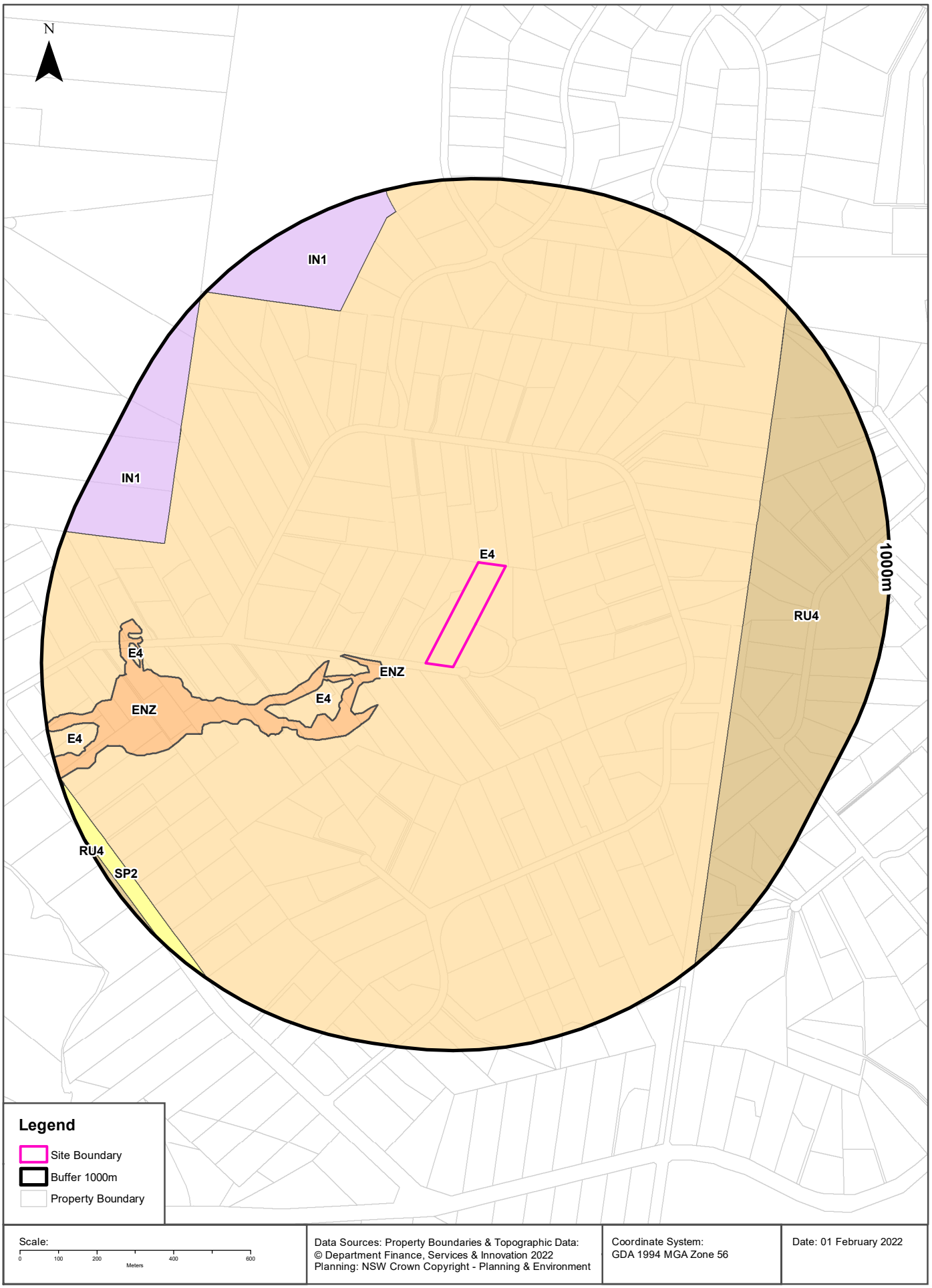
State Significant Precincts

What SEPP State Significant Precincts exist within the dataset buffer?

Map Id	Precinct	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
N/A	No records in buffer							

EPI Planning Zones

116-123 Kerrs Road, Mount Vernon, NSW 2178



Environmental Planning Instrument

116-123 Kerrs Road, Mount Vernon, NSW 2178

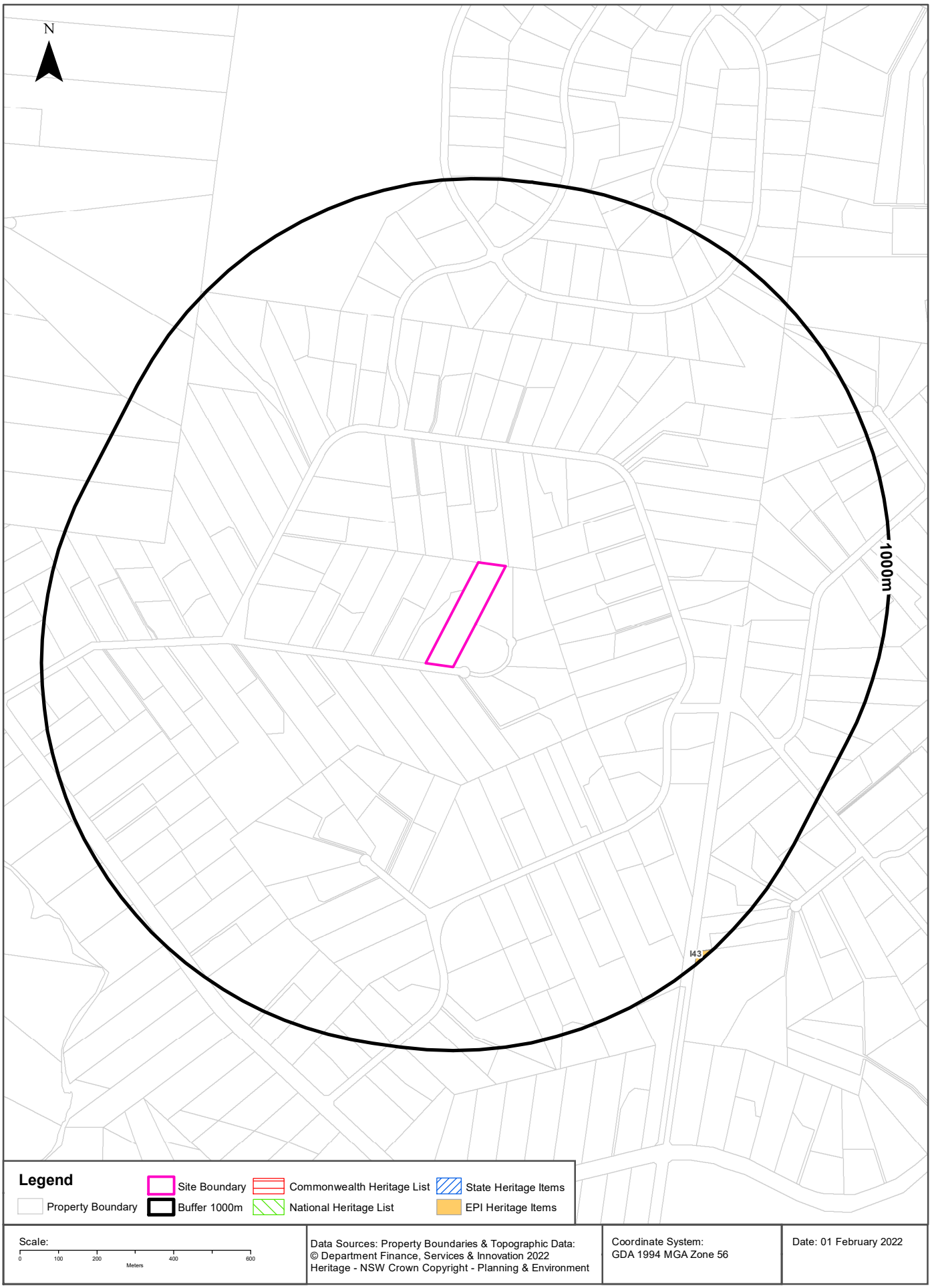
Land Zoning

What EPI Land Zones exist within the dataset buffer?

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
E4	Environmental Living		Penrith Local Environmental Plan 2010	11/09/2020	01/10/2020	31/03/2021	State Environmental Planning Policy (Western Sydney Aerotropolis) 2020	0m	On-site
ENZ	Environment and Recreation		State Environmental Planning Policy (Western Sydney Aerotropolis) 2020	11/09/2020	01/10/2020	11/09/2020		82m	South West
ENZ	Environment and Recreation		State Environmental Planning Policy (Western Sydney Aerotropolis) 2020	11/09/2020	01/10/2020	11/09/2020		110m	West
E4	Environmental Living		Penrith Local Environmental Plan 2010	11/09/2020	01/10/2020	31/03/2021	State Environmental Planning Policy (Western Sydney Aerotropolis) 2020	197m	South West
RU4	Primary Production Small Lots		Fairfield Local Environmental Plan 2013	17/05/2013	31/05/2013	24/09/2021		631m	East
E4	Environmental Living		Penrith Local Environmental Plan 2010	11/09/2020	01/10/2020	31/03/2021	State Environmental Planning Policy (Western Sydney Aerotropolis) 2020	744m	West
IN1	General Industrial		State Environmental Planning Policy (Western Sydney Employment Area) 2009	11/06/2020	11/06/2020	11/06/2020	State Environmental Planning Policy (Western Sydney Employment Area) Amendment 2020	748m	North West
E4	Environmental Living		Penrith Local Environmental Plan 2010	11/09/2020	01/10/2020	31/03/2021	State Environmental Planning Policy (Western Sydney Aerotropolis) 2020	867m	West
SP2	Infrastructure	Classified Road	Penrith Local Environmental Plan 2010	11/09/2020	01/10/2020	31/03/2021	State Environmental Planning Policy (Western Sydney Aerotropolis) 2020	945m	South West
RU4	Primary Production Small Lots		Penrith Local Environmental Plan 2010	18/12/2020	18/12/2020	31/03/2021	Amendment No 33	985m	South West

Heritage Items

116-123 Kerrs Road, Mount Vernon, NSW 2178



Heritage

116-123 Kerrs Road, Mount Vernon, NSW 2178

Commonwealth Heritage List

What are the Commonwealth Heritage List Items located within the dataset buffer?

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

National Heritage List

What are the National Heritage List Items located within the dataset buffer?
Note. Please click on Place Id to activate a hyperlink to online website.

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

State Heritage Register - Curtilages

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

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

Environmental Planning Instrument - Heritage

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

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I43	Inter-war Spanish mission house	Item - General	Local	Fairfield Local Environmental Plan 2013	17/05/2013	31/05/2013	04/09/2020	974m	South East

Natural Hazards - Bush Fire Prone Land

116-123 Kerrs Road, Mount Vernon, NSW 2178

Data Sources: Bush Fire Prone Land: © NSW Rural Fire Service 2022. Property Boundaries: © Department Finance, Services & Innovation 2022

Coordinate System: GDA 1994 MGA Zone 56

Date: 01 February 2022

Natural Hazards

116-123 Kerrs Road, Mount Vernon, NSW 2178

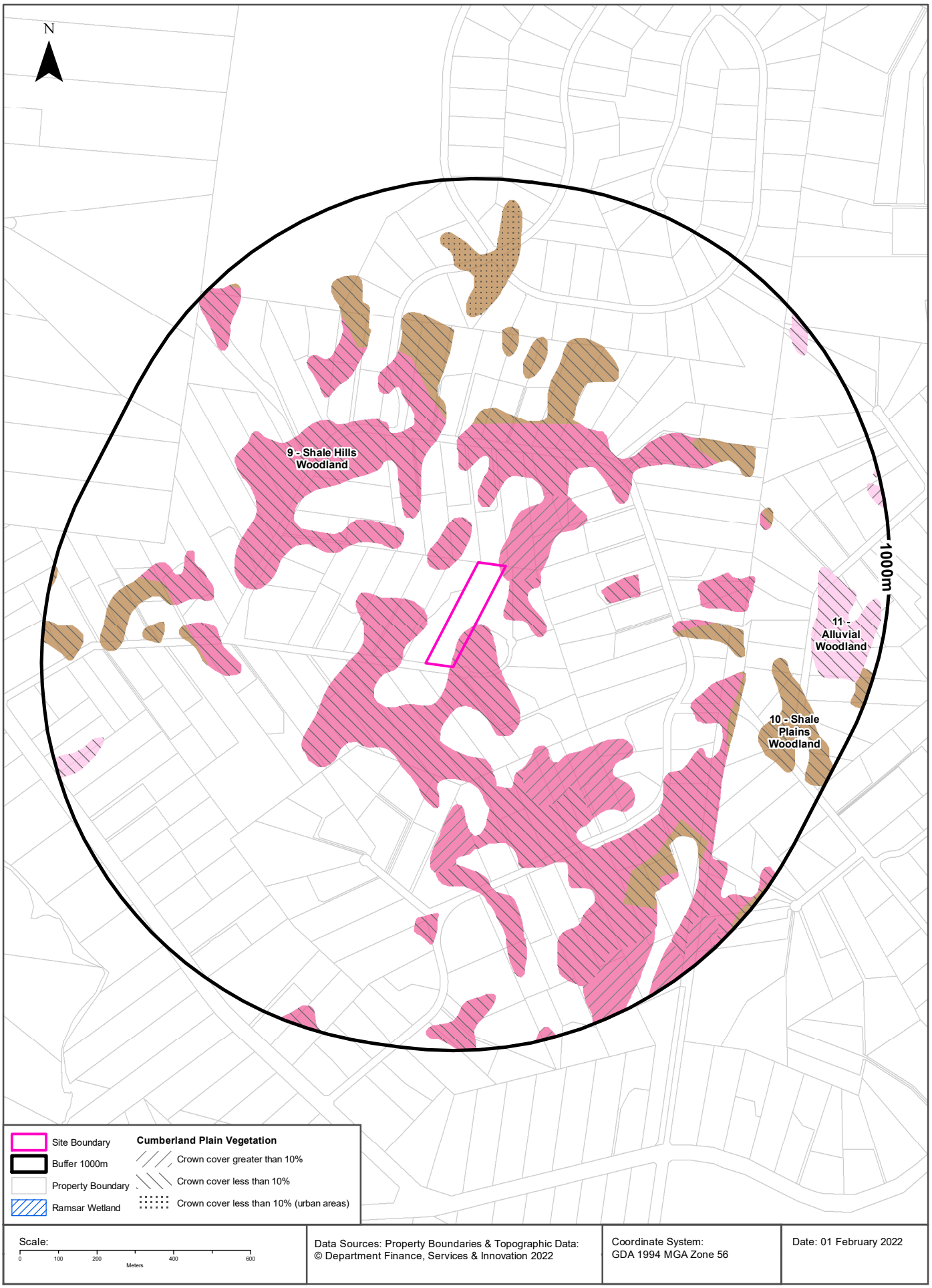
Bush Fire Prone Land

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

Bush Fire Prone Land Category	Distance	Direction
Vegetation Buffer	63m	South
Vegetation Category 2	93m	South West
Vegetation Category 1	847m	South East

Ecological Constraints - Vegetation & Ramsar Wetlands

116-123 Kerrs Road, Mount Vernon, NSW 2178



Ecological Constraints

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Remnant Vegetation of the Cumberland Plain

What remnant vegetation of the Cumberland Plain exists within the dataset buffer?

Description	Crown Cover	Distance	Direction
9 - Shale Hills Woodland	Crown cover less than 10%	0m	On-site
9 - Shale Hills Woodland	Crown cover greater than 10%	0m	On-site
10 - Shale Plains Woodland	Crown cover less than 10%	360m	North
10 - Shale Plains Woodland	Crown cover less than 10% (urban areas)	637m	North
11 - Alluvial Woodland	Crown cover less than 10%	811m	East
11 - Alluvial Woodland	Crown cover greater than 10%	959m	East

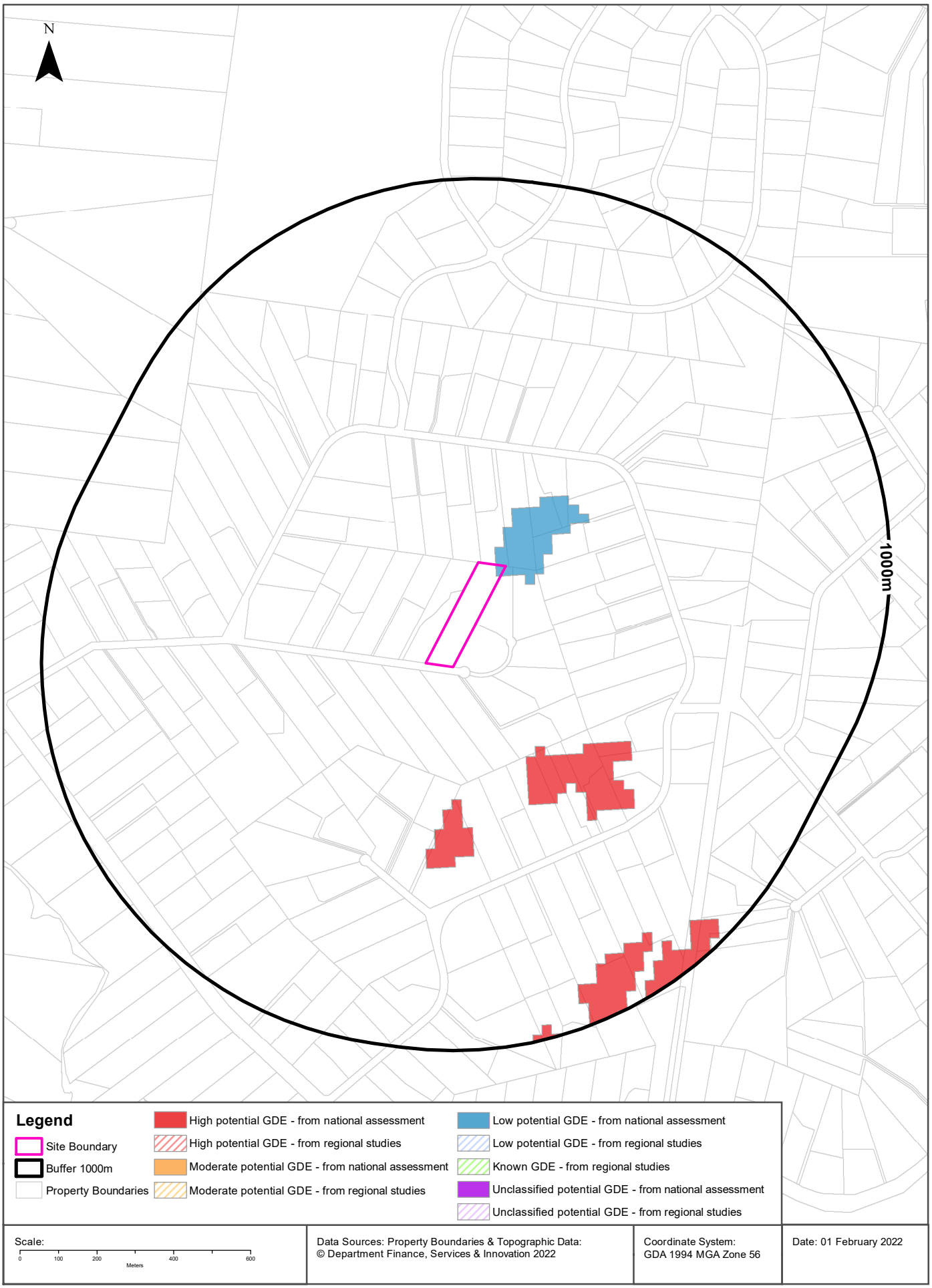
Ramsar Wetlands

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					

Ecological Constraints - Groundwater Dependent Ecosystems Atlas

116-123 Kerrs Road, Mount Vernon, NSW 2178



Ecological Constraints

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Groundwater Dependent Ecosystems Atlas

Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Terrestrial	Low potential GDE - from national assessment	Undulating to low hilly country, mainly on shale.	Vegetation	Consolidated sedimentary	0m	On-site
Terrestrial	High potential GDE - from national assessment	Undulating to low hilly country, mainly on shale.	Vegetation	Consolidated sedimentary	296m	South East

Ecological Constraints - Inflow Dependent Ecosystems Likelihood

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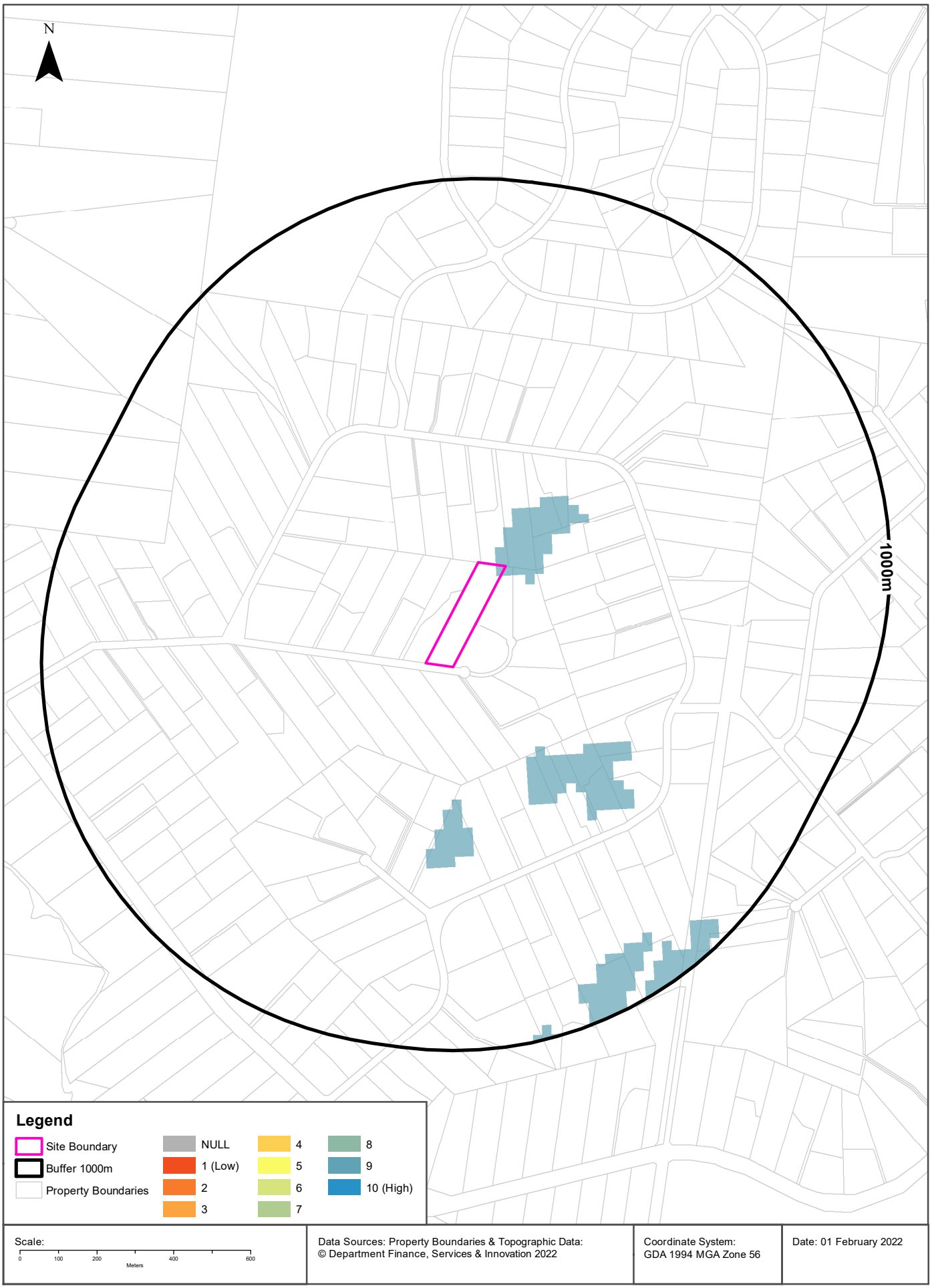

Ecological Constraints

116-123 Kerrs Road, Mount Vernon, NSW 2178

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance	Direction
Terrestrial	9	Undulating to low hilly country, mainly on shale.	Vegetation	Consolidated sedimentary	0m	On-site

Ecological Constraints

116-123 Kerrs Road, Mount Vernon, NSW 2178

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	Litoria aurea	Green and Golden Bell Frog	Endangered	Not Sensitive	Vulnerable	
Animalia	Aves	Anseranas semipalmata	Magpie Goose	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Not Sensitive	Critically Endangered	
Animalia	Aves	Apus pacificus	Fork-tailed Swift	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	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	Callocephalon fimbriatum	Gang-gang Cockatoo	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Calyptorhynchus banksii samueli	Red-tailed Black-Cockatoo (inland subspecies)	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Calyptorhynchus lathami	Glossy Black-Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Certhionyx variegatus	Pied Honeyeater	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Chthonicola sagittata	Speckled Warbler	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Circus assimilis	Spotted Harrier	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Falco subniger	Black Falcon	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Gallinago hardwickii	Latham's Snipe	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Glossopsitta pusilla	Little Lorikeet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Haliaeetus leucogaster	White-bellied Sea-Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hieraaetus morphnoides	Little Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hirundapus caudacutus	White-throated Needletail	Not Listed	Not Sensitive	Vulnerable	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Hirundo rustica	Barn Swallow	Not Listed	Not Sensitive	Not Listed	ROKAMBA;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	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	Neophema pulchella	Turquoise Parrot	Vulnerable	Category 3	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Ninox connivens	Barking Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Ninox strenua	Powerful Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Oxyura australis	Blue-billed Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Petroica phoenicea	Flame Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pezoporus wallicus wallicus	Eastern Ground Parrot	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Pluvialis squatarola	Grey Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Rostratula australis	Australian Painted Snipe	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Stagonopleura guttata	Diamond Firetail	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Stictonetta naevosa	Freckled Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Todiramphus chloris	Collared Kingfisher	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Tringa nebularia	Common Greenshank	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tyto novaehollandiae	Masked Owl	Vulnerable	Category 3	Not Listed	
Animalia	Gastropoda	Meridolum corneovirens	Cumberland Plain Land Snail	Endangered	Not Sensitive	Not Listed	
Animalia	Mammalia	Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	Falsistrellus tasmaniensis	Eastern False Pipistrelle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus australis	Little Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus orianae oceanensis	Large Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Myotis macropus	Southern Myotis	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Phascolarctos cinereus	Koala	Vulnerable	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	Caretta caretta	Loggerhead Turtle	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Chelonia mydas	Green Turtle	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Acacia pubescens	Downy Wattle	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Argyrotegium nitidulum	Shining Cudweed	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Callistemon linearifolius	Netted Bottle Brush	Vulnerable	Category 3	Not Listed	
Plantae	Flora	Cynanchum elegans	White-flowered Wax Plant	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Dichanthium setosum	Bluegrass	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Dillwynia tenuifolia		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Dillwynia tenuifolia		Endangered Population, 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	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
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	Isotoma fluviatilis subsp. fluviatilis		Not Listed	Not Sensitive	Extinct	
Plantae	Flora	Macadamia integrifolia	Macadamia Nut	Not Listed	Not Sensitive	Vulnerable	
Plantae	Flora	Marsdenia viridiflora subsp. viridiflora	Native Pear	Endangered Population	Not Sensitive	Not Listed	
Plantae	Flora	Persoonia nutans	Nodding Geebung	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Pimelea curviflora var. curviflora		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Pimelea spicata	Spiked Rice-flower	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Pultenaea parviflora		Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Pultenaea pedunculata	Matted Bush-pea	Endangered	Not Sensitive	Not Listed	

Data does not include NSW category 1 sensitive species.

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LC Code	Location Confidence
Premise Match	Georeferenced to the site location / premise or part of site
Area Match	Georeferenced to an approximate or general area
Road Match	Georeferenced to a road or rail corridor
Road Intersection	Georeferenced to a road intersection
Buffered Point	A point feature buffered to x metres
Adjacent Match	Land adjacent to a georeferenced feature
Network of Features	Georeferenced to a network of features
Suburb Match	Georeferenced to a suburb boundary
As Supplied	Spatial data supplied by provider

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