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ENVIRONMENTAL SITE ASSESSMENT

LEONAY PARADE, LEONAY NSW

PREPARED FOR:	PreTech Pty Ltd
REFERENCE:	REF-18-7058-A1
DATE:	19th March 2019

CONTROLLED DOCUMENT

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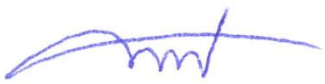	
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EXECUTIVE SUMMARY

EnviroTech Pty. Ltd. was engaged by PreTech Pty Ltd to conduct an Environmental Site Assessment at Leonay Parade, Leonay NSW 2750 (hereafter referred to as the site). The investigation is part of a development application for proposed residential developments.

The total area of the site is approximately 22.5 Ha in size which was the main golf course, however the area of investigation was limited to the southern portion of the main golf course 2020 m^2. The area of investigation for this report was limited to the southern portion of the site which is approximately 2020 m^2, wherein the proposed development is to take place. The area was nominated based on the potential building envelope of the proposed development as only the portion of the site to have construction processes taking place onsite. The remaining portion of the golf course was not being changed in regard to this development.

A site inspection was carried out on Monday 19th November 2018 which involved a visual assessment of the accessible areas of the site and surrounding areas as well as the acquisition of representative soil samples. 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.

This report was completed in accordance with the *Guidelines for Consultants Reporting on Contaminated Sites, NSW EPA, September 2000*.

Based on the data and evidence collected during the site inspection and site history review, the findings of the Environmental Site Assessment are as follows:

1. On Monday 19th November 2018, a site inspection was conducted by Envirotech consultant Jack Hinchliffe;
2. At the time of inspection, the site consisted of a large golf course with a main building towards the north-east of site. The area of investigation consisted of a small portion of area at the southern portion of site, the area was occupied by trees and underlying soil consisted of suspected fill;
3. The following area of concern were identified:
    - The underlying soils surrounding the area of investigation has the potential to be comprised of unknown fill material.
4. The site was first developed before 1943;
5. The site is not listed by the EPA;
6. There is a risk that contaminants associated with the potential fill material includes: Heavy Metals, BTEX, Phenols, TRH, PAH, and OC/OP Pesticides.
7. Based on the available information, a targeted sampling plan was considered most appropriate to provide sufficient characterisation data. A total of six (6) test pits were nominated across the area of investigation (Figure 3); which was limited to the area of the proposed development and calculated through the Sampling Design Guidelines (NSW EPA, 1995) based on a site of approximately 2020 m^2, which is the size of the area of the proposed development.
8. Soil chemical concentrations of samples were analysed by ALS Environmental Division;
9. Soil chemical concentrations were below the thresholds of the adopted human health and ecological assessment criteria for residential land use as specified under the NEPM (2013);
10. As soil samples indicated all samples were detected below the adopted site assessment criteria. The soil does not require remedial actions and is considered that the site can be used for the proposed works.

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1. INTRODUCTION

1.1 Background

EnviroTech Pty. Ltd. was engaged by PreTech Pty Ltd to conduct an Environmental Site Assessment at Leonay Parade, Leonay NSW 2750 (hereafter referred to as the site). The investigation is part of a development application for proposed residential developments.

The total area of the site is approximately 22.5 Ha in size which was the main golf course, however the area of investigation was limited to the southern portion of the main golf course 2020 m^2. The area of investigation for this report was limited to the southern portion of the site which is approximately 2020m^2, wherein the proposed development is to take place. The area was nominated based on the potential building envelope of the proposed development as only the portion of the site to have construction processes taking place onsite. The remaining portion of the gold course was not being changed in regard to this development.

A site inspection was carried out on Monday 19th November 2018 which involved a visual assessment of the accessible areas of the site and surrounding areas as well as the acquisition of representative soil samples. 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.

This report was completed in accordance with the *Guidelines for Consultants Reporting on Contaminated Sites, NSW EPA, September 2000*.

1.2 Objectives

The objectives of this PSI were to:

1. Identify past and present potentially contaminating activities;
2. Identify potential contaminants of concern;
3. Provide a preliminary assessment of the condition of the site and potential for contamination; and
4. Assess the need for further investigation.

1.3 Scope of Works

The scope of works included the following:

1. Acquisition and review of available data comprising;
    - Cadastre & Topography
    - Aerial Imagery
    - EPA Contaminated Land
    - EPA Records of Notice
    - National Waste
    - Groundwater Bores
    - Geology & Soils
    - Planning Zones
2. A review of past and current site uses;
3. A review of past and current adjacent site uses;
4. A site inspection;

5. *Supplementary* soil sampling and analysis; and
6. Reporting in accordance with the associated legislations and guidelines.

1.4 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:

1. *Protection of the Environment Operations Act* (1997);
2. *Protection of the Environment Operations Regulation* (2008);
3. *Contaminated Land Management Act* (1998).

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

1. *Guidelines for the NSW Site Auditor Scheme* (NSW DEC, 2006).
2. *Guidelines for Consultants Reporting on Contaminated Sites* (NSW EPA, 2000).
3. *Guidelines on the Investigation Levels for Soil and Groundwater*, National Environmental Protection Measure 1999, 2013 Amendment (NEPC, 2013).
4. Australian Standard AS 4482.1 *Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds.*
5. Australian Standard AS 4482.2 *Guide to the sampling and investigation of potentially contaminated soil. Part 2: Volatile substances.*
6. *Sampling Design Guidelines* (NSW EPA, 1995).
7. *Waste Classification Guidelines Part 1: Classifying Waste* (NSW DECCW, 2014).
8. *Guidelines for Implementing the Protection of the Environment Operations (Underground*
9. *Petroleum Storage Systems) Regulation* 2008 (NSW DECCW, 2009).
10. *Guidelines for the Assessment and Management of Groundwater Contamination* (NSW DEC, 2007).

1.5 Context of report

This report is to be read in its entirety and should not be review in individual section to provide any level of information independently. Each section of the report relates to the rest of the document and as such is to be read in conjunction, including its appendices and attachments.

2. SITE IDENTIFICATION

The study site is Leonay Parade, Leonay NSW 2750 (Lot 1100 DP1217686) (Figure 1). It can be identified as an irregularly shaped allotment north of Leonay Parade. Figure 2 shows an aerial photograph of the site and the surrounding land.

Table 1: Site Identification.

Street Address	Leonay Parade, Leonay NSW 2750
Lot and DP Number	Lot 1100 DP1217686
Approx. Site Area	22.5 Ha
Local Government Area	Penrith City Council
Zoning	RE1 – Public Recreation RE2 - Private Recreation
LGA Legislation	Penrith Local Environmental Plan 2010

Figure 1: Site location map (NSW Spatial Information Exchange).

3. PROPOSED DEVELOPMENT

The investigation will accompany a proposed development application for proposed new residences.

Figure 2: Aerial photograph of the site, surrounding land, and area of investigation (blue). (PhotoMaps by nearmap).

4. SITE DESCRIPTION

4.1 Site inspection

On Monday 19th November 2018, a site inspection was conducted by Envirotech consultant Jack Hinchliffe. 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, the site consisted of a large golf course with a main building towards the north-east of site. The area of investigation consisted of a small portion of area at the southern portion of site, the area was occupied by trees and underlying soil consisted of suspected fill.

4.2 Surrounding Land Use

The site is located within a mixed residential/recreational setting and bordered by:

- Residential buildings north, east and west of site;
- Jamison Creek 9m north of site;
- Leonay Oval 14m north of site;
- M4 Western Motorway 272m north of site;
- Pamela Parade Reserve 274m east of site;
- Leonay Public School 21m east of site;
- Leonay Centre 174m south-east of site;
- Leonay Parade Reserve 241 m south of site;
- Nepean river 102m east of site;
- Tributaries of Nepean river flowing easterly through the southern portion of site;
- Skarratt Park 358m south-west of site;

4.3 Topography

The site occupies a relatively flat but gentle southward facing slope.

4.4 Geology and Soils

The department of environment soil map shows the site is within a Richmond Soil Landscape characterised by a quaternary terrace of the Nepean and Georges Rivers. Mainly flat (slopes <1%). Splays and levees provide local relief (<3 m). Tree cover, now almost completely cleared, was formerly a low open woodland (dry sclerophyll). Soils generally consist of loose reddish-brown loamy sand transitioning to brown mottled stiff medium-heavy clay.

4.5 Surface Water Hydrology

No groundwater or distinct overland flow paths were noted during the investigation. Stormwater is expected to infiltrate into soils or sheet into the stormwater drainage system at Leonay Parade South.

4.6 Hydrogeology

A search of the State Department of Primary Industries Groundwater map showed three (3) groundwater works within 500m of the site.

Table 2: Summary of Groundwater Bore Search.

GW Bore ID	Intended Purpose	Depth (m bgl)	Standing Water Level Zone (m bgl)	Water Bearing Zone
GW075122	Monitoring	300 m	180 m	Sandstone
GW075123	Monitoring	175 m	58 m	Sandstone
GW100215	Domestic	17 m	---	N/A

4.7 Acid Sulphate Soils

The site is not located in an Acid Sulfate Class soil area.

5. PRELIMINARY CONCEPTUAL SITE MODEL (PCSM)

5.1 Areas of Concern

- The underlying soils surrounding the area of investigation has the potential to be comprised of unknown fill material.

Table 2 identifies the main Areas of Environmental Concern (AECs), and their associated Contaminants of Concern (COCs), using the information gathered through this assessment and qualitative judgement based on consultant experience.

Table 2: Areas of Environmental Concern *(*Derived from AS 4482.1-2005 and consultant experience).*

AEC	Potentially Contaminating Activity	Contaminants of Concern	Likelihood of Contamination**
Underlying soils impacted by unknown fill material.	Potentially contaminated fill material.	• Heavy Metals • Hydrocarbons • OC/OP Pesticides	Possible

5.2 Receptors and Sensitive Environments

Surrounding residential properties, residents of the future development, member using the golf course and construction workers during the construction process are the main receptors. Sensitive environments would include the bushland which surrounds the site in all directions. Sensitive environments would include Jamison Creek 9m north, Leonay Oval 14m north, Pamela Parade Reserve 274m east, Leonay Public School 21m east, Leonay Centre 174m south-east, Leonay Parade Reserve 241 m south, Nepean river 102m east, Tributaries of Nepean river flowing easterly through the southern portion of site and Skarratt Park 358m south-west of site.

5.3 Potential for Migration and Exposure of Contaminants

There is potential for contaminates within underlying soils to migrate via groundwater as stormwater infiltration and transport any contaminates such as heavy metals through the water column. Exposure routes of contaminants could potentially be through dermal and oral contact of soils and shallow groundwater. These risks will most likely be at its highest risk potential during any earthworks or construction onsite.

6. SITE RECORDS

A search of Leonay Parade, Leonay, NSW 2750 on the following records was undertaken by Jack Hinchliffe. A full list of recorded sites within a 1 km radius is provided within (Appendix C).

6.1 List of NSW Contaminated Sites - Notified to the EPA

- Woolworth's Service Station – Address: 283 Great Western Highway, Emu Plains – Activity: Service Station – Management Class: Regulation under CLM Act not required – Location: 911m North.

6.2 List of NSW Contaminated Sites - Record of Notices

- No records in buffer.

6.3 National Waste Management Site Database

- No records in buffer.

6.4 List of Current EPA Licensed Activities

- Sydney Trains – Address: PO Box K349, Haymarket NSW 1238 – Activity: Railway systems activities– Location: 629m West.

6.5 Delicensed Activities still regulated by the EPA

- No records in buffer.

6.6 Former Licensed Activities under the POEO Act 1997 now surrendered

- Licence # 4653. Luhrman Environment Management PTY LTD – Other Activities / Non-Scheduled Activity - Application of Herbicides;
- Licence # 4838. Robert Orchard – Other Activities / Non-Scheduled Activity - Application of Herbicides; and
- Licence # 6630. Sydney Weed and Pest Management Pty Ltd – Other Activities / Non-Scheduled Activity - Application of Herbicides.

6.7 Historical Business Directories Premise Match

- No records in buffer

6.8 Historical Business Directories Road Match

- Langblen, M – Location: Western Road, Emu Plains – Activity: Motor Service Stations, Petrol, Oil Etc. – Year: 1961;
- Opel Motors – Location: Western Highway. Emu Plains – Activity: Motor Garages &/or Engineers – Years: 1970-1961; and
- Rouggos, G – Location: Western Road, Emu Plains – Activity: Motor Service Stations, Petrol, Oil Etc. – Year: 1961.

6.9 Section 10.7 Certificate

- A search of the section 10.7 certificate has not been undertaken. A review of the certificate with regards to Matters arising under the Contaminated Land Management Act 1997 and the Contaminated Land Management Amendment Act 2008 should be undertaken concurrently with the review of this report.

7. SITE HISTORY

7.1 Aerial Photographs

A review of aerial photographs provided by Lot Search Pty Ltd (Appendix C) was undertaken. The results of which are summarized in Table 3.

Table 3: Findings of the historical photograph review

Year	Description
1943	• Low resolution black and white photo; • Site appears to be unoccupied but maybe already utilized as a golf course; • Market garden east of site; and • Possibly residential allotments to the north and south.
1955	• Low resolution black and white photo; • Sand mounds may be present surrounding site in areas which may occupy the golf course; and • No major changes to site and surrounds.
1961	• Low resolution black and white photo; and • No major changes to site and surrounds.
1965	• Low resolution black and white photo; • No major changes to site; and • Market gardens north-east of site have been removed and a new road has been built.
1970	• Low resolution black and white photo; • No major changes to site; and • Majority of market gardens eats of site have been removed and replaced by residential housing;
1982	• Moderate resolution colour photo; • Site is clearly now utilized as a golf course; • Currently existing golf course club is now present north of site; and • All previous market gardens have been removed and replaced by residential allotments east of site.
1991	• Moderate resolution colour photo; • Trees have been planted on the area within the site boundaries; and • Further residential developments east of site.
2002	• Moderate resolution colour photo; • Majority of site is now covered in trees that have been planted on the area within the site boundaries; and • Golf course club house paved road has extended north-west.
2009	• High resolution colour photo; • No significant changes to site; and • No significant changes surrounding site.

7.2 Information Gaps

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

1. Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a road or an area, within the dataset buffer 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;
2. Inferences have been drawn based on 'point in time' aerial photographs;
3. No information pertaining to the site pre-1943 was available; and

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.

8. SOIL SAMPLING AND ANALYSIS

8.1 Data Quality Objectives

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

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

8.2 Define the Problem

The underlying soils onsite have the potential to be comprised of unknown fill material and therefore potentially contaminated.

8.3 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?

8.4 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.

8.5 Define the Study Boundaries

The study site is Leonay Parade, Leonay NSW 2750 (Lot 1100 DP1217686) (Figure 1). It can be identified as an irregularly shaped allotment north of Leonay Parade.

8.6 Develop a Decision Rule

Soil analytical data were assessed against National Environmental Protection Measure (NEPM) criteria as identified 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.

8.7 Specify Limits of Decision Errors

Data generated during the project must be appropriate to allow decisions to be made with confidence. The acceptable limit on decision error is 95 % compliance with data quality indicators.

8.8 Optimize Design for Obtaining Data

Based on the available information, a targeted sampling plan was considered most appropriate to provide sufficient characterisation data. A total of six (6) test pits were nominated across the area of investigation (Figure 3), which was limited to the area of the proposed development and calculated through the Sampling Design Guidelines (NSW EPA, 1995) based on a site of approximately 2020m^2, which is the size of the area of the proposed development.

8.9 Soil Sample Methodology

Soil samples were collected on Monday 19th November 2018 via test pitting. Samples were collected from approximately 500 mm depth using a simple mattock. No Groundwater was encountered in soil profile samples.

During the collection of soil samples, any features such as seepage, discoloration, staining, odours, or other physical indicators of contamination were noted. All site work was undertaken by Jack Hinchliffe, Environmental Scientist of Envirotech. Soil Samples were transferred directly from the test pits into laboratory supplied 250 mL sample jars sealed with Teflon lids. The samples were stored in a chilled esky and transferred to ALS Environmental Division under stringent chain of custody (COC) procedures.

8.10 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 3 below providing a diverse range of analytes:

Table 4: Analytical Schedule.

Sample ID	Location	Analytes
TP1-6	Top 500mm of potential fill material within the area of investigation (Figure 3).	• Heavy Metals • Hydrocarbons • Phenols • OC/OPs

Figure 3: Site sampling plan showing location of the six (6) test pits (yellow). (enhanced image Appendix B).

9. SITE ASSESSMENT CRITERIA

Concentrations of contaminants in soil samples were compared against the National Environmental Protection Council (2013) site assessment criteria presented below and summarised in Table 4:

1. *Health Investigation Levels (HIL) for Soil Contaminants – Residential A;*
2. *Soil Health Screening Levels (HSL) for Vapour Intrusion – Residential A & B;*
3. *Management Limits for TRH Fractions F1-F4 in Soil - Residential, Parkland and Public Open Space (Fine Grained Soils); and*
4. *Health Screening Levels for Asbestos Contamination in Soil – Residential A with accessible soil also includes children's day care centres, preschools and primary schools.*

Table 4: Adopted Human Health Based Soil Criteria and Hydrocarbon Management Limits (all units in mg/kg)

	Limit of Reporting	Health Screening Levels	Environmental Screening Levels	Management Limits
METALS AND INORGANICS				
Arsenic	5.0	100	100	-
Cadmium	1.0	20	-	-
Chromium	2.0	100	-	-
Copper	5.0	6,000	-	-
Nickel	2.0	400	-	-
Lead	5.0	300	-	-
Zinc	5.0	7,400	-	-
Mercury	0.1	40	-	-
PAH				
BaP (TEQ)	0.5	3	0.7	-
Total PAH	0.5	300		-
BTEX				
Benzene	0.2	0.6	65	-
Toluene	0.5	390	105	-
Total Xylenes	0.5	95	45	-
Naphthalene	1	4	170	-
PHENOLS				
Phenol	0.5	3,000	-	-
Pentachlorophenol	2.0	100	-	-
Cresols	0.5	400	-	-
TRH				
F1 C6 – C10	10	230	180	800
F2 > C10 – C16	50	180	120	1,000
F3 > C16 – C34	100	-	1300	3,500

F4 > C34 – C40	50	-	5600	10,000
ASBESTOS				
Bonded ACM	0.01%		0.01%	
Friable ACM	0.001%		0.001%	
Visible ACM			No visible ACM	
OC AND OP PESTICIDES				
DDT+DDE+DDD	0.05	240	-	
Aldrin and dieldrin	0.05	6	-	
Chlordane	0.05	50	-	
Endosulfan	0.05	270	-	
Endrin	0.05	10	-	
Heptachlor	0.05	6	-	
HCB	0.05	10	-	
Methoxychlor	0.05	300	-	
Mirex	0.05	10	-	
Toxaphene	0.05	20	-	

10. QUALITY ASSURANCE / QUALITY CONTROL

10.1 Site Procedures

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

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

10.2 Laboratory

The following is an extract from the quote for service provided by ALS Environmental Division.

"ALS has a comprehensive QA/QC program. Our QA/QC procedures are designed to provide reliable and defensible analytical results. Our analytical services are based on internal QCS3 schedule, which includes Laboratory Control Samples (LCS), Method Blanks (MB), Matrix Spikes (MS), Laboratory Duplicates (Dups) and Surrogates (for target organics) where applicable, at frequencies at or above that detailed in the 1999 NEPM guidelines.

The basis of the QCS3 Schedule is the 'analytical lot' (process analytical batch) of samples. Generally, the laboratory processes samples of similar matrices in groups called 'Lots'. 'Lots' are made up of 20 samples that may consist of several discrete batches, and may be independent of project and / or client. The selection of samples for QC purposes will be biased towards the larger batches within the process lot" ...

The following summarizes the frequency that QC samples are processed:

1. 5% Method Blanks (MB) –1 analyzed within each process lot of 20 samples.
2. 10% Laboratory Duplicates (Dups) –2 analyzed within each process lot of 20 samples.
3. 5% Laboratory Control Samples (LCS) –1 analyzed within each process lot of 20 samples.
4. 5% Matrix Spikes (MS) – 1 analyzed within each process lot of 20 samples (except for dioxins).
5. Surrogate Spikes on all 'target' organics analyses.

10.3 QA/QC Results

10.3.1 Site

1. All soil samples arrived at ALS Environmental within specified holding times;
2. All soil samples arrived at ALS Environmental within specified temperature requirements;
3. No potential OHS incidents were recorded on site;
4. No quality assurance incidents (such as cross contamination or similar) were recorded.

10.3.2 Lab

ALS Environmental Division provided a Quality Control Report and Interpretive Quality Control Report (Appendix D). Those Quality Control Reports contain the following information:

1. A Laboratory Duplicate (DUP) Report - referring to a randomly selected intra-laboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. For all matrices, no Duplicate outliers occurred.
2. A Method Blank (MB) Report - referring 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. For all matrices, no Method Blank outliers occurred.
3. Laboratory Control Spike (LCS) Report - referring 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. For all matrices, no Laboratory Control outliers occurred.
4. A Matrix Spike (MS) Report – referring to an intra-laboratory 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. For all matrices, no Matrix Spike outliers occurred.
5. An Analysis Holding Time Compliance Report - No Analysis Holding Time outliers exist.
6. A Frequency of Quality Control Samples Report - No Quality Control Frequency Outliers exist.

10.4 QA/QC Conclusions

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

The NATA certified laboratory reports indicate that the laboratory was generally achieving levels of performance within its recommended control limits during the period when the samples from this program were analyzed.

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

11. RESULTS

11.1 Areas of Concern

The following areas of environmental concern were identified:

- The underlying soils surrounding the area of investigation has the potential to be comprised of unknown fill material.

11.2 Soil Laboratory Results

Detailed laboratory reports and chain of custody documentation are provided in Appendix D. Laboratory results are summarized in Table 5 and discussed in the following sections in relation to the adopted assessment criteria. The results were as follows:

1. HEAVY METALS: All samples were reported by the laboratory to have concentrations below the adopted site assessment criteria.
2. TRH: All samples were reported by the laboratory to have concentrations below the adopted site assessment criteria.
3. BTEX: All samples were reported by the laboratory to have concentrations below the adopted site assessment criteria.
4. PAH: All samples were reported by the laboratory to have concentrations below the adopted site assessment criteria.
5. OC/OP Pesticides: All samples were reported by the laboratory to have concentrations below the adopted site assessment criteria.
6. PHENOLS: All samples were reported by the laboratory to have concentrations below the adopted site assessment criteria.

Table 5: Summary of soil sample results from site investigation

Analyte	NSW DEC Health-based Investigation Levels, HIL A (mg/kg)	Ecological Screening Level – urban residential and public open space	Maximum concentration detected (mg/kg)	Average concentration detected (mg/kg)	95% UCL	Acceptability
Metals and Inorganics						
Arsenic	100	N/A	8	6.8	N/A	Acceptable
Cadmium	20	N/A	N/D	N/D	N/A	Acceptable
Chromium (IV)	100	N/A	25	19	N/A	Acceptable
Copper	6,000	N/A	19	16.3	N/A	Acceptable
Lead	300	N/A	25	22.3	N/A	Acceptable
Mercury	40	N/A	N/D	N/D	N/A	Acceptable
Nickel	400	N/A	9	7.8	N/A	Acceptable
Zinc	7400	N/A	60	50	N/A	Acceptable
Total Recoverable Hydrocarbons (TRH)						
F1 C6-C10	230	120	N/D	N/D	N/A	Acceptable
F2 C10-C16	180	180	N/D	N/D	N/A	Acceptable
F3 C16-C34	2500	1300	N/D	N/D	N/A	Acceptable
F4 C34-C40	10000	5600	N/D	N/D	N/A	Acceptable
BTEX						
Benzene	0.6	65	N/D	N/D	N/A	Acceptable
Toulene	390	105	N/D	N/D	N/A	Acceptable
Ethylbenzene	10	70	N/D	N/D	N/A	Acceptable
Xylenes (total)	95	45	N/D	N/D	N/A	Acceptable
Naphthalene	4	170	N/D	N/D	N/A	Acceptable
Polyaromatic Hydrocarbons (PAHs)						
Benzo(a)pyrene	3	0.7	N/D	N/D	N/A	Acceptable
Total PAH	300	N/A	N/D	N/D	N/A	Acceptable
OC and OP Pesticides						
DDT+DDE+DDD	240	240	N/D	N/D	N/A	Acceptable
Aldrin and dieldrin	6	6	N/D	N/D	N/A	Acceptable
Chlordane	50	50	N/D	N/D	N/A	Acceptable
Endosulfan	270	270	N/D	N/D	N/A	Acceptable
Endrin	10	10	N/D	N/D	N/A	Acceptable
Heptachlor	6	6	N/D	N/D	N/A	Acceptable
HCB	10	10	N/D	N/D	N/A	Acceptable

Methoxychlor	300	300	N/D	N/D	N/A	Acceptable
Total Recoverable Hydrocarbons (TRH)-Management Levels						
Phenol	3000	3000	N/D	N/D	N/A	Acceptable
Pentachlorophenol	100	100	N/D	N/D	N/A	Acceptable

ND = Non-Detect N/A = Not Applicable

All soil samples tested were reported by the laboratory to have chemical concentrations below the adopted site assessment criteria for HIL A, residential site use as per the NEPM, 2013

12. DISCUSSION

12.1 Soil Laboratory Results

All soil samples tested were reported by the laboratory to have chemical concentrations below the adopted site assessment criteria for HIL A, residential site use as per the NEPM, 2013.

12.2 Potential Risks to Onsite Receptors

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

- The site is privately owned;
- The site is not publicly accessible; and
- The contaminants tested for have indicated concentrations BELOW the adopted site assessment threshold.

12.3 Recommendations

As soil samples indicated all samples were detected below the adopted site assessment criteria. The soil does not require remedial actions and is considered that the site can be used for the proposed works.

13. CONCLUSIONS

Based on the data and evidence collected during the site inspection and site history review, the findings of the Environmental Site Assessment are as follows:

1. On Monday 19th November 2018, a site inspection was conducted by Envirotech consultant Jack Hinchliffe;
2. At the time of inspection, the site consisted of a large golf course with a main building towards the north-east of site. The area of investigation consisted of a small portion of area at the southern portion of site, the area was occupied by trees and underlying soil consisted of suspected fill;
3. The following area of concern were identified:
    - The underlying soils surrounding the area of investigation has the potential to be comprised of unknown fill material.
4. The site was first developed before 1943;
5. The site is not listed by the EPA;
6. There is a risk that contaminants associated with the potential fill material includes: Heavy Metals, BTEX, Phenols, TRH, PAH, and OC/OP Pesticides.
7. Based on the available information, a targeted sampling plan was considered most appropriate to provide sufficient characterisation data. A total of six (6) test pits were nominated across the area of investigation (Figure 3);.
8. Soil chemical concentrations of samples were analysed by ALS Environmental Division;
9. Soil chemical concentrations were below the thresholds of the adopted human health and ecological assessment criteria for residential land use as specified under the NEPM (2013);
10. As soil samples indicated all samples were detected below the adopted site assessment criteria. The soil does not require remedial actions and is considered that the site can be used for the proposed works.

14. LIMITATIONS STATEMENT

EnviroTech Pty. Ltd. Pty. Ltd. has undertaken the following report in accordance with the scope of works set out between EnviroTech Pty. Ltd. and the client. EnviroTech 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, EnviroTech 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. EnviroTech 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. Envirotech 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. Envirotech cannot be held liable for third party reliance on this document.

Envirotech'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. Envirotech Pty Ltd has limited its investigation to the scope agreed upon with its client.

15. REFERENCES AND LEGISLATION

- *Guidelines for the NSW Site Auditor Scheme* (NSW DEC, 2006).
- *Guidelines for Consultants Reporting on Contaminated Sites* (NSW EPA, 2000).
- *Guidelines on the Investigation Levels for Soil and Groundwater*, National Environmental Protection Measure 1999, 2013 Amendment (NEPC, 2013).
- Australian Standard AS 4482.1 *Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds.*
- Australian Standard AS 4482.2 *Guide to the sampling and investigation of potentially contaminated soil. Part 2: Volatile substances.*
- *Sampling Design Guidelines* (NSW EPA, 1995).
- *Waste Classification Guidelines Part 1: Classifying Waste* (NSW DECCW, 2014).
- *Guidelines for Implementing the Protection of the Environment Operations (Underground*
- *Petroleum Storage Systems) Regulation* 2008 (NSW DECCW, 2009).
- *Guidelines for the Assessment and Management of Groundwater Contamination* (NSW DEC, 2007).
- NSW Spatial Information Exchange (http://maps.six.nsw.gov.au/)
- NSW Espade (http://www.environment.nsw.gov.au/eSpadeWebapp/)

APPENDIX A: SITE PHOTOS

Area of investigation facing south-west.

Area of investigation facing north-east.

Building material present indicating potential fill material comprising site.

Areas of gravel present with potential fill material within area of investigation.

APPENDIX B: SAMPLING PLAN

LEGEND:
Site Boundary
Other Fences
Landform Element
Watercourses, Dams
Overland Flow Path
Surface Spray Sprinkler
Irrigation Pipework
Soil Borehole
Photo Location
Building Area
Land App. Area
Paved Area

envirotech
Environmental and Engineering Consultancy Services

Wastewater | Contamination | Geotechnical
Stormwater | Ecology | Occupational Hygiene
Bushfire | Acoustic & Noise

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T: 1300 888 324 | (02) 9896 1568

TITLE: Leonay Parade Site Map
SHEET SIZE: A4
SCALE: NTS
CLIENT: PreTech Pty Ltd.
PROJECT: Leonay Parade, Leonay NSW (Penrith LGA)
SHEET: 1/1
DATE: 20/11/2018
PROJECT REF / DRAWING NUMBER: DWG-18-7058-A

APPENDIX C: LOT SEARCH

LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 19 Nov 2018 18:19:23

Reference: LS004652 EP

Address: Leonay Parade, Leonay, NSW 2750

Table of Contents

Location Confidences

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

LC Code	Location Confidence
Premise match	Georeferenced to the site location / premise or part of site
General area or suburb match	Georeferenced with the confidence of the general/approximate area
Road match	Georeferenced to the road or rail
Road intersection	Georeferenced to the road intersection
Feature is a buffered point	Feature is a buffered point
Land adjacent to geocoded site	Land adjacent to Georeferenced Site
Network of features	Georeferenced to a network of features

Dataset Listing

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

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	Dept. Finance, Services & Innovation	19/11/2018	19/11/2018	Daily	-	-	-	-
Topographic Data	Dept. Finance, Services & Innovation	17/07/2018	17/07/2018	As required	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	19/11/2018	19/11/2018	Monthly	1000	0	0	1
Contaminated Land Records of Notice	Environment Protection Authority	13/11/2018	13/11/2018	Monthly	1000	0	0	0
Former Gasworks	Environment Protection Authority	06/11/2018	06/11/2018	Monthly	1000	0	0	0
National Waste Management Facilities Database	Geoscience Australia	06/11/2018	07/03/2017	Quarterly	1000	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	06/11/2018	06/11/2018	Monthly	2000	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	11/01/2018	11/01/2018	As required	1000	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	01/11/2018	01/11/2018	Monthly	1000	0	0	1
Delicensed POEO Activities still Regulated by the EPA	Environment Protection Authority	01/11/2018	01/11/2018	Monthly	1000	0	0	0
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	01/11/2018	01/11/2018	Monthly	1000	0	0	3
UPSS Environmentally Sensitive Zones	Environment Protection Authority	14/04/2015	12/01/2010	As required	1000	1	1	1
UBD Business to Business Directory 1991 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business to Business Directory 1991 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business to Business Directory 1986 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business to Business Directory 1986 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1982 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1982 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1970 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1970 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1961 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1961 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory 1950 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1950 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500	0	0	0
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500	-	0	4
Points of Interest	Dept. Finance, Services & Innovation	12/10/2018	12/10/2018	Quarterly	1000	0	0	29
Tanks (Areas)	Dept. Finance, Services & Innovation	15/10/2018	15/10/2018	Quarterly	1000	0	0	0
Tanks (Points)	Dept. Finance, Services & Innovation	15/10/2018	15/10/2018	Quarterly	1000	0	0	1

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Major Easements	Dept. Finance, Services & Innovation	12/10/2018	12/10/2018	Quarterly	1000	0	0	8
State Forest	Dept. Finance, Services & Innovation	18/01/2018	18/01/2018	As required	1000	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	18/01/2018	30/09/2017	Annually	1000	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000	1	2	2
Botany Groundwater Management Zones	NSW Department of Primary Industries	15/03/2018	01/10/2005	As required	1000	0	0	0
Groundwater Boreholes	NSW Dept. of Primary Industries - Water NSW; Commonwealth of Australia (Bureau of Meteorology)	24/07/2018	23/07/2018	Annually	2000	0	0	54
Geological Units 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	1	-	4
Geological Structures 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	0	-	4
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000	0	0	0
Soil Landscapes	NSW Office of Environment & Heritage	12/08/2014		None planned	1000	1	-	5
Atlas of Australian Soils	CSIRO	19/05/2017	17/02/2011	As required	1000	1	2	4
Environmental Planning Instrument - Acid Sulfate Soils	NSW Department of Planning and Environment	23/10/2018	12/10/2018	As required	500	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000	1	2	3
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1000	0	0	1
Dryland Salinity Potential of Western Sydney	NSW Office of Environment & Heritage	12/05/2017	01/01/2002	None planned	1000	1	1	5
Mining Subsidence Districts	Dept. Finance, Services & Innovation	13/07/2017	01/07/2017	As required	1000	0	0	0
SEPP 14 - Coastal Wetlands	NSW Planning and Environment	17/12/2015	24/10/2008	Annually	1000	0	0	0
SEPP 26 - Littoral Rainforest	NSW Planning and Environment	17/12/2015	05/02/1988	Annually	1000	0	0	0
SEPP 71 - Coastal Protection	NSW Planning and Environment	17/12/2015	01/08/2003	Annually	1000	0	0	0
SEPP Major Developments 2005	NSW Planning and Environment	09/03/2013	25/05/2005	Under Review	1000	0	0	0
SEPP Strategic Land Use Areas	NSW Planning and Environment	01/08/2017	28/01/2014	Annually	1000	0	0	1
EPI - Land Zoning	NSW Planning and Environment	23/10/2018	12/10/2018	Quarterly	1000	1	3	46
EPI - Minimum Lot Size	NSW Planning and Environment	23/10/2018	12/10/2018	Quarterly	0	0	-	-
EPI - Height of Buildings	NSW Planning and Environment	23/10/2018	12/10/2018	Quarterly	0	0	-	-
EPI - Floor Space Ratio	NSW Planning and Environment	23/10/2018	12/10/2018	Quarterly	0	0	-	-
EPI - Land Application	NSW Planning and Environment	23/10/2018	12/10/2018	Quarterly	0	1	-	-
EPI - Land Reservation Acquisition	NSW Planning and Environment	23/10/2018	12/10/2018	Quarterly	0	0	-	-
State Heritage Register - Curtilages	NSW Office of Environment & Heritage	18/10/2018	19/01/2018	Quarterly	1000	0	0	0
Environmental Planning Instrument - Heritage	NSW Department of Planning and Environment	10/09/2018	27/07/2018	Quarterly	1000	0	1	22
Bush Fire Prone Land	NSW Rural Fire Service	08/08/2018	31/07/2018	Quarterly	1000	0	0	3
Remnant Vegetation of the Cumberland Plain	NSW Office of Environment & Heritage	07/10/2014	04/08/2011	Unknown	1000	1	2	13
RAMSAR Wetlands	Commonwealth of Australia Department of the Environment	08/10/2014	24/06/2011	As required	1000	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	4
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	4

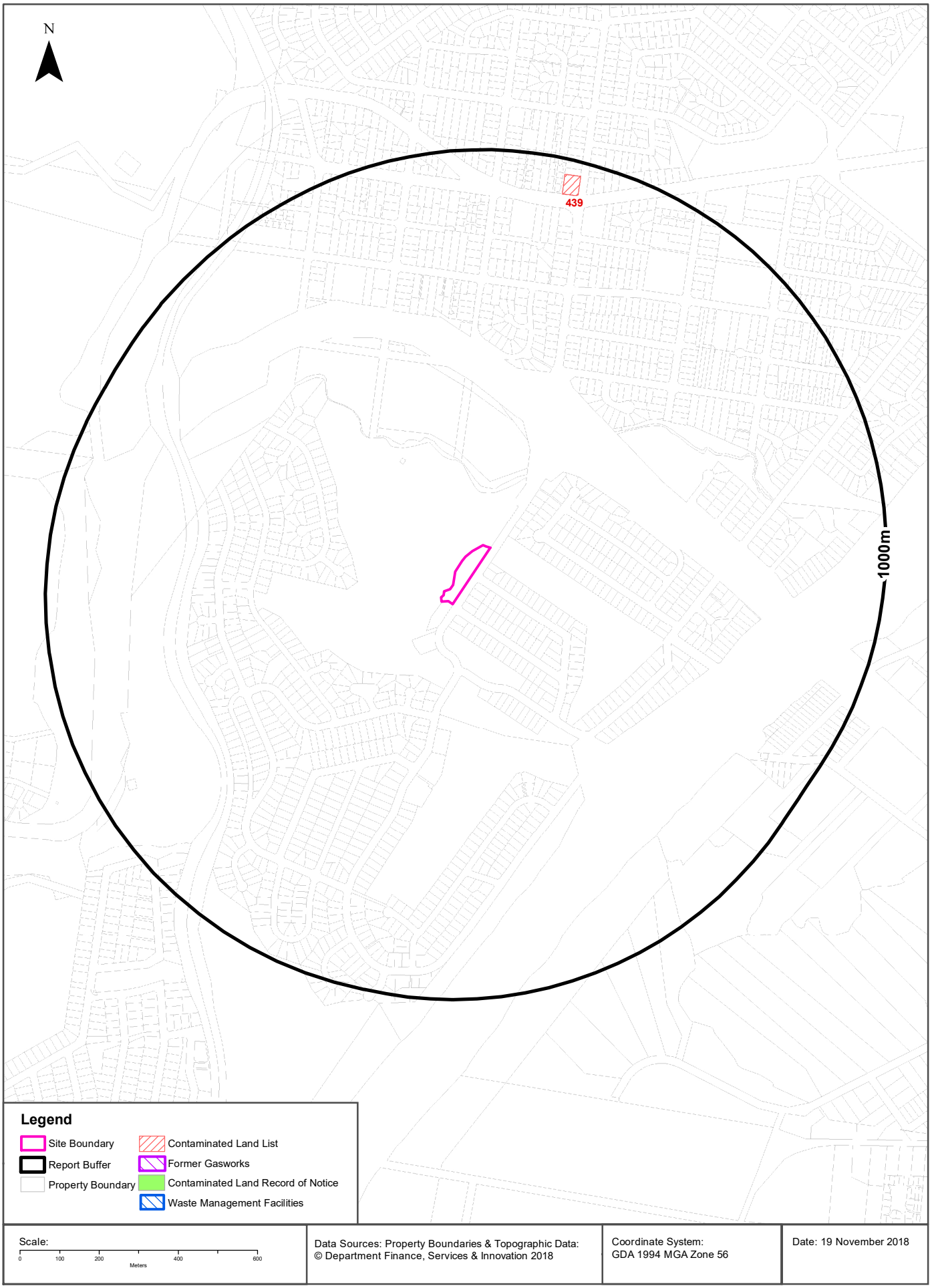
Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	13/11/2018	13/11/2018	Daily	10000	-	-	-

Aerial Imagery 2018

Leonay Parade, Leonay, NSW 2750

Contaminated Land & Waste Management Facilities

Leonay Parade, Leonay, NSW 2750



Contaminated Land & Waste Management Facilities

Leonay Parade, Leonay, NSW 2750

List of NSW contaminated sites notified to EPA

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

Map Id	Site	Address	Suburb	Activity	Management Class	Status	Location Confidence	Dist (m)	Direction
439	Woolworths Service Station	283 Great Western Highway	Emu Plains	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	911m	North

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 & Waste Management Facilities

Leonay Parade, Leonay, NSW 2750

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

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

National Waste Management Site Database

Sites on the National Waste Management Site Database within the dataset buffer:

Site Id	Owner	Name	Address	Suburb	Class	Landfill	Reprocess	Transfer	Comments	Loc Conf	Dist (m)	Direction
N/A	No records in buffer											

Waste Management Facilities Data Source: Geoscience Australia

EPA PFAS Investigation Program

Leonay Parade, Leonay, NSW 2750

EPA PFAS Investigation Program

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

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

EPA PFAS Investigation Program: Environment Protection Authority

EPA Other Sites with Contamination Issues

Leonay Parade, Leonay, NSW 2750

EPA Other Sites with Contamination Issues

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

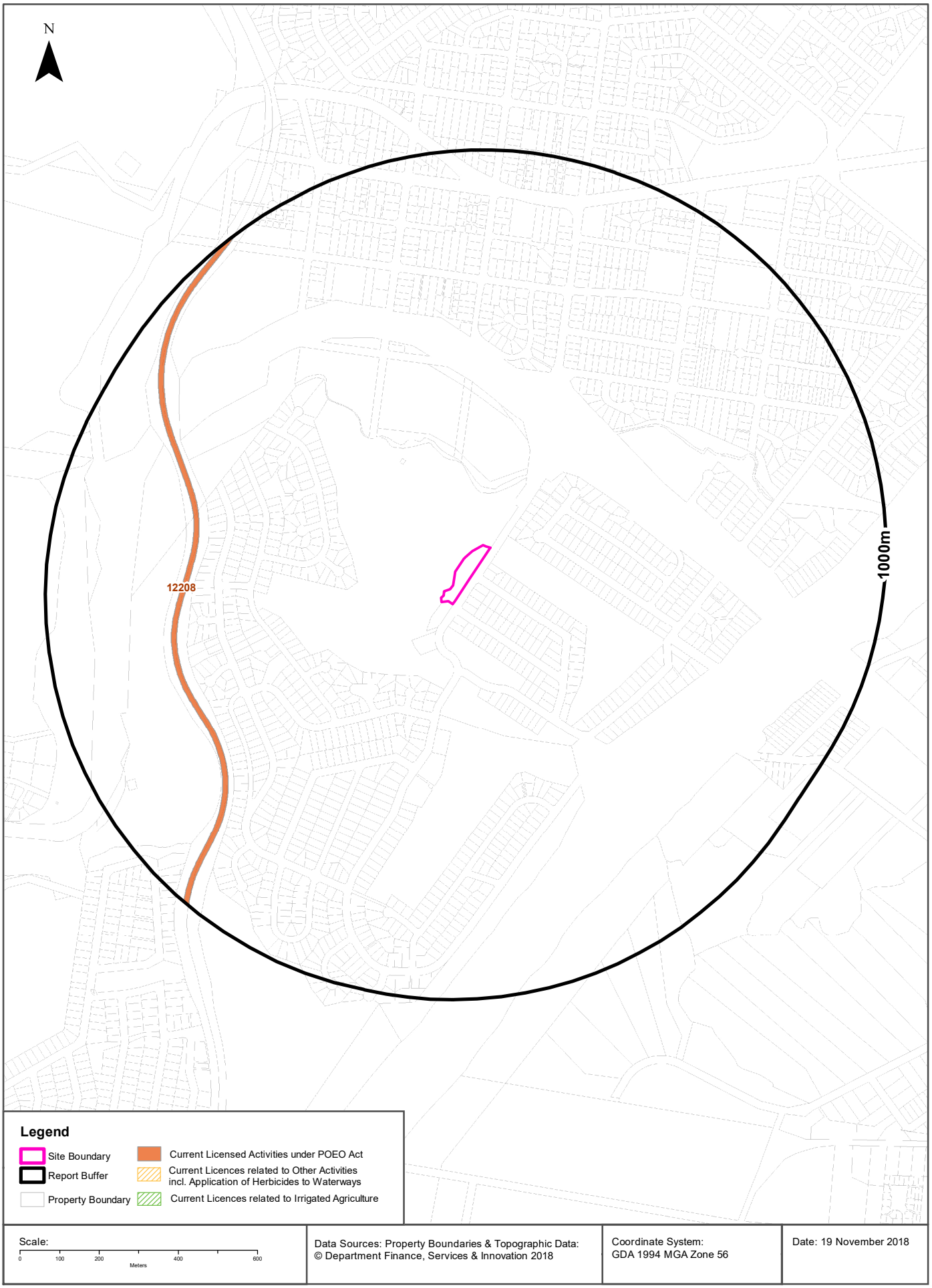
- James Hardie asbestos manufacturing and waste disposal sites
- Radiological investigation sites in Hunter's Hill

Sites within the dataset buffer:

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

Current EPA Licensed Activities

Leonay Parade, Leonay, NSW 2750



EPA Activities

Leonay Parade, Leonay, NSW 2750

Licensed Activities under the POEO Act 1997

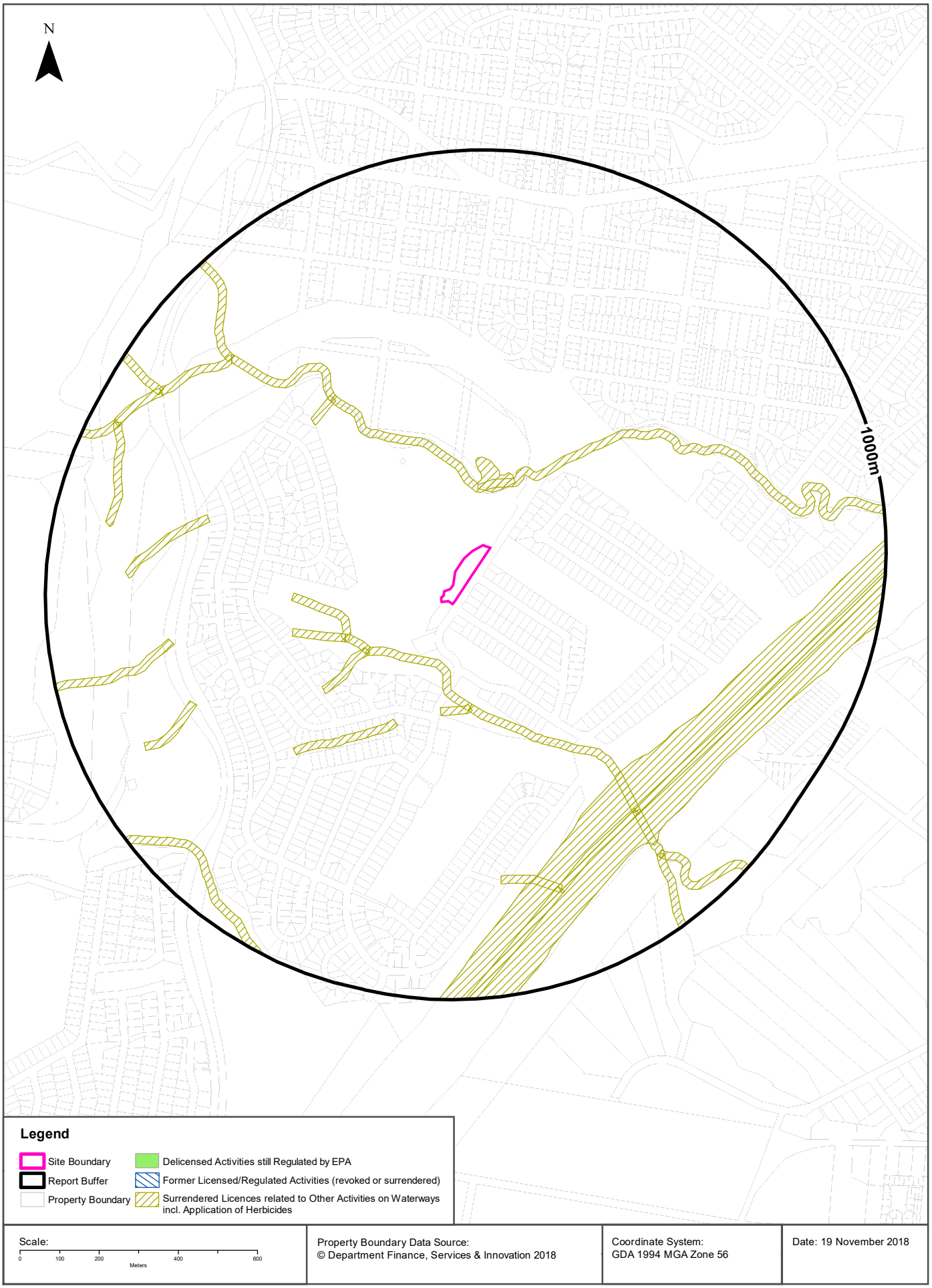
Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
12208	SYDNEY TRAINS		PO BOX K349, HAYMARKET, NSW 1238		Railway systems activities	Road Match	629m	West

POEO Licence Data Source: Environment Protection Authority

Delicensed & Former Licensed EPA Activities

Leonay Parade, Leonay, NSW 2750



EPA Activities

Leonay Parade, Leonay, NSW 2750

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		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	133m	-
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	133m	-
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	133m	-

Former Licensed Activities Data Source: Environment Protection Authority

UPSS Sensitive Zones

Leonay Parade, Leonay, NSW 2750

Historical Business Directories

Leonay Parade, Leonay, NSW 2750

1991 Business to Business Directory Records Premise or Road Intersection Matches

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

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

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

1991 Business to Business Directory Records Road or Area Matches

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

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

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

Historical Business Directories

Leonay Parade, Leonay, NSW 2750

1986 Business to Business Directory Records Premise or Road Intersection Matches

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

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

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

1986 Business to Business Directory Records Road or Area Matches

Records from the 1986 UBD Business to Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

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

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

Historical Business Directories

Leonay Parade, Leonay, NSW 2750

1982 Business Directory Records
Premise or Road Intersection Matches

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

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

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

1982 Business Directory Records
Road or Area Matches

Records from the 1982 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

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

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

Historical Business Directories

Leonay Parade, Leonay, NSW 2750

1970 Business Directory Records
Premise or Road Intersection Matches

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

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

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

1970 Business Directory Records
Road or Area Matches

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

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

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

Historical Business Directories

Leonay Parade, Leonay, NSW 2750

1961 Business Directory Records
Premise or Road Intersection Matches

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

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

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

1961 Business Directory Records
Road or Area Matches

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

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

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

Historical Business Directories

Leonay Parade, Leonay, NSW 2750

1950 Business Directory Records
Premise or Road Intersection Matches

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

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

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

1950 Business Directory Records
Road or Area Matches

Records from the 1950 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

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

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

Historical Business Directories

Leonay Parade, Leonay, NSW 2750

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

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

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

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

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

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

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
MOTOR SERVICE STATIONS, PETROL, OILS, ETC.	Langblen, M., Western Rd., Emu Plains (Emu)	201054	**1961**	Road Match	207m
MOTOR GARAGES & ENGINEERS	Opel Motors, Western Hghwy. Emu Plains (EMU)	535437	**1970**	Road Match	207m
MOTOR GARAGES & ENGINEERS	Opel Motors, Western Rd., Emu Plains (Emu)	201053	**1961**	Road Match	207m
MOTOR SERVICE STATIONS, PETROL, OILS, ETC.	Rouggos, G., Western Rd., Emu Plains (Emu)	201055	**1961**	Road Match	207m

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

Aerial Imagery 2009

Leonay Parade, Leonay, NSW 2750

Scale: 0 25 50 100 Meters	Data Source Aerial Imagery: © 2018 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.	Coordinate System: GDA 1994 MGA Zone 56	Date: 19 November 2018

Aerial Imagery 2002

Leonay Parade, Leonay, NSW 2750

Scale: 0 25 50 100 Meters

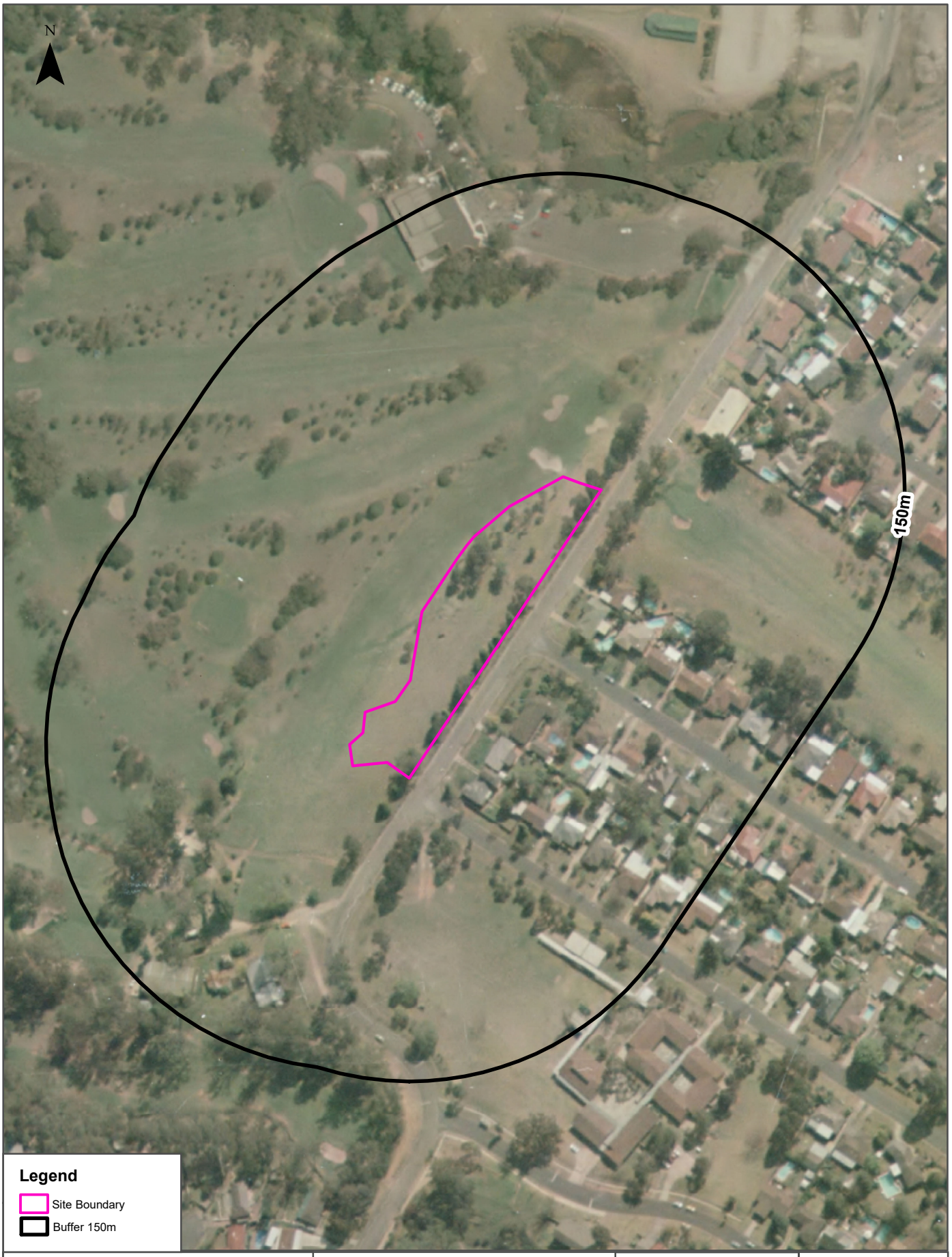
Data Source Aerial Imagery: © 2018 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System: GDA 1994 MGA Zone 56

Date: 19 November 2018

Aerial Imagery 1991

Leonay Parade, Leonay, NSW 2750



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

Coordinate System: GDA 1994 MGA Zone 56

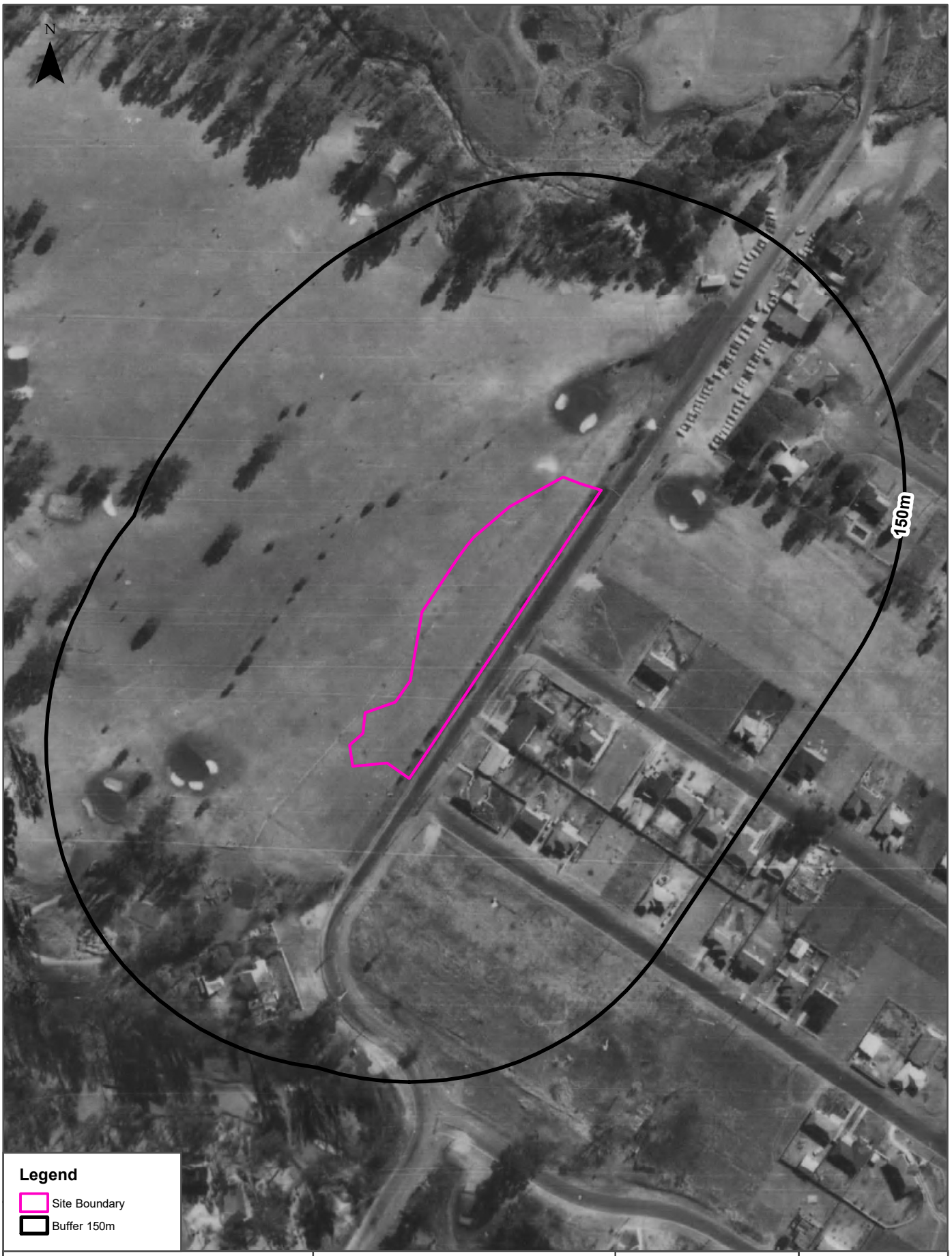
Date: 19 November 2018

Aerial Imagery 1982

Leonay Parade, Leonay, NSW 2750

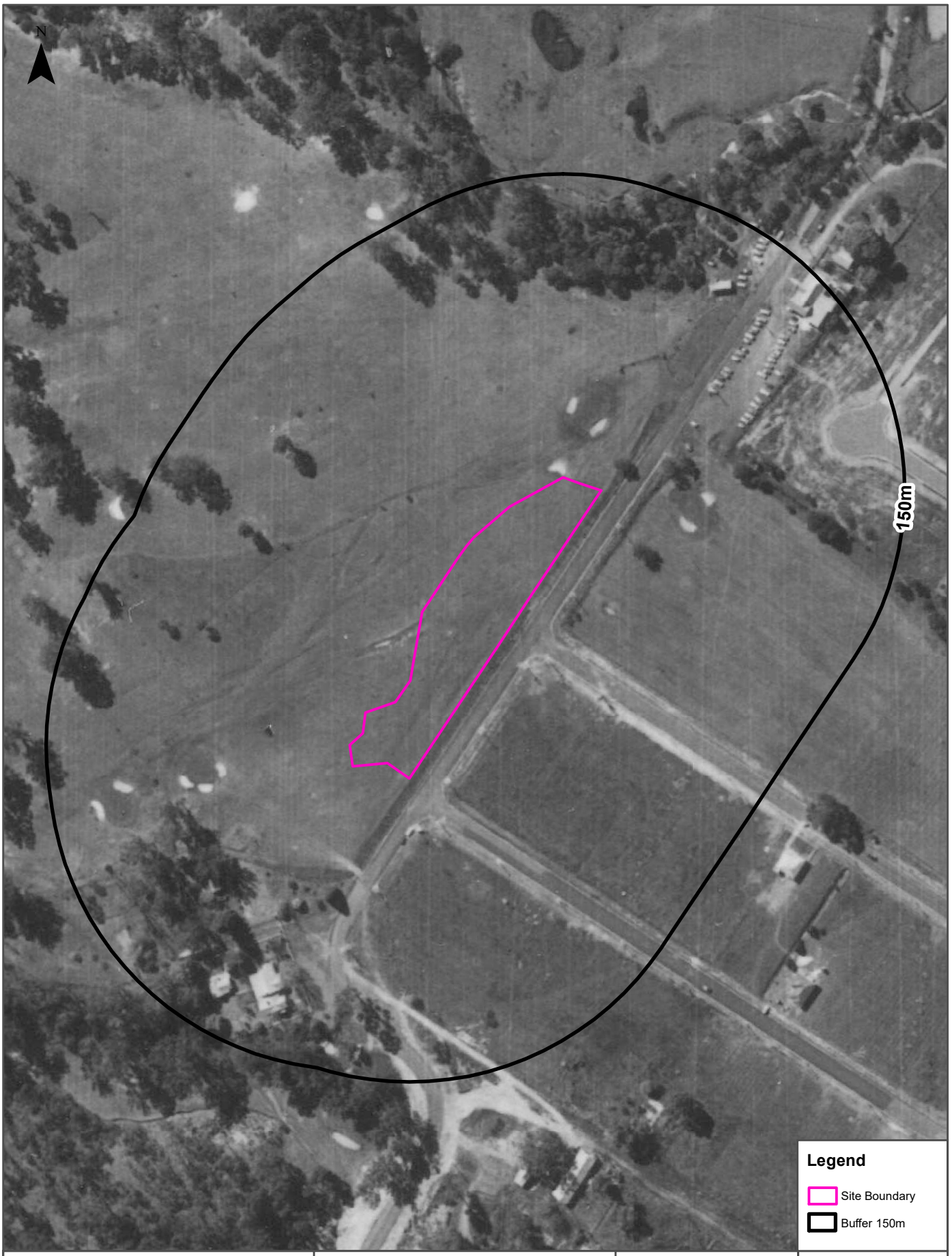
Aerial Imagery 1970

Leonay Parade, Leonay, NSW 2750



Aerial Imagery 1965

Leonay Parade, Leonay, NSW 2750



Aerial Imagery 1961

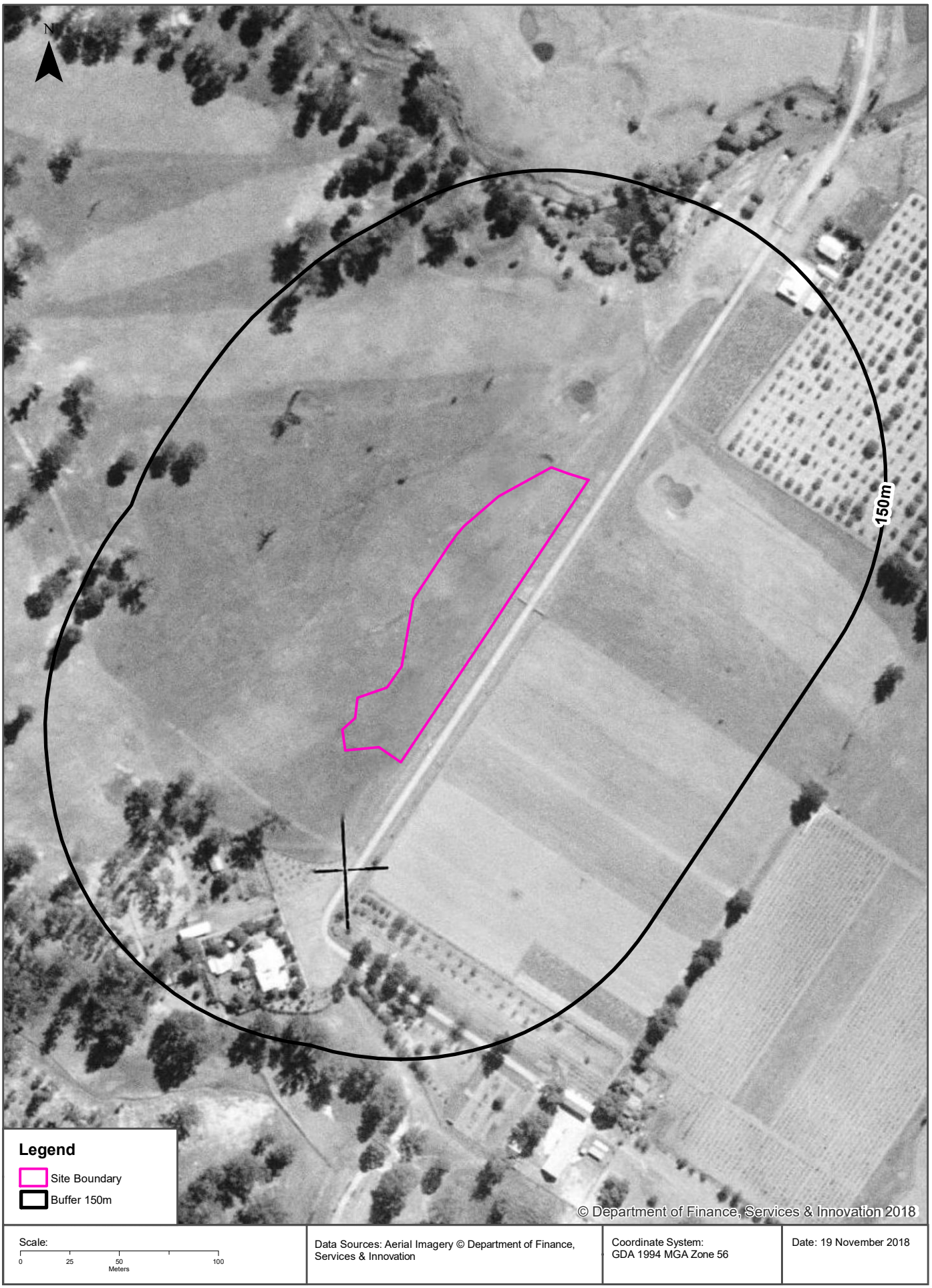
Leonay Parade, Leonay, NSW 2750

Aerial Imagery 1955

Leonay Parade, Leonay, NSW 2750

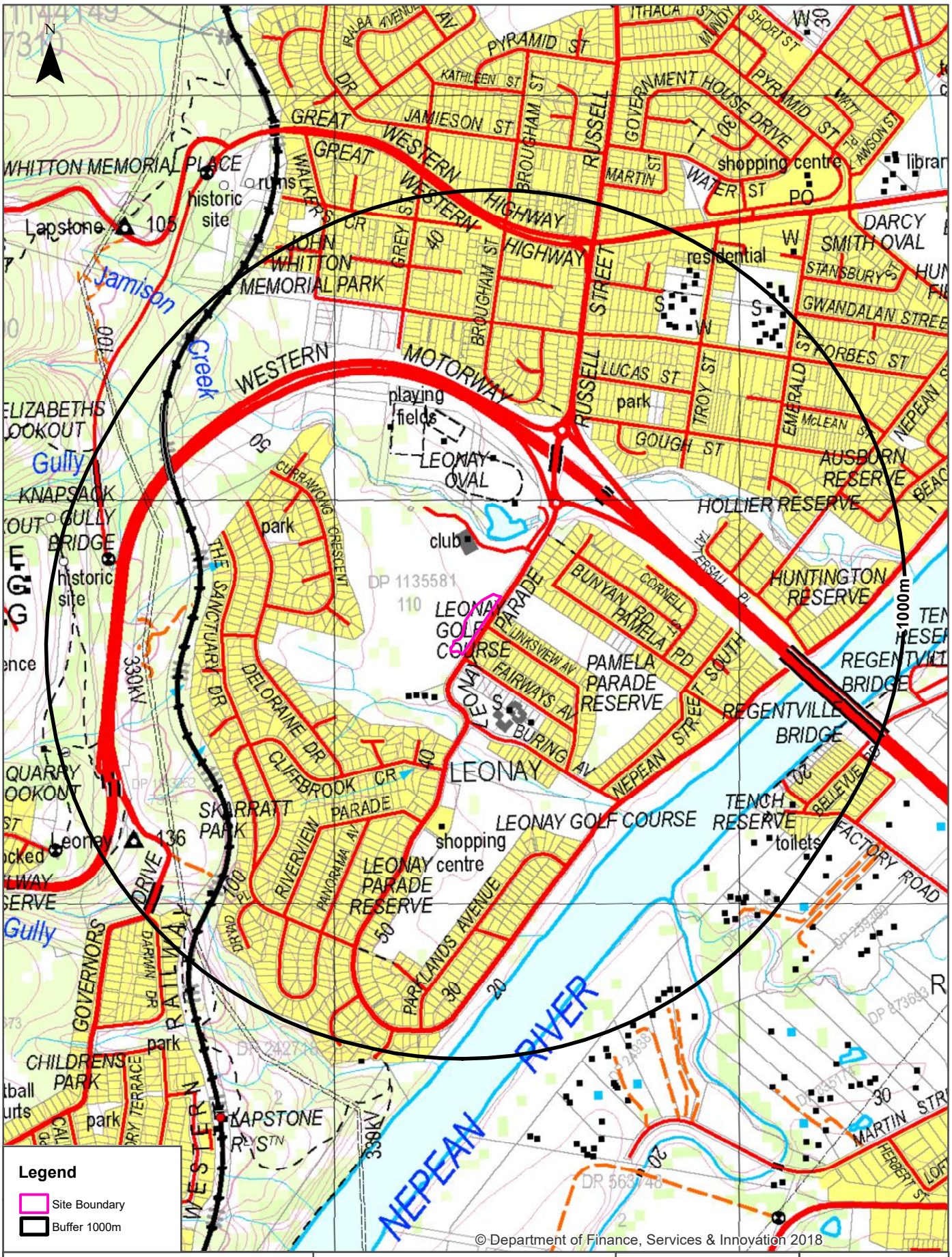
Aerial Imagery 1943

Leonay Parade, Leonay, NSW 2750



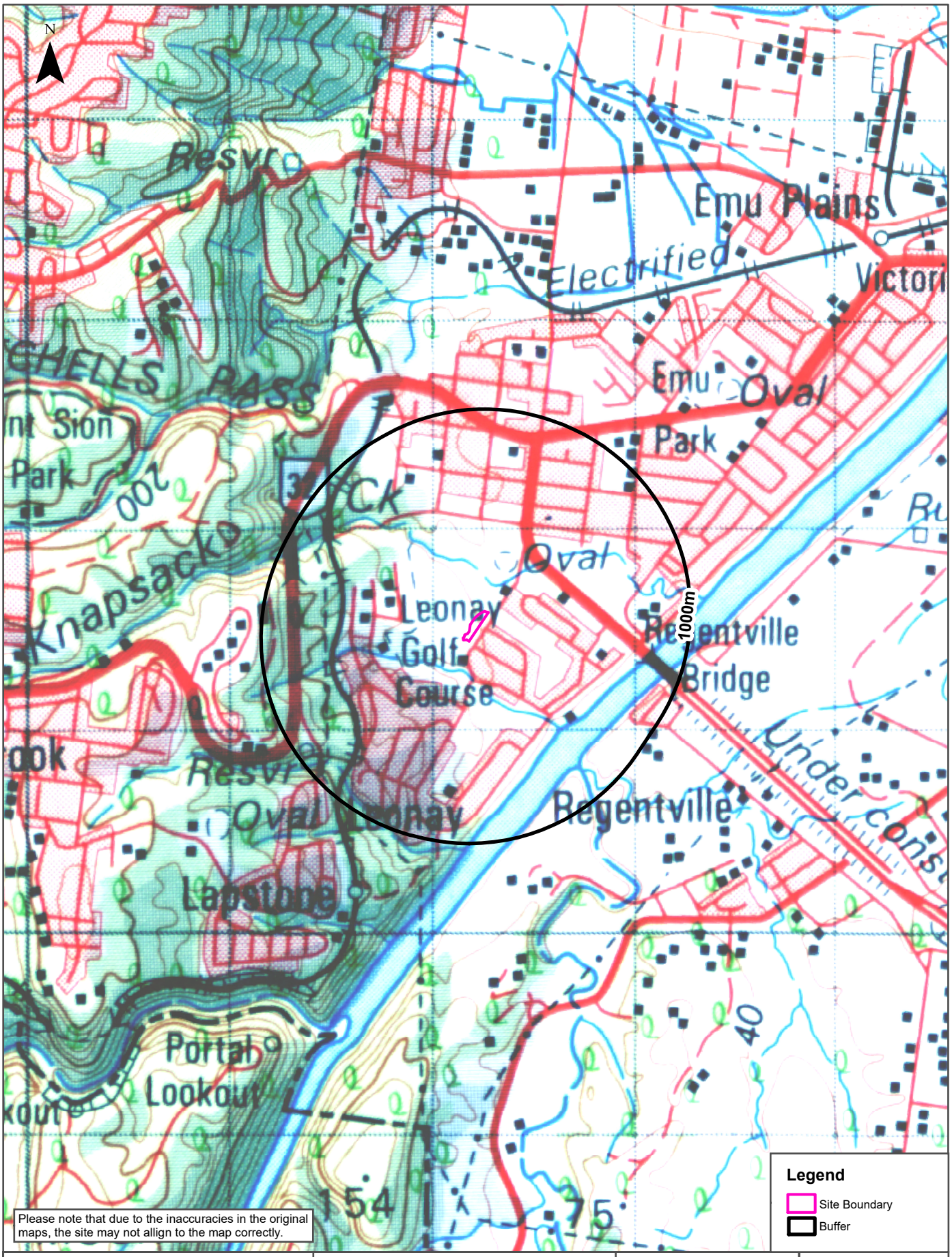
Topographic Map 2015

Leonay Parade, Leonay, NSW 2750



Historical Map 1975

Leonay Parade, Leonay, NSW 2750



Please note that due to the inaccuracies in the original maps, the site may not allign to the map correctly.

Scale: 0 125 250 500 750 1,000 1,250 Meters

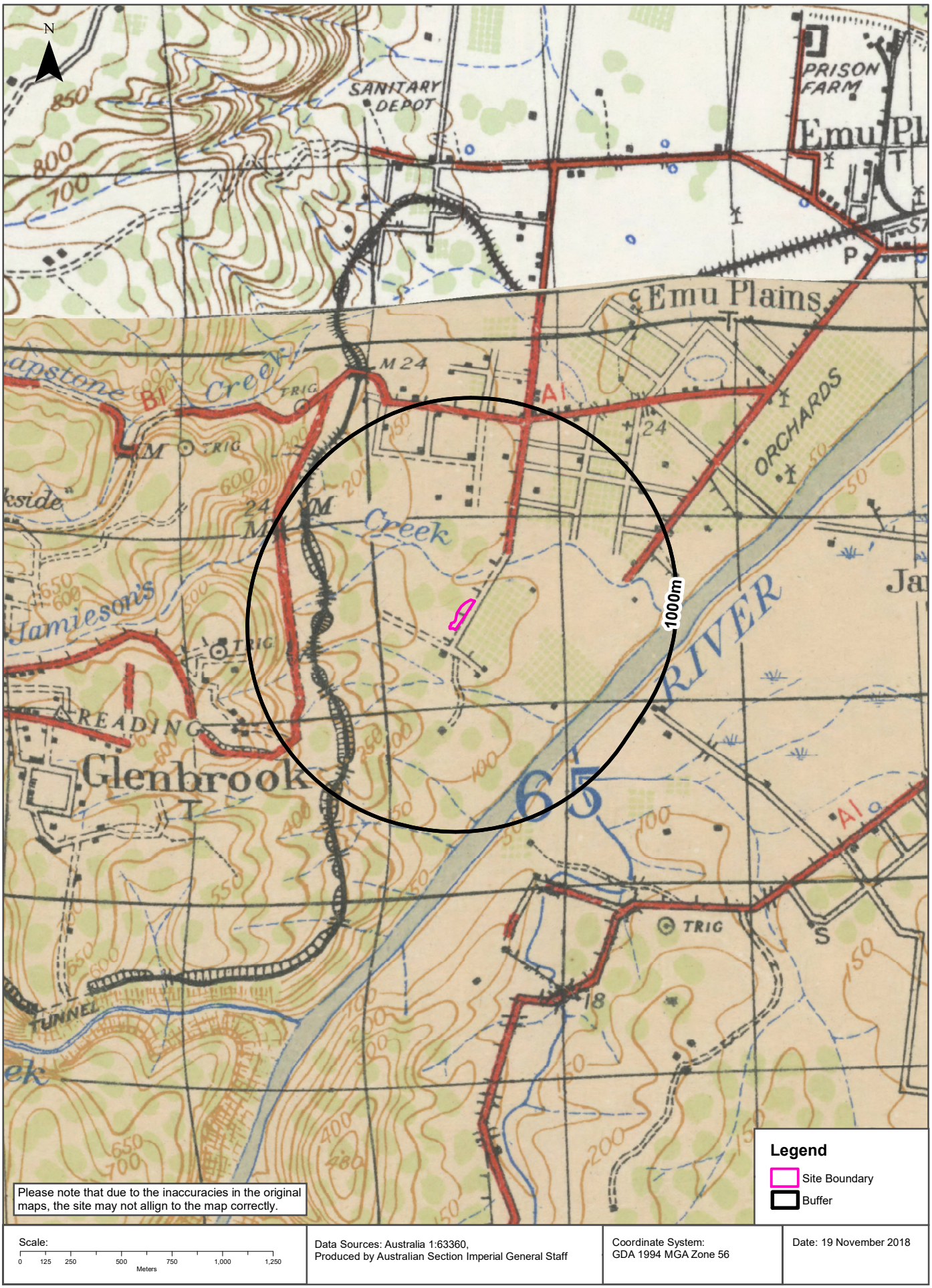
Data Sources: NATMAP 1:100,000
Topographic Maps Geoscience Australia

Coordinate System:
GDA 1994 MGA Zone 56

Date: 19 November 2018

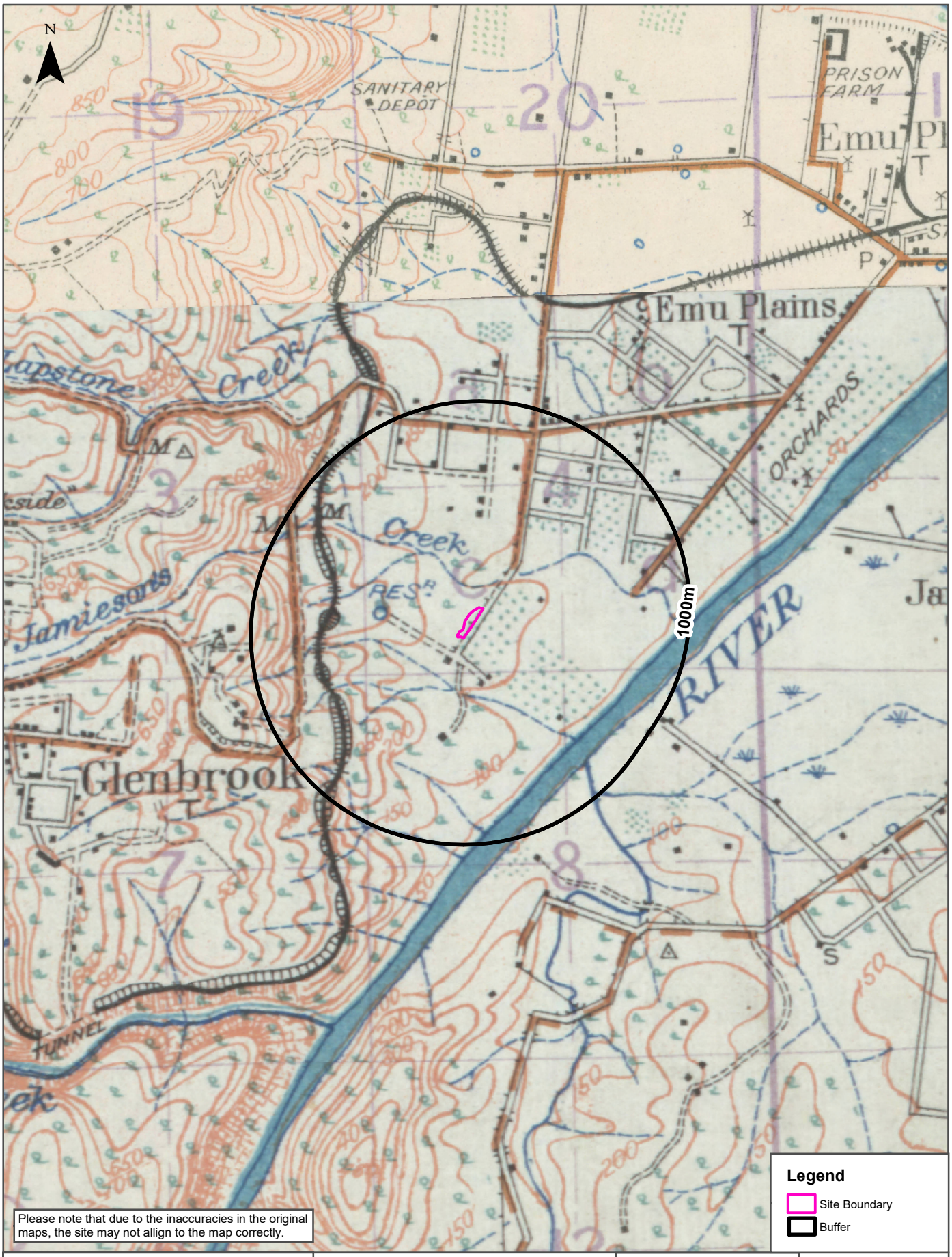
Historical Map c.1942

Leonay Parade, Leonay, NSW 2750



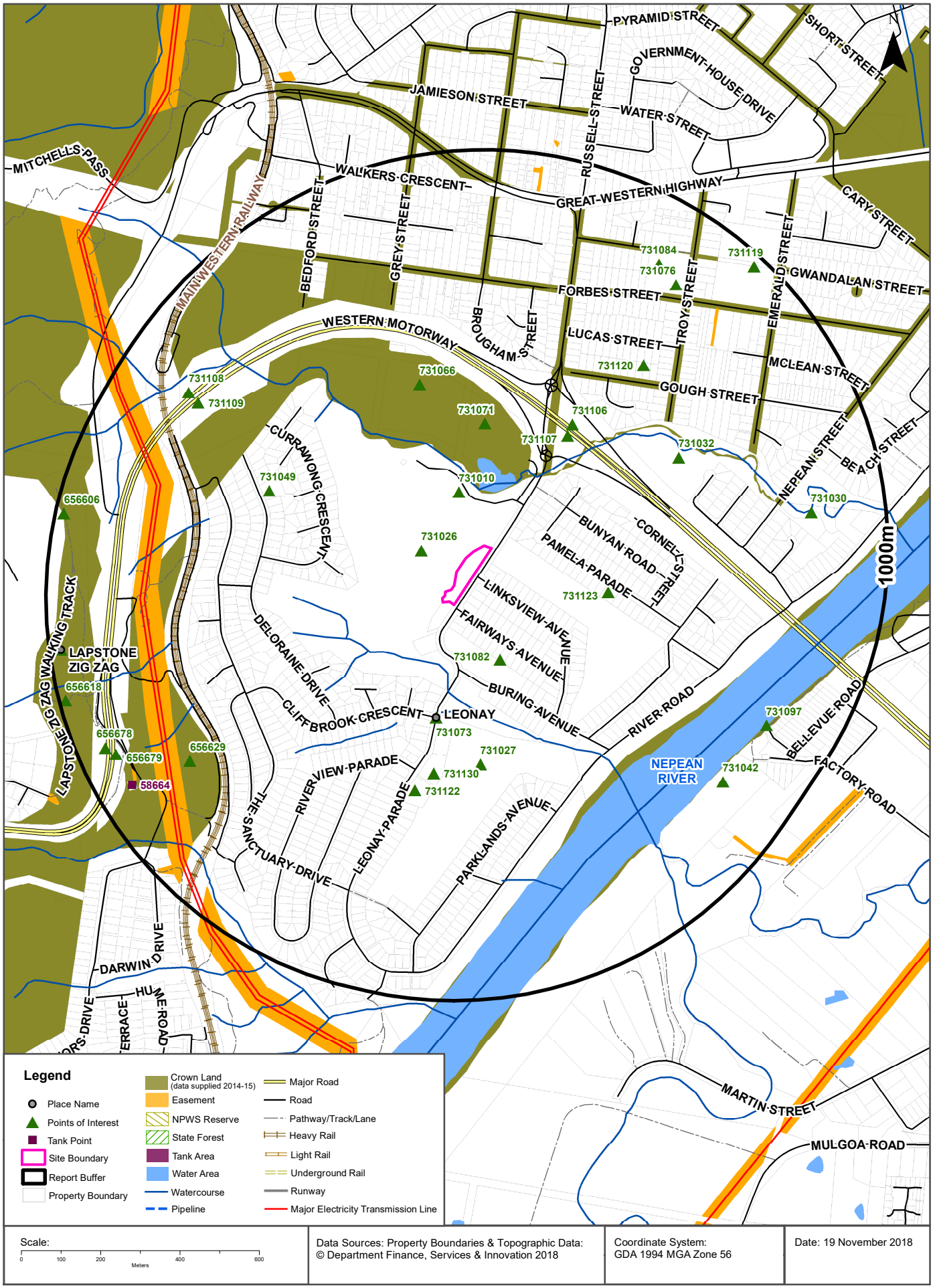
Historical Map c.1929

Leonay Parade, Leonay, NSW 2750



Topographic Features

Leonay Parade, Leonay, NSW 2750



Topographic Features

Leonay Parade, Leonay, NSW 2750

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
731026	Golf Course	LEONAY GOLF COURSE	104m	North West
731010	Club	EMU PLAINS SPORTING AND RECREATION CLUB	150m	North
731082	Primary School	LEONAY PUBLIC SCHOOL	180m	South
731073	Suburb	LEONAY	288m	South
731071	Sports Field	LEONAY OVAL	309m	North
731123	Park	PAMELA PARADE RESERVE	314m	East
731107	Roadside Emergency Telephone	397	343m	North East
731106	Roadside Emergency Telephone	398	373m	North East
731027	Golf Course	LEONAY GOLF COURSE	408m	South
731130	Shopping Centre	LEONAY CENTRE	428m	South
731066	Sports Field	PLAYING FIELDS	440m	North
731122	Park	LEONAY PARADE RESERVE	479m	South
731049	Park	Park	512m	North West
731032	Park	HOLLIER RESERVE	525m	North East
731120	Park	Park	601m	North East
656629	Park	SKARRATT PARK	753m	South West
731109	Roadside Emergency Telephone	399	779m	North West
731030	Park	HUNTINGTON RESERVE	811m	East
731042	Park	TENCH RESERVE	812m	South East
731076	Place Of Worship	CATHOLIC CHURCH	812m	North East
731108	Roadside Emergency Telephone	400	814m	North West
731097	Boat Ramp	Boat Ramp	825m	South East
731084	Primary School	OUR LADY OF THE WAY PRIMARY SCHOOL	833m	North East
656679	Roadside Emergency Telephone	401	909m	South West
656678	Roadside Emergency Telephone	402	927m	South West
657126	Urban Place	LAPSTONE ZIG ZAG	970m	West
731119	Primary School	EMU PLAINS PUBLIC SCHOOL	972m	North East
656606	Historic Site	LUCASVILLE PLATFORM	978m	West
656618	Lookout	QUARRY LOOKOUT	983m	West

Topographic Features

Leonay Parade, Leonay, NSW 2750

Tanks (Areas)

What are the Tank Areas located within the dataset buffer?
Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
	No records in buffer					

Tanks (Points)

What are the Tank Points located within the dataset buffer?
Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
58664	Water	Operational		04/12/2000	908m	South West

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
120119232	Primary	Undefined		708m	North
150419942	Primary	Electricity	60m	717m	West
145014702	Primary	Right of way	4	755m	North East
120108416	Primary	Undefined		880m	South West
171846198	Primary	Right of way	4 wide and vari	908m	North
172906564	Primary	Right of way	5 WIDE	918m	South East
120120373	Primary	Undefined		947m	South West
120116883	Primary	Undefined		952m	South West

Topographic Features

Leonay Parade, Leonay, NSW 2750

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)

Leonay Parade, Leonay, NSW 2750

Legend

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

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

Scale: 0 100 200 400 Meters	Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2018	Coordinate System: GDA 1994 MGA Zone 56	Date: 19 November 2018

Hydrogeology & Groundwater

Leonay Parade, Leonay, NSW 2750

Hydrogeology

Description of aquifers on-site:

Description
Porous, extensive highly productive aquifers

Description of aquifers within the dataset buffer:

Description
Porous, extensive aquifers of low to moderate productivity
Porous, extensive highly productive aquifers

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

Botany Groundwater Management Zones

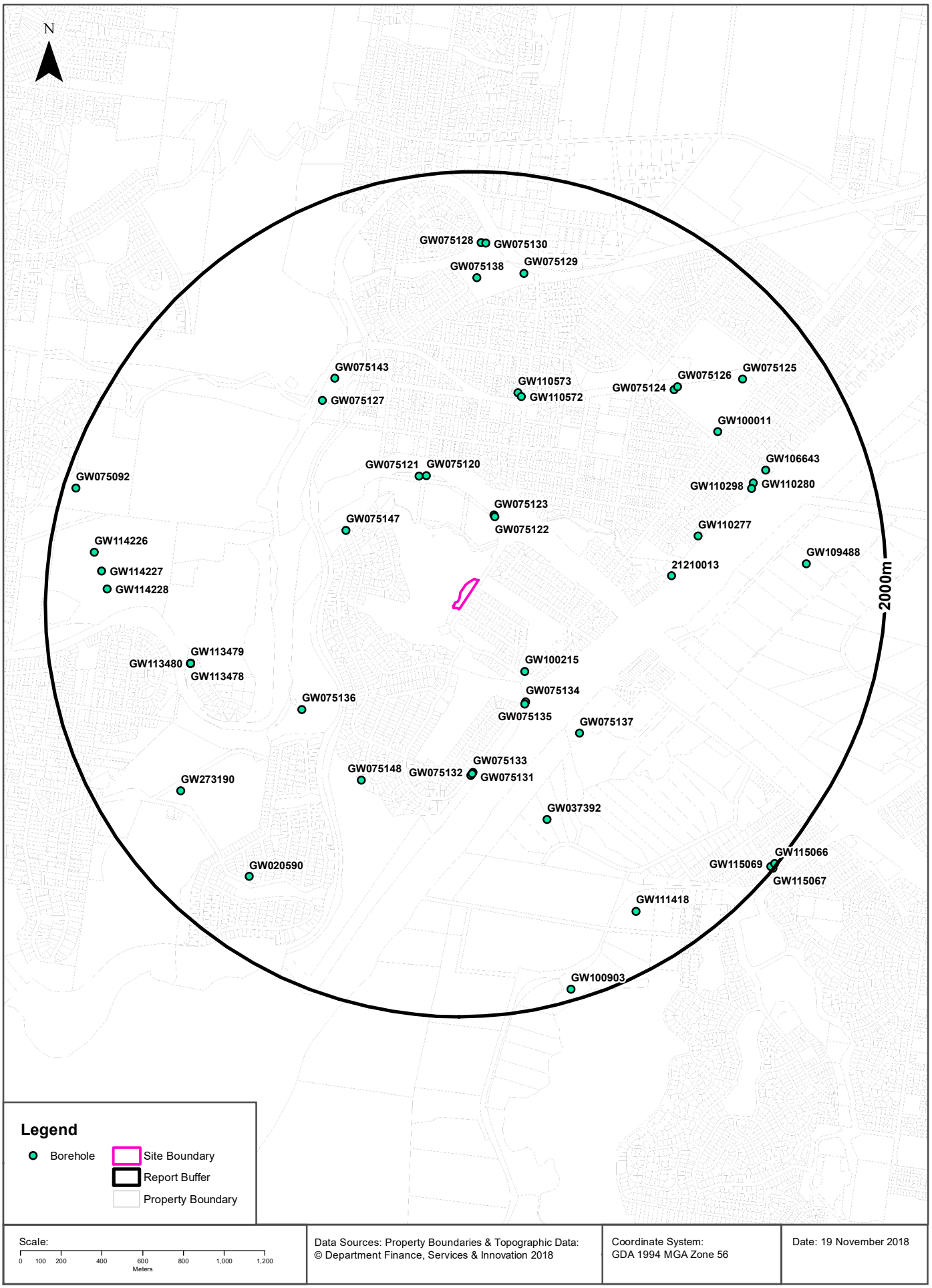
Groundwater management zones relating to the Botany Sand Beds aquifer within the dataset buffer:

Management Zone No.	Restriction	Distance	Direction
N/A	No records in buffer		

Botany Groundwater Management Zones Data Source : NSW Department of Primary Industries

Groundwater Boreholes

Leonay Parade, Leonay, NSW 2750



Hydrogeology & Groundwater

Leonay Parade, Leonay, NSW 2750

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)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW075122	10CA117211, 10CA117212, 10CA117213, 10CA117219, 10WM000003	Bore	Other Govt	Town Water Supply	Monitoring Bore		31/01/2006	300.00	300.00			8.500		321m	North
GW075123	10CA117211, 10CA117212, 10CA117213, 10CA117219, 10WM000003	Bore	Other Govt	Town Water Supply	Monitoring Bore		21/03/2006	175.00	175.00			6.000		327m	North
GW100215	10BL152347	Bore	Private	Domestic	Domestic		19/05/1993	17.00	17.00					446m	South East
GW075120	10CA117211, 10CA117212, 10CA117213, 10CA117219, 10WM000003	Bore	Other Govt	Town Water Supply	Test Bore, Town Water Supply		21/01/2006	174.00	174.00		17.80	97.800		558m	North
GW075134	10CA117211, 10CA117212, 10CA117213, 10CA117219, 10WM000003	Bore	Other Govt	Town Water Supply	Monitoring Bore		30/04/2006	294.00	294.00			130.000		561m	South East
GW075135	10CA117211, 10CA117212, 10CA117213, 10CA117219, 10WM000003	Bore	Other Govt	Town Water Supply	Monitoring Bore		30/04/2006	84.00	84.00			25.000		567m	South East
GW075121	10CA117211, 10CA117212, 10CA117213, 10CA117219, 10WM000003	Bore	Other Govt	Town Water Supply	Test Bore, Town Water Supply		08/02/2006	311.00	311.00			22.000		574m	North

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)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW075147	10CA117211, 10CA117212, 10CA117213, 10CA117219, 10WM00003	Bore	Other Govt	Town Water Supply	Monitoring Bore		15/06/2007	9.00	9.00					639m	North West
GW075133	10CA117211, 10CA117212, 10CA117213, 10CA117219, 10WM00003	Bore	Other Govt	Town Water Supply	Monitoring Bore		30/04/2006	12.00	12.00					805m	South
GW075131	10CA117211, 10CA117212, 10CA117213, 10CA117219, 10WM00003	Bore	Other Govt	Town Water Supply	Test Bore, Town Water Supply		31/10/2006	290.00	290.00			80.000		811m	South
GW075132	10CA117211, 10CA117212, 10CA117213, 10CA117219, 10WM00003	Bore	Other Govt	Town Water Supply	Test Bore, Town Water Supply		31/10/2006	73.00	73.00			55.000		818m	South
GW075137	10CA117211, 10CA117212, 10CA117213, 10CA117219, 10WM00003	Bore	Other Govt	Town Water Supply	Monitoring Bore		31/10/2006	283.00	283.00		10.00	12.100		850m	South East
GW075136	10CA117211, 10CA117212, 10CA117213, 10CA117219, 10WM00003	Bore	Other Govt	Town Water Supply	Monitoring Bore		31/10/2006	289.00	289.00		96.00	10.000		894m	South West
GW110572	10BL603227	Well	Private	Monitoring Bore	Monitoring Bore		02/09/2009	8.30	8.30					925m	North
GW110573	10BL603227	Well	Private	Monitoring Bore	Monitoring Bore		02/09/2009	10.50	10.50					939m	North
21210013					UNK								30.00	949m	East
GW075148	10CA117211, 10CA117212, 10CA117213, 10CA117219, 10WM00003	Bore	Other Govt	Town Water Supply	Monitoring Bore		15/06/2007	6.00	6.00					958m	South West
GW110277	10BL602826, 10WA112723	Bore	Private	Domestic	Domestic		09/01/2009	17.00	17.00	240	10.00	0.500		1101m	East

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)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW037 392	10BL031 305, 10BL109 535, 10WA11 2621	Well	Private	Domestic, Irrigation, Stock	Irrigation		01/09/1973	12.80	12.80					1119m	South
GW075 127	10CA11 7211, 10CA11 7212, 10CA11 7213, 10CA11 7219, 10WM00 0003	Bore	Other Govt	Town Water Supply	Monitoring Bore		31/10/2006	300.00	301.00		46.00	20.000		1145m	North West
GW075 143	10CA11 7211, 10CA11 7212, 10CA11 7213, 10CA11 7219, 10WM00 0003	Bore	Other Govt	Town Water Supply	Monitoring Bore		15/06/2007	6.00	6.00					1197m	North West
GW113 477	10BL604 206	Bore	Other Govt	Monitoring Bore	Monitoring Bore	RAAF Base - Glenbrook	05/08/2010	3.00	3.00					1316m	West
GW113 479	10BL604 206	Bore	Other Govt	Monitoring Bore	Monitoring Bore	RAAF Base - Glenbrook	23/07/2010	4.00	4.00					1316m	West
GW113 480	10BL604 206	Bore	Other Govt	Monitoring Bore	Monitoring Bore	RAAF Base - Glenbrook	23/07/2010	2.97	2.97					1316m	West
GW113 476	10BL604 206	Bore	Other Govt	Monitoring Bore	Monitoring Bore	RAAF Base - Glenbrook	05/08/2010	6.00	6.00					1316m	West
GW113 483	10BL604 206	Bore	Other Govt	Monitoring Bore	Monitoring Bore	RAAF Base - Glenbrook	30/07/2010	10.00	10.00					1316m	West
GW113 478	10BL604 206	Bore	Other Govt	Monitoring Bore	Monitoring Bore	RAAF Base - Glenbrook	23/07/2010	36.20	36.20					1316m	West
GW113 485	10BL604 206	Bore	Other Govt	Monitoring Bore	Monitoring Bore	RAAF Base - Glenbrook	11/08/2010	10.72	10.72					1316m	West
GW113 482	10BL604 206	Bore	Other Govt	Monitoring Bore	Monitoring Bore	RAAF Base - Glenbrook	04/08/2010	36.00	36.00					1316m	West
GW113 481	10BL604 206	Bore	Other Govt	Monitoring Bore	Monitoring Bore	RAAF Base - Glenbrook	02/08/2010	10.00	10.00					1316m	West
GW113 484	10BL604 206	Bore	Other Govt	Monitoring Bore	Monitoring Bore	RAAF Base - Glenbrook	26/07/2010	5.00	5.00					1316m	West
GW075 124	10CA11 7211, 10CA11 7212, 10CA11 7213, 10CA11 7219, 10WM00 0003	Bore	Other Govt	Town Water Supply	Test Bore, Town Water Supply		31/10/2006	301.00	301.00			36.000		1340m	North East
GW075 126	10CA11 7219	Bore	Local Govt		Monitoring Bore		31/10/2006	14.00	14.00					1363m	North East
GW100 011	10BL156 424, 10WA11 2761	Bore	Local Govt	Recreation (groundwater)	Recreation (groundwater)		01/02/1995	15.00	15.00	120	7.00	1.000		1382m	North East
GW110 298	10BL602 709, 10WA11 2721	Bore	Private	Domestic	Domestic		19/11/2008	17.00	17.00	300	11.00	0.400		1415m	East
GW110 280	10BL602 707, 10WA11 2720	Battery Spears, Filter Pac	Private	Domestic	Domestic		21/11/2008	17.00	17.00	300	10.00	0.500		1432m	East

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)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW075138	10CA117211, 10CA117212, 10CA117213, 10CA117219, 10WM000003	Bore	Other Govt	Town Water Supply	Monitoring Bore		15/06/2007	6.00	6.00					1478m	North
GW106643	10BL164010, 10WA112697	Bore	Private	Domestic	Domestic		23/11/2004	16.30	16.30	300	3.00	2.500		1511m	East
GW075129	10CA117211, 10CA117212, 10CA117213, 10CA117219, 10WM000003	Bore	Other Govt	Town Water Supply	Monitoring Bore		31/10/2006	276.00	276.00			40.000		1519m	North
GW273190		Bore	NSW Office of Water		Monitoring Bore		14/12/2010	234.00	234.00		146.10	1.500	186.48	1609m	South West
GW109488	10BL164612, 10WA112702	Bore	Private	Domestic	Domestic		15/02/2008	15.00		1200	9.00	0.900		1612m	East
GW075125	10CA117211, 10CA117212, 10CA117213, 10CA117219, 10WM000003	Bore	Other Govt	Town Water Supply	Monitoring Bore		31/10/2006	300.00	300.00			12.500		1629m	North East
GW075130	10CA117219	Bore	Other Govt		Monitoring Bore		15/06/2007	14.50	14.50					1649m	North
GW075128	10CA117211, 10CA117212, 10CA117213, 10CA117219, 10WM000003	Bore	Other Govt	Town Water Supply	Test Bore, Town Water Supply		31/10/2006	264.00	268.00			41.500		1651m	North
GW020590	10BL013205, 10WA107793	Bore open thru rock	Federal Govt	Waste Disposal	Waste Disposal		01/05/1963	46.30	46.30					1655m	South West
GW114228	10BL603823	Bore	Local Govt	Monitoring Bore	Monitoring Bore	Blue Mountains CC	23/02/2010	7.00	7.00					1698m	West
GW111418	10BL600927, 10WA112711	Bore	Private	Domestic, Stock	Domestic, Stock		04/02/2007	204.00	204.00	760	53.00	2.800		1719m	South East
GW114227	10BL603823	Bore	Local Govt	Monitoring Bore	Monitoring Bore	Blue Mountains CC	22/02/2010	10.00	10.00					1732m	West
GW114226	10BL603823	Bore	Local Govt	Monitoring Bore	Monitoring Bore	Blue Mountains CC	22/02/2010	9.00	9.00					1778m	West
GW075092		Bore - Nested (3)	NSW Office of Water		Monitoring Bore		27/07/2008	150.00	150.00		81.11	2.500	184.71	1938m	West

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)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW100903	10BL156825, 10WA112655	Bore	Private	Domestic, Stock	Domestic, Stock		20/08/1995	73.10	73.10					1945m	South
GW115069	10BL604525			Monitoring Bore	Monitoring Bore		16/03/2014	9.00	9.00		6.00			1985m	South East
GW115066	10BL604525			Monitoring Bore	Monitoring Bore		14/03/2011	8.50	8.50		8.20			1991m	South East
GW115067	10BL604525			Monitoring Bore	Monitoring Bore		15/03/2011	8.85	8.85		8.10			1998m	South East

Hydrogeology & Groundwater

Leonay Parade, Leonay, NSW 2750

Driller's Logs

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

Groundwater No	Drillers Log	Distance	Direction
GW075122	0.00m-7.00m Sand, orange brown 7.00m-21.00m Shale, grey, laminated 21.00m-22.00m Clay layer, grey white 22.00m-49.00m Sandstone, grey white 49.00m-60.50m Sandstone, white, grey with Shale bands 60.50m-112.00m Sandstone, pure white 112.00m-116.00m Shale, bands, dark grey with sandstone 116.00m-134.00m Sandstone, clean white 134.00m-136.00m Conglomerate, river Gravels, Sandstone & Mudstone 136.00m-140.00m Sandstone, clean white 140.00m-146.00m Conglomerate, river Gravels, Sandstone & Mudstone 146.00m-152.00m Sandstone, clean white 152.00m-165.00m Conglomerate, river Gravels 165.00m-228.00m Sandstone, fine to medium grained 228.00m-246.00m Sandstone, interbedded, grey white 246.00m-264.00m Sandstone, clean, white grey 264.00m-270.00m Shale, dark brown black 270.00m-282.00m Sandstone, light brown white 282.00m-294.00m Sandstone, grey white 294.00m-295.00m Shale layer, grey 295.00m-299.00m Claystone layer, mauve 299.00m-300.00m Sandstone, light grey	321m	North
GW075123	0.00m-3.00m Topsoil, Sandy Clay, brown 3.00m-6.00m Clay, sandy, grey & light brown 6.00m-10.00m Shale layer, brown 10.00m-12.00m Clay, sandy, brown 12.00m-18.00m Shale, dark grey with Sandy Clay 18.00m-19.00m Sandy Gravelly Clay, grey 19.00m-40.00m Sandy Silty Clay, grey 40.00m-76.00m Sandstone, grey 76.00m-93.50m Sandstone, light grey 93.50m-101.00m Sandstone, light grey white 101.00m-121.00m Sandstone, light with dark grey bands 121.00m-156.00m Sandstone, clean white, light grey 156.00m-162.00m Shale, dark grey 162.00m-168.00m Sandstone, clean white light grey 168.00m-169.00m Shale, dark grey 169.00m-175.00m Sandstone, white light grey	327m	North
GW100215	0.00m-10.00m CLAY 10.00m-17.00m CLAY-SAND-GRAVEL	446m	South East
GW075120	0.00m-6.00m Sandstone, crushed, grey, yellow, red 6.00m-13.00m Clay, silty, grey, orange, red 13.00m-15.00m Siltstone, grey 15.00m-17.00m Shale, weathered, grey 17.00m-19.00m Sandstone, orange 19.00m-27.00m Shale, grey 27.00m-51.00m Sandstone, weathered, grey 51.00m-69.00m Sandstone, brown, then grey 69.00m-72.00m Shale, dark grey 72.00m-87.00m Sandstone, light grey 87.00m-87.50m Shale, dark grey 87.50m-116.00m Sandstone, grey 116.00m-118.00m Shale, dark grey 118.00m-130.50m Sandstone, grey, then white 130.50m-142.00m Shale, dark grey 142.00m-144.00m Sandstone, white 144.00m-145.00m Shale, dark grey 145.00m-146.00m Sandstone, grey 146.00m-149.00m Sandstone, with fine & coarse grains, angular to subangular 149.00m-174.00m Sandstone, grey, white	558m	North

Groundwater No	Drillers Log	Distance	Direction
GW075134	0.00m-1.00m Fill - Landfill 1.00m-8.00m Sand, fine 8.00m-15.50m Gravel, river gravels 15.50m-24.00m Sandstone, fine 24.00m-84.00m Sandstone, medium-coarse 84.00m-87.00m Sandstone, fine 87.00m-90.00m Clay 90.00m-105.00m Sandstone, medium 105.00m-117.00m Sandstone, coarse 117.00m-134.00m Sandstone, fine 134.00m-286.00m Sandstone, fine-medium 286.00m-288.00m Shale 288.00m-294.00m Sandstone, medium-coarse 294.00m-294.00m Claystone	561m	South East
GW075135	0.00m-1.00m Fill 1.00m-3.00m Topsoil 3.00m-9.00m Silty Clay 9.00m-15.00m Gravel, river gravels 15.00m-25.00m Sandstone, fine, white 25.00m-40.00m Sandstone, medium, light grey 40.00m-55.00m Sandstone, medium-coarse 55.00m-66.00m Sandstone, fine 66.00m-74.00m Sandstone, medium-coarse 74.00m-84.00m Sandstone, fine, light grey	567m	South East
GW075121	0.00m-3.00m Topsoil 3.00m-6.00m Sandstone, fine grained 6.00m-14.00m Clay, silty, red then brown 14.00m-28.00m Shale, hard, grey, then brown 28.00m-29.00m Sandstone, hard 29.00m-51.00m Sandstone, white 51.00m-60.00m Sandstone, brown 60.00m-70.00m Sandstone, dark grey 70.00m-115.00m Sandstone, light grey 115.00m-117.00m Sandstone, brown 117.00m-122.00m Sandstone, grey 122.00m-170.00m Sandstone, light grey 170.00m-178.00m Sandstone, grey with Shale inclusions 178.00m-179.00m Sandstone, light grey 179.00m-260.00m Sandstone, grey with Shale inclusions 260.00m-293.00m Sandstone, grey with Quartz pebbles 293.00m-295.00m Claystone, red & orange 295.00m-301.00m Shale, dark grey, black 301.00m-311.00m Sandstone, grey with large Quartz grains	574m	North
GW075147	0.00m-1.00m Topsoil, Clayey Loam, dark brown, moist 1.00m-2.00m Clay, moist, light grey 2.00m-3.00m Clay, from red to white 3.00m-4.00m Clayey Sand, fine to medium, reddish 4.00m-5.00m Clay, white, very fine clayey silt 5.00m-6.00m Sandstone, fine, moist grey clay 6.00m-7.00m Sandstone, fine, soft moist grey clay 7.00m-9.00m Clay, brown	639m	North West
GW075133	0.00m-5.00m Topsoil 5.00m-6.00m Clay 6.00m-9.00m Sand 9.00m-10.00m Sand & Gravel 10.00m-11.00m Gravel 11.00m-12.00m Sandstone, medium	805m	South
GW075131	0.00m-8.00m Clay/Silt 8.00m-30.00m Sandstone, orange, medium 30.00m-84.00m Sandstone & Shale 84.00m-168.00m Sandstone, grey, coarse 168.00m-230.00m Sandstone, grey, coarse some medium 230.00m-284.00m Sandstone, fine, some Claystone 284.00m-290.00m Claystone	811m	South
GW075132	0.00m-9.00m Loam, sandy 9.00m-15.00m Gravel 15.00m-28.00m Sandstone, medium & coarse 28.00m-36.00m Sandstone, fine 36.00m-65.00m Sandstone, medium 65.00m-67.00m Sandstone, coarse 67.00m-73.00m Sandstone, medium, white	818m	South
GW075137	0.00m-12.00m Topsoil 12.00m-24.00m Shale 24.00m-62.00m Sandstone, fine, grey 62.00m-108.00m Sandstone, coarse, grey 108.00m-116.00m Shale 116.00m-250.00m Sandstone, coarse, grey 250.00m-280.00m Siltstone, grey 280.00m-283.00m Siltstone, pink	850m	South East

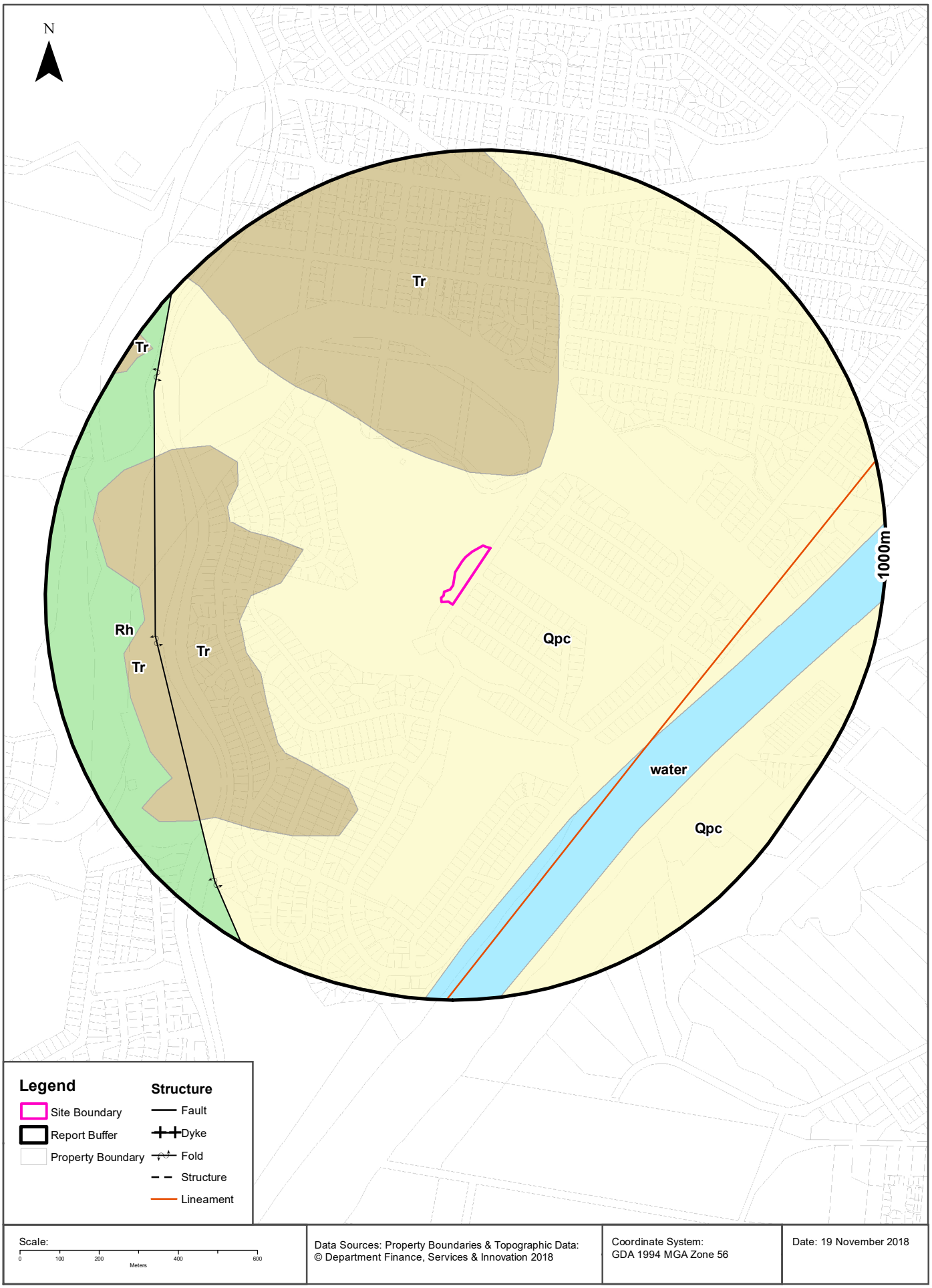
Groundwater No	Drillers Log	Distance	Direction
GW075136	0.00m-116.00m Sandstone, fine yellow 116.00m-120.00m Shale 120.00m-210.00m Sandstone, coarse, grey-white 210.00m-277.00m Sandstone, coarse, grey 277.00m-280.00m Shale, red 280.00m-289.00m Basement	894m	South West
GW110572	0.00m-1.00m FILL 1.00m-7.00m CLAY 7.00m-8.30m CLAY	925m	North
GW110573	0.00m-1.00m FILL 1.00m-7.00m CLAY 7.00m-10.50m CLAY SANDY	939m	North
GW075148	0.00m-1.00m Topsoil, Silty Clayey Loam, light yellow 1.00m-2.00m Sandstone, medium, frine with some medium 2.00m-3.00m Sandstone, silty to very fine, light yellow 3.00m-4.00m Sandstone, fine, thinly banded, slight moisture 4.00m-6.00m Sandstone, fine, light yellow, some moist clay, grey	958m	South West
GW110277	0.00m-4.50m SAND (MEDIUM) 4.50m-16.50m GRAVEL 16.50m-17.00m SHALE	1101m	East
GW037392	0.00m-7.62m Loam Sandy 7.62m-11.28m Gravel 11.28m-12.80m Clay 12.80m-12.82m Sandstone	1119m	South
GW075127	0.00m-3.00m Fill 3.00m-6.00m Clay, red 6.00m-14.00m Clay, orange 14.00m-18.00m Gravel, river gravels 18.00m-84.00m Sandstone, fine, white 84.00m-200.00m Sandstone, coarse, yellow 200.00m-246.00m Sandstone, fine, grey 246.00m-301.00m Basement	1145m	North West
GW075143	0.00m-2.00m Sandstone, fine to medium, poorly sorted, dry 2.00m-3.00m Sandstone, fien to medium, brown & slightly moist 3.00m-4.00m Sandstone, numberous bands, Clayey Sand 4.00m-5.00m Sandstone, fine to medium, dark yellow 5.00m-6.00m Sandstone, hard rock frags to 10mm, slightly moist.	1197m	North West
GW075124	0.00m-8.00m Sand 8.00m-13.50m Gravel, river gravels 13.50m-22.00m Shale 22.00m-32.00m Sandstone, fine 32.00m-277.00m Sandstone, medium 277.00m-298.00m Sandstone, Claystone & Shale 298.00m-301.00m Claystone	1340m	North East
GW100011	0.00m-3.70m CLAYEY LOAM 3.70m-6.60m SANDY LOAM 6.60m-8.40m ALLUVIAL GRAVEL 8.40m-13.10m WATER BEARING ALLUVIAL GRAVEL 13.10m-15.00m DARK GREY SHALE	1382m	North East
GW110298	0.00m-2.00m TOPSOIL 2.00m-8.00m SAND MEDIUM 8.00m-16.50m GRAVEL AND SAND 16.50m-17.00m SHALE	1415m	East
GW110280	0.00m-2.00m TOPSOIL 2.00m-8.00m SAND 8.00m-16.50m SAND AND GRAVEL 16.50m-17.00m SHALE	1432m	East
GW075138	0.00m-1.00m Topsoil, clay, orange, some rock frags to5mm 1.00m-2.00m Clay, weathered, white, slightly moist 2.00m-3.00m Clay, orange, slightly moist 3.00m-4.00m Clay, weathered, grey, hard rock frags to 30mm 4.00m-5.00m Clay, grey to orange, large frags to 30mm 5.00m-6.00m Clay (Shale?), dark grey, slightly moist	1478m	North
GW106643	0.00m-0.50m soil 0.50m-7.00m sand 7.00m-16.00m gravel, coarse 16.00m-16.30m shale	1511m	East

Groundwater No	Drillers Log	Distance	Direction
GW075129	0.00m-17.00m Gravel 17.00m-24.00m Shale 24.00m-36.00m Sandstone, fine 36.00m-210.00m Sandstone, coarse 210.00m-264.00m Sandstone, medium 264.00m-271.00m Claystone 271.00m-276.00m Sandstone, white, coarse	1519m	North
GW273190	0.00m-1.00m Clay, brown 1.00m-4.00m Clay, Gravelly, red/brown 4.00m-7.00m Sandstone, light orange 7.00m-25.00m Sandstone, light brown 25.00m-29.00m Sandstone, white 29.00m-34.00m Sandstone, light brown 34.00m-38.00m Sandstone, white 38.00m-39.00m Sandstone, yellow 39.00m-46.00m Sandstone, orange 46.00m-47.50m Clay, grey 47.50m-53.00m Sandstone, light brown 53.00m-55.00m Sandstone, brown 55.00m-57.00m Shale, grey 57.00m-64.00m Sandstone, light brown 64.00m-65.00m Shale, grey 65.00m-66.00m Sandstone, grey, some Shale 66.00m-68.00m Sandstone, light grey 68.00m-88.00m Sandstone, white 88.00m-99.50m Sandstone, light brown 99.50m-102.00m Shale 102.00m-121.00m Sandstone, light brown 121.00m-130.00m Sandstone, white 130.00m-140.00m Sandstone, light grey 140.00m-142.00m Sandstone, brown 142.00m-157.00m Sandstone, light brown 157.00m-162.00m Sandstone, brown 162.00m-172.00m Sandstone, light brown 172.00m-182.00m Sandstone, white 182.00m-186.00m Sandstone, yellow, bands of Shale 186.00m-191.00m Sandstone, white 191.00m-193.00m Shale 193.00m-204.00m Sandstone, light grey 204.00m-206.00m Sandstone, light grey, bands of Shale 206.00m-222.00m Sandstone, ligth brown 222.00m-226.00m Sandstone, brown 226.00m-229.00m Sandstone, coarse, white 229.00m-232.00m Sandstone, light grey, bands of Shale 232.00m-233.00m Claystone, grey 233.00m-234.00m Claystone, red	1609m	South West
GW075125	0.00m-10.00m Sand 10.00m-14.00m Gravel, river Gravels 14.00m-26.00m Shale 26.00m-47.00m Sandstone, fine 47.00m-84.00m Sandstone, coarse 84.00m-200.00m Sandstone, fine 200.00m-209.00m Shale 209.00m-234.00m Sandstone, fine 234.00m-299.00m Sandstone, Shale, Claystone 299.00m-300.00m Claystone	1629m	North East
GW075128	0.00m-14.00m Gravel 14.00m-84.00m Sandstone, fine 84.00m-141.00m Sandstone, medium 141.00m-144.00m Shale 144.00m-215.00m Sandstone, coarse 215.00m-254.00m Sandstone, grey, Shale 254.00m-268.00m Claystone	1651m	North

Groundwater No	Drillers Log	Distance	Direction
GW020590	0.00m-0.30m Topsoil Gravel 0.30m-0.91m Clay Boulder 0.91m-1.52m Clay Yellow 1.52m-2.13m Pipe Clay White 2.13m-2.43m Sandstone 2.43m-3.35m Boulders Clay 3.35m-3.65m Sandstone 3.65m-6.09m Sandstone 6.09m-8.22m Sandstone Bands 8.22m-16.15m Sandstone Hard 16.15m-16.45m Shale 16.45m-28.95m Sandstone 28.95m-29.26m Clay 29.26m-29.87m Sandstone Yellow 29.87m-31.09m Clay Laminated Ironstone 31.09m-35.66m Sandstone Soft 35.66m-40.84m Sandstone 40.84m-41.15m Clay Laminated Ironstone 41.15m-41.45m Sandstone Shale 41.75m-42.67m Sandstone 42.67m-43.28m Clay Sandy Gravel 43.28m-46.32m Sandstone	1655m	South West
GW111418	0.00m-36.00m SHALE 36.00m-72.00m SANDSTONE/SHALE 72.00m-89.00m SANDSTONE 89.00m-94.00m SANDSTONE/SHALE 94.00m-97.00m SHALE 97.00m-113.00m SANDSTONE/SHALE 113.00m-135.00m SANDSTONE 135.00m-137.00m SHALE 137.00m-171.00m SANDSTONE 171.00m-188.00m SANDSTONE/QUARTZ 188.00m-196.00m SANDSTONE 196.00m-204.00m SHALE	1719m	South East
GW075092	0.00m-3.00m Sandstone, red & brown 3.00m-10.00m Sandstone, white & red 10.00m-15.00m Sandstone, orange 15.00m-30.00m Sandstone, yellow/brown 30.00m-50.00m Shale, dark grey 50.00m-65.00m Sandstone, pale grey 65.00m-85.00m Siltstone 85.00m-126.00m Sandstone, white 126.00m-130.00m Shale 130.00m-148.00m Sandstone, pale grey 148.00m-150.00m Shale	1938m	West
GW100903	0.00m-0.60m TOPSOIL 0.60m-2.40m CLAY (BROWN) 2.40m-2.75m IRONSTONE 2.75m-16.80m SHALE 16.80m-19.20m SANDSTONE 19.20m-20.10m SHALE 20.10m-64.60m SANDSTONE 64.60m-70.40m SHALE (BLACK) 70.40m-73.10m SANDSTONE	1945m	South
GW115069	0.00m-0.50m CLAYEY SILT, DARK BROWN 0.50m-5.00m SILTY CLAY, BROWN,SOME PEBBLES 5.00m-9.00m SILTY SANDY CLAY, BROWN	1985m	South East
GW115066	0.00m-0.50m SILTY CLAYEY SAND 0.50m-1.00m SANDY CLAY SILTY,DARK BROWN 1.00m-4.00m SILTY CLAY, MED. PLASTICITY,BROWN 4.00m-8.50m SILTY CLAY,BROWN MOTT. WITH SOME GREY	1991m	South East
GW115067	0.00m-0.20m CONCRETE 0.20m-1.30m SILTY CLAYEY SAND,DARK BROWN,SOME GRAVEL 1.30m-2.10m SILTY SANDY CLAY 2.10m-8.85m SILTY SANDY CLAY BROWN/ORANGE MOTTLED	1998m	South East

Geology 1:100,000

Leonay Parade, Leonay, NSW 2750



Geology

Leonay Parade, Leonay, NSW 2750

Geological Units

What are the Geological Units onsite?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Qpc	Gravel, sand, silt, clay	Cranebrook Formation			Quaternary		Penrith	1:100,000

What are the Geological Units within the dataset buffer?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Qpc	Gravel, sand, silt, clay	Cranebrook Formation			Quaternary		Penrith	1:100,000
Rh	Medium to very coarse-grained quartz sandstone, minor laminated mudstone and siltstone leases	Hawkesbury Sandstone			Middle Triassic		Penrith	1:100,000
Tr	Conglomerate, matrix supported				Tertiary		Penrith	1:100,000
water							Penrith	1:100,000

Geological Structures

What are the Geological Structures onsite?

Feature	Name	Description	Map Sheet	Dataset
No features				1:100,000

What are the Geological Structures within the dataset buffer?

Feature	Name	Description	Map Sheet	Dataset
Fold	Lapstone Monocline	Fold, position accurate	Penrith	1:100,000
Fold	Lapstone Monocline	Fold, position accurate	Penrith	1:100,000
Fold	Lapstone Monocline	Fold, position accurate	Penrith	1:100,000
Lineament		Kooree Creek Lineament	Penrith	1:100,000

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

Naturally Occurring Asbestos Potential

Leonay Parade, Leonay, NSW 2750

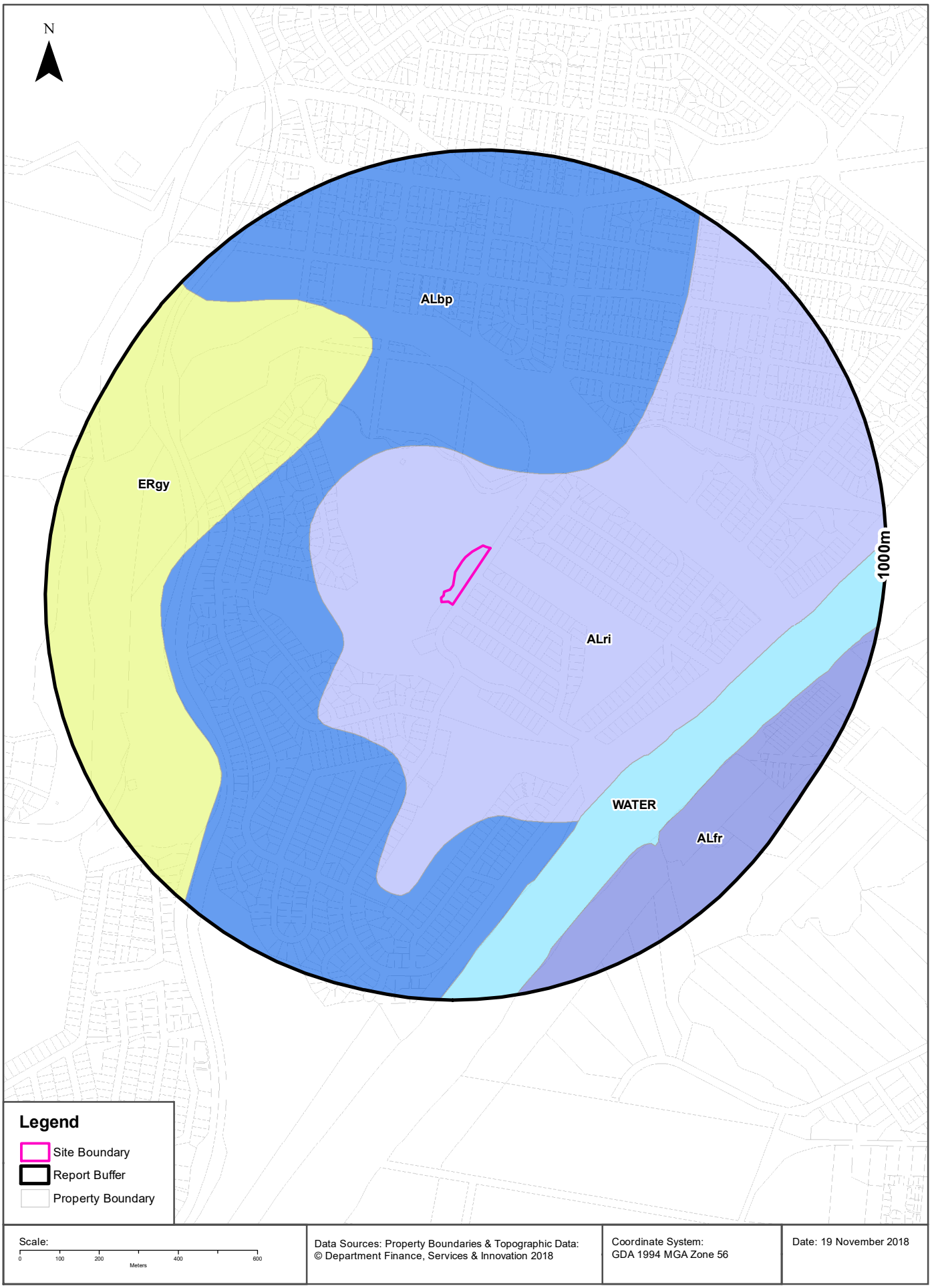
Naturally Occurring Asbestos Potential

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												

Soil Landscapes

Leonay Parade, Leonay, NSW 2750



Soils

Leonay Parade, Leonay, NSW 2750

Soil Landscapes

What are the onsite Soil Landscapes?

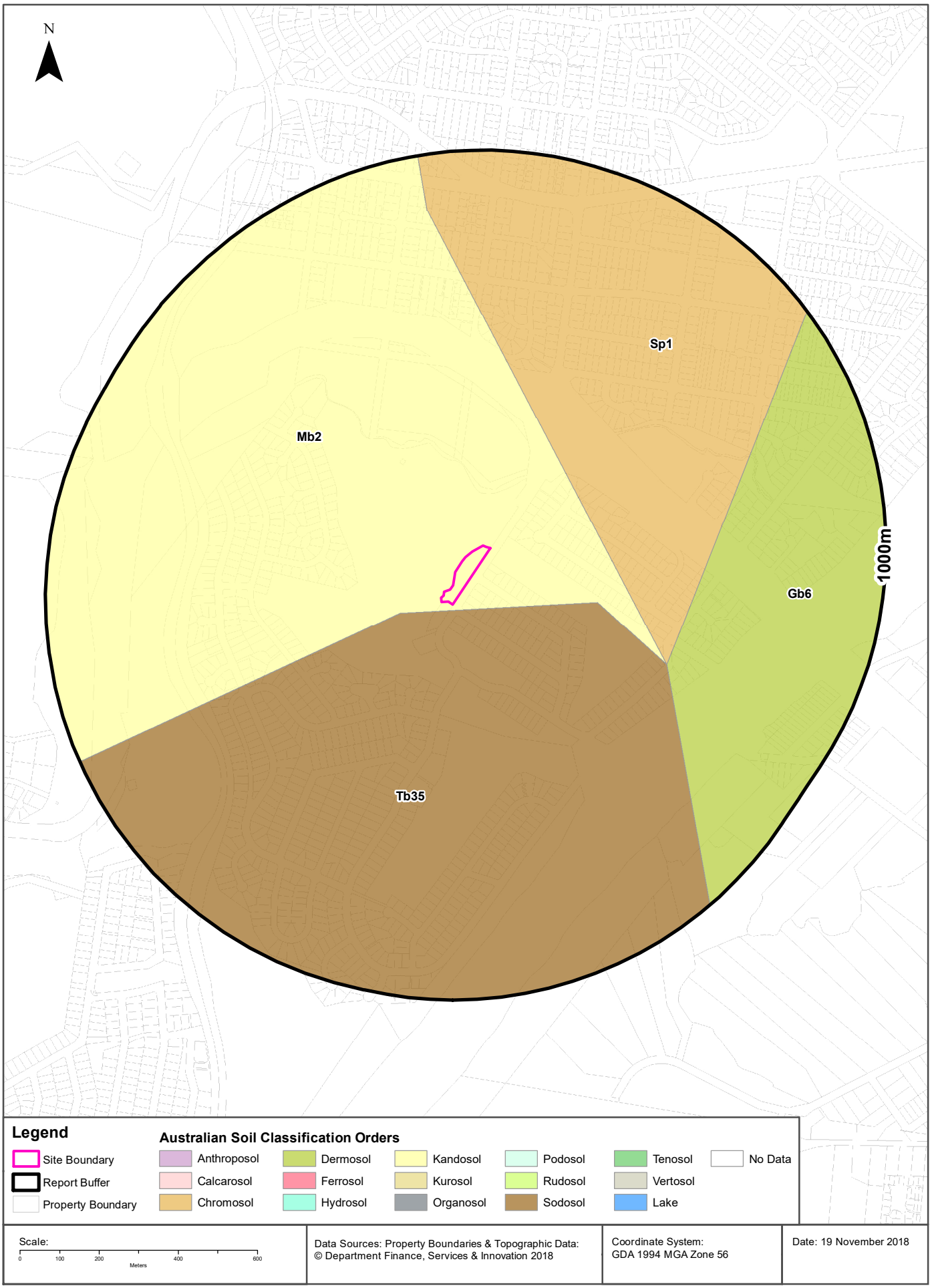
Soil Code	Name	Group	Process	Map Sheet	Scale
ALri	RICHMOND		ALLUVIAL	Penrith	1:100,000

What are the Soil Landscapes within the dataset buffer?

Soil Code	Name	Group	Process	Map Sheet	Scale
ALbp	BERKSHIRE PARK		ALLUVIAL	Penrith	1:100,000
ALfr	FREEMANS REACH		ALLUVIAL	Penrith	1:100,000
ALri	RICHMOND		ALLUVIAL	Penrith	1:100,000
ERgy	GYMEA		EROSIONAL	Penrith	1:100,000
WATER	WATER		WATER	Penrith	1:100,000

Atlas of Australian Soils

Leonay Parade, Leonay, NSW 2750



Soils

Leonay Parade, Leonay, NSW 2750

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
Mb2	Kandosol	Dissected sandstone plateau of moderate to strong relief with sandstone pillars, ledges, and slabs-- level to undulating ridges, irregularly benched slopes, steep ridges, cliffs, canyons, narrow sandy valleys: chief soils are (i) on areas of gentle to moderate relief, acid yellow leached earths (Gn2.74) and (Gn2.34) and acid leached yellow earths (Gn2.24)-sometimes these soils contain ironstone gravel; and (ii) on, or adjacent to, areas of strong relief, siliceous sands (Uc1.2), leached sands (Uc2.12) and (Uc2.2), and shallow forms of the above (Gn2) soils. Associated are: (i) on flat to gently undulating remnants of the original plateau surface, leached sands (Uc2.3), siliceous sands (Uc1.2), sandy earths (Uc5.22), and (Gn2) soils as for (i) above (these areas are in part comparable with unit Cb29); (ii) on flat ironstone gravelly remnants of the original plateau surface, (Gn2) soils as for unit Mb5(i); (iii) on gently undulating ridges where interbedded shales are exposed, shallow, often stony (Dy3.41), (Dr2.21), and related soils similar to unit Tb35; (iv) narrow valleys of (Uc2.3) soils flanked by moderate slopes of (Dy3.41) soils; (v) escarpments of steep hills with shallow (Dy) and (Dr) soils between sandstone pillars; and (vi) shallow (Um) soils, such as (Um6.21) on steep hills of basic rocks. As mapped, minor areas of units Mg20, Mm1, and Mw8 are included. Data are limited.	0m
Tb35	Sodosol	Dissected plateau remnants--flat to undulating ridge tops with moderate to steep side slopes: chief soils are hard acidic yellow and yellow mottled soils (Dy3.41), (Dy2.21), and (Dy2.41) and hard acidic red soils (Dr2.21); many shallow profiles occur and profile thickness varies considerably over short distances. Associated are: (Gn3.54), (Gn3.14), and possibly other (Gn3) soils; (Db1.2) soils on some ridges; (Dy5.81) soils in areas transitional to unit Mb2; soils common to unit Mb2; and eroded lateritic remnants. Small areas of other soils are likely. Flat ferruginous shale or sandstone fragments are common on and/or in and/or below the soils of this unit.	14m
Sp1	Chromosol	Gently undulating plain usually with a surface scatter of ironstone gravel: chief soils are hard acidic yellow soils (Dy2.61) on flat-topped ridges and higher situations generally and hard acidic yellow mottled soils (Dy3.41) or (Dy3.81) in lower-lying situations. They all commonly contain ironstone gravel through the profile. Associated are (Dy5.41) or (Dy5.81) soils, containing ironstone gravels; and shallow (Gn2.1) gravelly soils also with indurated materials below the solum. Iron-cemented and/or silica-cemented strata have been recorded in many areas below the soils. As mapped, areas of units X9, Pb12, and Tb35 may be included.	256m
Gb6	Dermosol	Younger river terraces, present flood-plain, and swamps: chief soils are dark friable loamy soils (Um6.11), possibly with some (Gn2.8) soils on the terraces. Associated are various (Um) and (Uc) soils on the flood-plains and swamps. Area is subject to periodic inundation. As mapped, areas of units X9, Mb2, and Sp1 are included.	521m

Acid Sulfate Soils

Leonay Parade, Leonay, NSW 2750

Environmental Planning Instrument - Acid Sulfate Soils

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

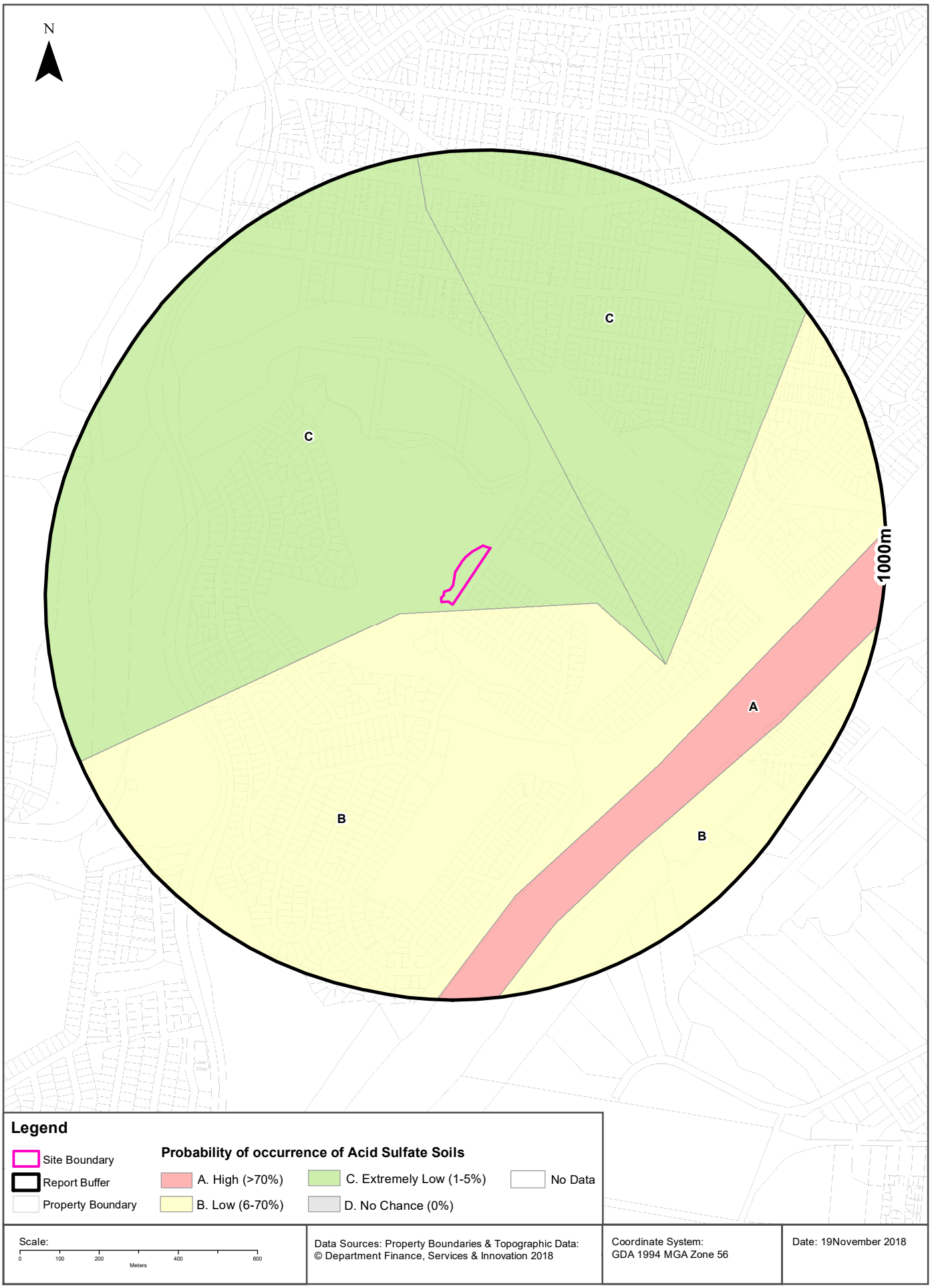
Soil Class	Description	EPI
N/A		

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

Soil Class	Description	EPI	Distance	Direction
N/A				

Atlas of Australian Acid Sulfate Soils

Leonay Parade, Leonay, NSW 2750



Acid Sulfate Soils

Leonay Parade, Leonay, NSW 2750

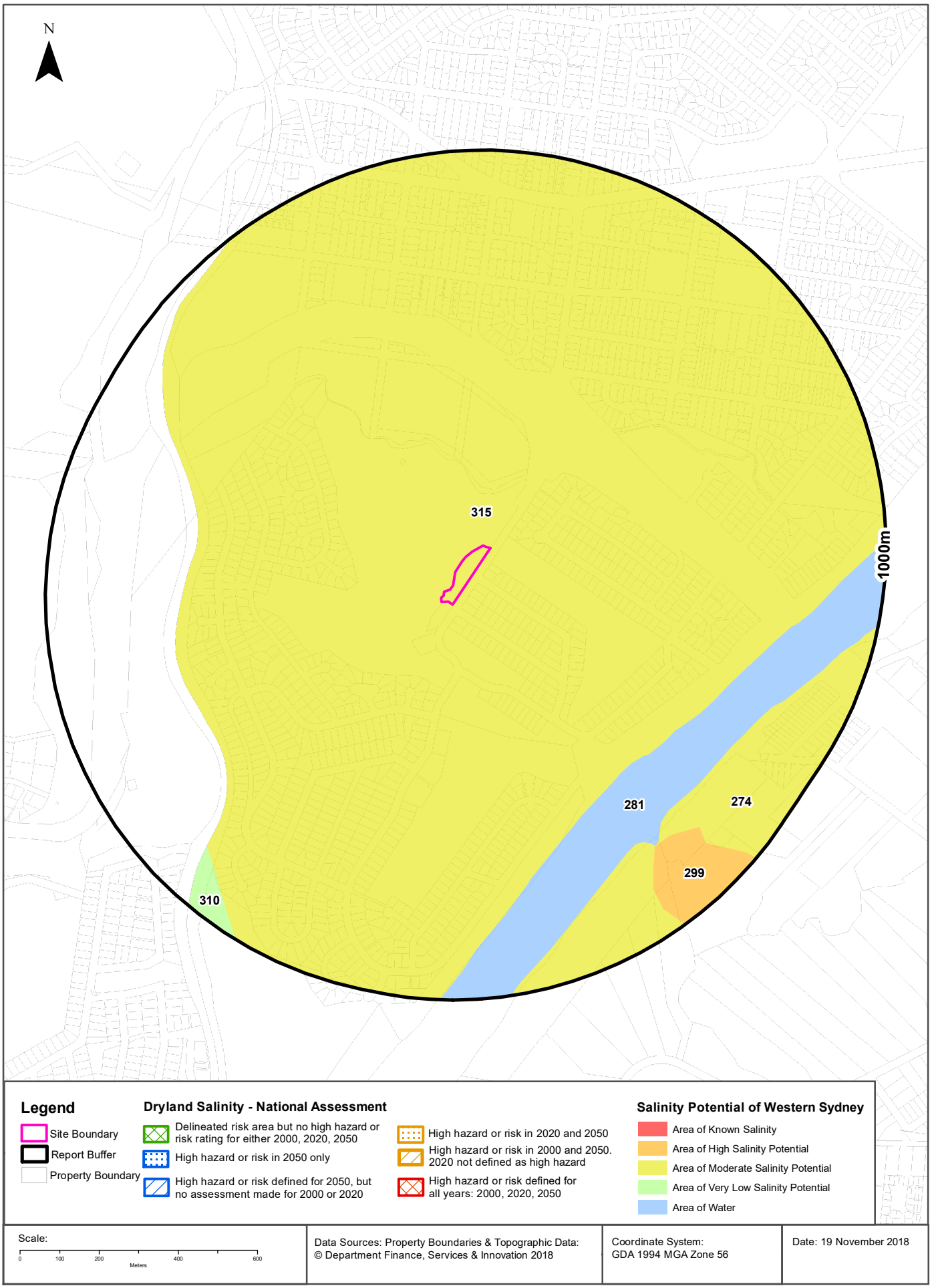
Atlas of Australian Acid Sulfate Soils

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

Class	Description	Distance
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	0m
B	Low Probability of occurrence. 6-70% chance of occurrence.	14m
A	High Probability of occurrence. >70% chance of occurrence.	649m

Dryland Salinity

Leonay Parade, Leonay, NSW 2750



Dryland Salinity

Leonay Parade, Leonay, NSW 2750

Dryland Salinity - National Assessment

Is there Dryland Salinity - National Assessment data onsite?

No

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	999m	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
315	MODERATE	Area of Moderate Salinity Potential	0m	Onsite
281	WATER	Area of Water	600m	North East
274	MODERATE	Area of Moderate Salinity Potential	752m	South East
299	HIGH	Area of High Salinity Potential	796m	South East
310	LOW	Area of Very Low Salinity Potential	854m	South West

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

Mining Subsidence Districts

Leonay Parade, Leonay, NSW 2750

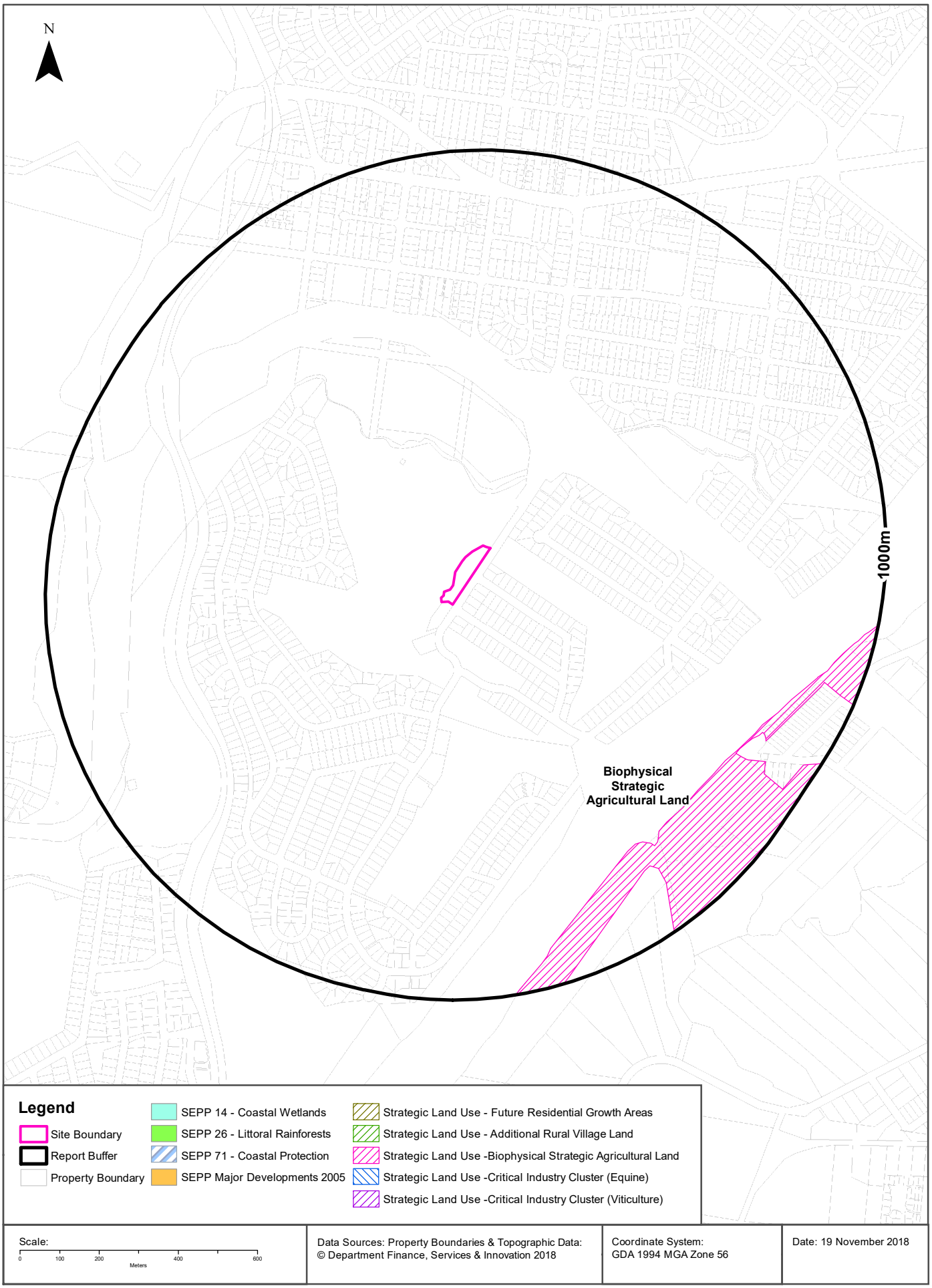
Mining Subsidence Districts

Mining Subsidence Districts within the dataset buffer:

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

State Environmental Planning Policy

Leonay Parade, Leonay, NSW 2750



Environmental Zoning

Leonay Parade, Leonay, NSW 2750

State Environmental Planning Policy Protected Areas

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

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

SEPP Protected Areas Data Source: NSW Department of Planning & Environment

State Environmental Planning Policy Major Developments (2005)

State Environmental Planning Policy Major Developments within the dataset buffer:

Map Id	Feature	Effective Date	Distance	Direction
N/A	No records within buffer			

SEPP Major Development Data Source: NSW Department of Planning & Environment

State Environmental Planning Policy Strategic Land Use Areas

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

Strategic Land Use	SEPPNo	Effective Date	Amendment	Amendment Year	Distance	Direction
Biophysical Strategic Agricultural Land	2007	28/01/2014	Coal Seam Gas 2014		762m	East

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

EPI Planning Zones

Leonay Parade, Leonay, NSW 2750

Environmental Planning Instrument

Leonay Parade, Leonay, NSW 2750

Land Zoning

What Environmental Planning Instrument Land Zones exist within the dataset buffer?

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RE2	Private Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	0m	Onsite
R2	Low Density Residential		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	0m	South West
RE2	Private Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	20m	South East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	133m	North West
RE2	Private Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	183m	South
SP2	Infrastructure	Classified Road	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	207m	North
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	280m	East
B1	Neighbourhood Centre		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	317m	South
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	413m	South West
R2	Low Density Residential		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	429m	North East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	429m	North East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	438m	South
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	454m	North West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018		528m	South
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	562m	North East
W2	Recreational Waterways		Penrith Local Environmental Plan 2010	22/09/2010	22/09/2010	22/06/2018		577m	East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	629m	South West
SP2	Infrastructure	Rail	Blue Mountains Local Environmental Plan 2015	21/12/2015	15/02/2016	06/04/2018		633m	North West
R3	Medium Density Residential		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	640m	North East
E3	Environmental Management		Penrith Local Environmental Plan 2010	22/09/2010	22/09/2010	22/06/2018		650m	North West
E2	Environmental Conservation		Blue Mountains Local Environmental Plan 2015	21/12/2015	15/02/2016	06/04/2018		659m	South West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	736m	North East
E2	Environmental Conservation		Penrith Local Environmental Plan 2010	22/09/2010	22/09/2010	22/06/2018		752m	North West
E2	Environmental Conservation		Penrith Local Environmental Plan 2010	22/09/2010	22/09/2010	22/06/2018		770m	South
SP2	Infrastructure	Classified Road	Blue Mountains Local Environmental Plan 2015	21/12/2015	15/02/2016	06/04/2018		779m	West
R2	Low Density Residential		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	804m	South East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	828m	East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	838m	South West

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
E2	Environmental Conservation		Blue Mountains Local Environmental Plan 2015	21/12/2015	15/02/2016	06/04/2018		853m	North West
E3	Environmental Management		Penrith Local Environmental Plan 2010	22/09/2010	22/09/2010	22/06/2018		853m	North West
E2	Environmental Conservation		Blue Mountains Local Environmental Plan 2015	21/12/2015	15/02/2016	06/04/2018		862m	West
SP2	Infrastructure	Classified Road	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	873m	North East
RU4	Primary Production Small Lots		Penrith Local Environmental Plan 2010	22/09/2010	22/09/2010	22/06/2018		876m	South East
E2	Environmental Conservation		Penrith Local Environmental Plan 2010	22/09/2010	22/09/2010	22/06/2018		889m	South
RU4	Primary Production Small Lots		Penrith Local Environmental Plan 2010	22/09/2010	22/09/2010	22/06/2018		891m	South
SP2	Infrastructure	Water Supply System	Blue Mountains Local Environmental Plan 2015	21/12/2015	15/02/2016	06/04/2018		895m	South West
SP2	Infrastructure	Classified Road	Penrith Local Environmental Plan 2010	22/09/2010	22/09/2010	22/06/2018		900m	South East
E4	Environmental Living		Blue Mountains Local Environmental Plan 2015	21/12/2015	15/02/2016	06/04/2018		904m	South West
R2	Low Density Residential		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	908m	North
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	908m	North East
R3	Medium Density Residential		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	923m	North East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	923m	South West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	944m	East
DM	Deferred Matter		Blue Mountains Local Environmental Plan 2015	21/12/2015	15/02/2016	06/04/2018		948m	West
SP2	Infrastructure	Defence	Blue Mountains Local Environmental Plan 2015	21/12/2015	15/02/2016	06/04/2018		963m	West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	22/06/2018	Amendment No 4	988m	North West

Environmental Planning Instrument

Leonay Parade, Leonay, NSW 2750

Minimum Lot Size

What are the onsite Environmental Planning Instrument Minimum Lot Sizes?

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

Maximum Height of Buildings

What are the onsite Environmental Planning Instrument Maximum Height of Buildings?

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

Floor Space Ratio

What are the onsite Environmental Planning Instrument Floor Space Ratios?

Symbol	Floor Space Ratio	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
No Data							

Land Application

What are the onsite Environmental Planning Instrument Land Applications?

Application Type	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
Included	Penrith Local Environmental Plan 2010	11/08/2017	11/08/2017	11/08/2017	Amendment No 12	100

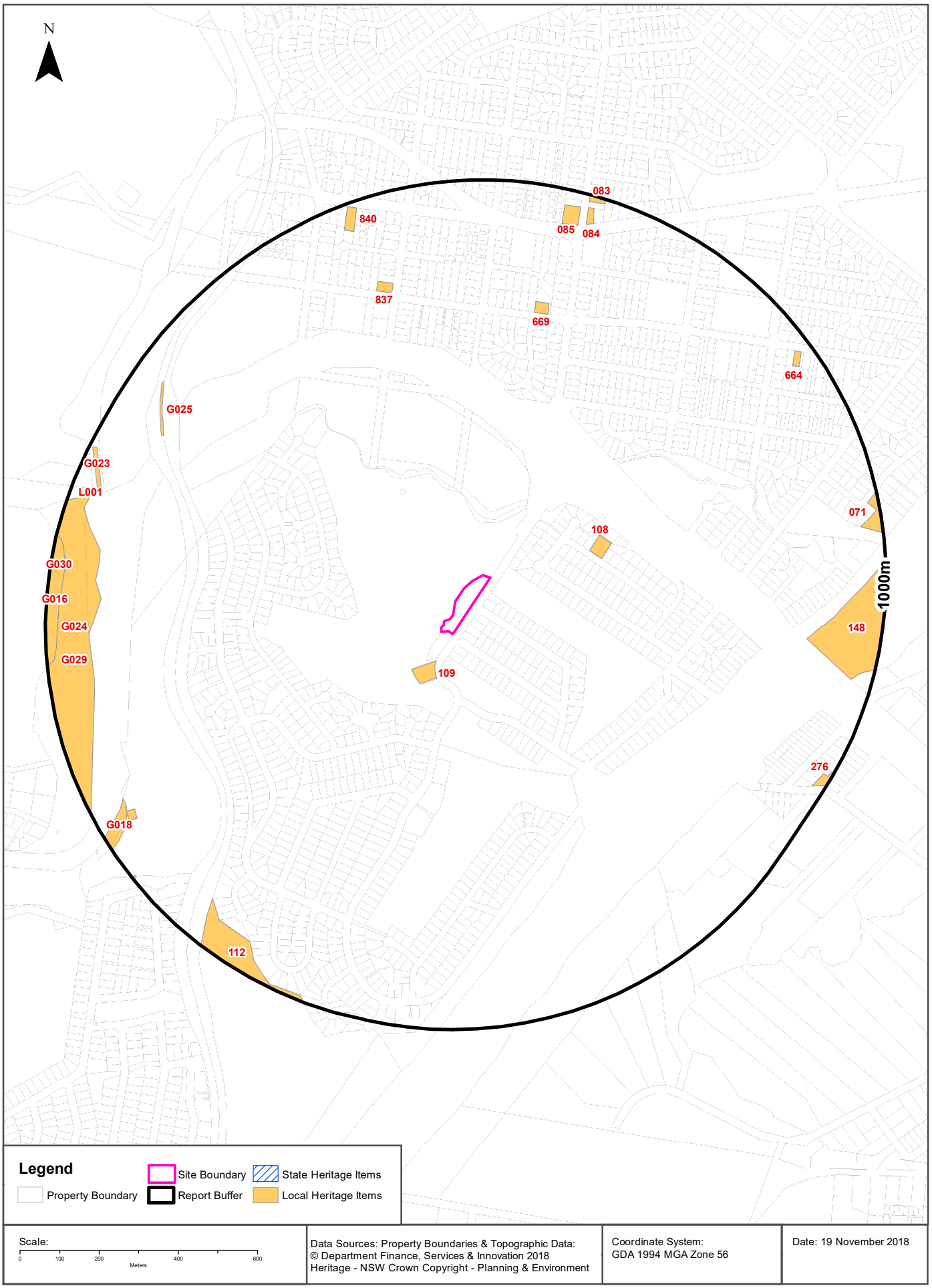
Land Reservation Acquisition

What are the onsite Environmental Planning Instrument Land Reservation Acquisitions?

Reservation	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Comments	Percentage of Site Area
No Data							

Heritage Items

Leonay Parade, Leonay, NSW 2750



Heritage

Leonay Parade, Leonay, NSW 2750

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

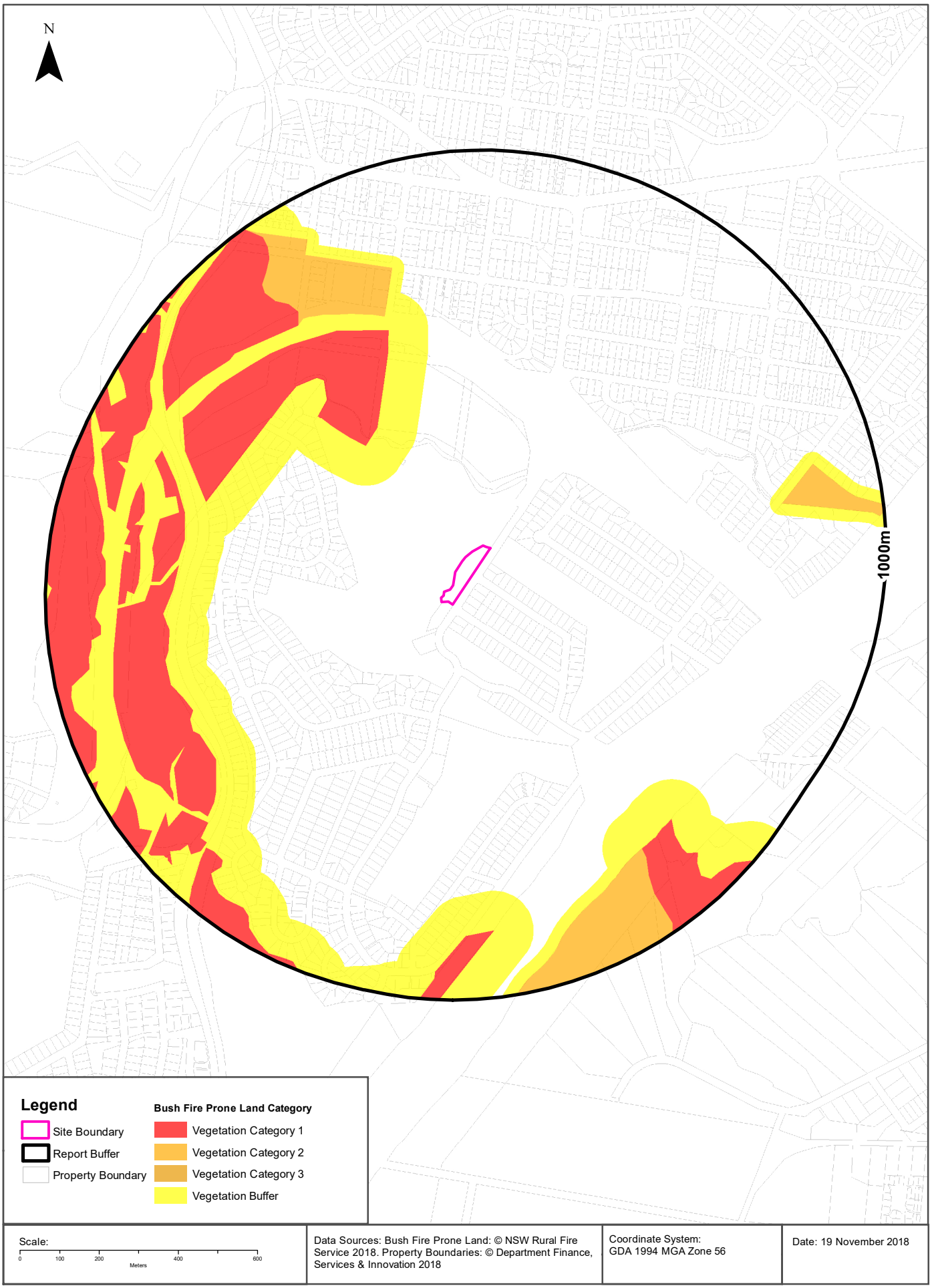
What are the EPI Heritage Items located within the dataset buffer?

Map Id	Name	Classification	Significance	EPI	Published Date	Commenced Date	Currency Date	Distance	Direction
109	Leo Buring cottage, barn, glasshouse and memorial	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	75m	South West
108	Edinglassie - House	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	259m	North East
669	House	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	678m	North
837	House	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	754m	North
148	Rowing Course	Item - General	Local	Penrith Local Environmental Plan 2010	22/09/2010	22/09/2010	11/08/2017	813m	North East
G025	Knapsack Gully Viaduct, 1912	Item - General	Local	Blue Mountains Local Environmental Plan 2015	21/12/2015	15/02/2016	15/02/2016	848m	North West
G029	Lucasville Station	Item - General	Local	Blue Mountains Local Environmental Plan 2015	21/12/2015	15/02/2016	15/02/2016	862m	West
G024	Lapstone Zig Zag	Item - General	Local	Blue Mountains Local Environmental Plan 2015	21/12/2015	15/02/2016	15/02/2016	862m	West
112	Site of Edinglassie	Item - Archaeological	Local	Penrith Local Environmental Plan 2010	22/09/2010	22/09/2010	11/08/2017	889m	South West
G018	Former Railway Line and Abandoned Rail Tunnel	Item - General	Local	Blue Mountains Local Environmental Plan 2015	21/12/2015	15/02/2016	15/02/2016	896m	South West
085	Emu Plains Assembly Hall	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	911m	North
084	Sandstone cottage	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	923m	North
G023	Knapsack Gully Viaduct, 1865	Item - General	Local	Blue Mountains Local Environmental Plan 2015	21/12/2015	15/02/2016	15/02/2016	926m	West
840	House	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	928m	North

Map Id	Name	Classification	Significance	EPI	Published Date	Commenced Date	Currency Date	Distance	Direction
664	House	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	932m	North East
071	Huntington Hall '?? dwelling and garden	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	943m	East
L001	Lapstone Monocline	Item - General	Local	Blue Mountains Local Environmental Plan 2015	21/12/2015	15/02/2016	15/02/2016	948m	West
G030	Former Lapstone Hotel (RAAF Base)	Item - General	Local	Blue Mountains Local Environmental Plan 2015	21/12/2015	15/02/2016	15/02/2016	963m	West
G016	Briarcliffe (RAAF Base)	Item - General	Local	Blue Mountains Local Environmental Plan 2015	21/12/2015	15/02/2016	15/02/2016	963m	West
276	Regentville Workers'?? Terrace	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	966m	South East
083	Edwardian cottage	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	984m	North
G018	Former Railway Line and Abandoned Rail Tunnel	Item - General	Local	Blue Mountains Local Environmental Plan 2015	21/12/2015	15/02/2016	15/02/2016	989m	South West

Natural Hazards - Bush Fire Prone Land

Leonay Parade, Leonay, NSW 2750



Natural Hazards

Leonay Parade, Leonay, NSW 2750

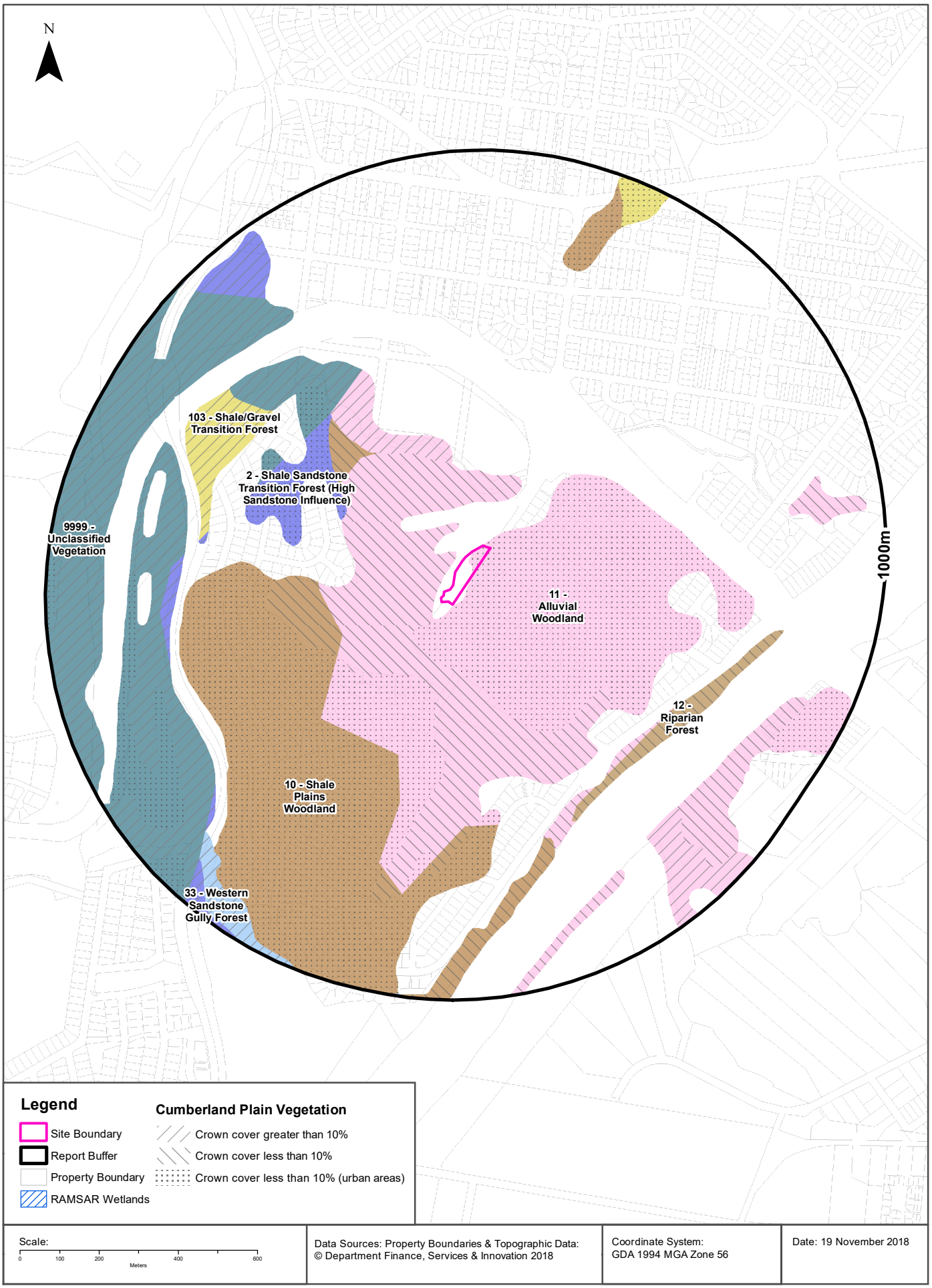
Bush Fire Prone Land

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

Bush Fire Prone Land Category	Distance	Direction
Vegetation Buffer	278m	East
Vegetation Category 1	378m	North West
Vegetation Category 2	629m	North West

Ecological Constraints - Remnant Vegetation of the Cumberland Plain

Leonay Parade, Leonay, NSW 2750



Ecological Constraints

Leonay Parade, Leonay, NSW 2750

Remnant Vegetation of the Cumberland Plain

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

Description	Crown Cover	Distance	Direction
11 - Alluvial Woodland	Crown cover less than 10% (urban areas)	0m	Onsite
11 - Alluvial Woodland	Crown cover less than 10%	15m	South West
11 - Alluvial Woodland	Crown cover greater than 10%	223m	North West
10 - Shale Plains Woodland	Crown cover less than 10%	263m	West
10 - Shale Plains Woodland	Crown cover less than 10% (urban areas)	295m	South West
2 - Shale Sandstone Transition Forest (High Sandstone Influence)	Crown cover less than 10% (urban areas)	313m	North West
9999 - Unclassified Vegetation	Crown cover less than 10% (urban areas)	497m	North West
9999 - Unclassified Vegetation	Crown cover greater than 10%	500m	North West
12 - Riparian Forest	Crown cover less than 10%	578m	South East
103 - Shale/Gravel Transition Forest	Crown cover greater than 10%	606m	North West
2 - Shale Sandstone Transition Forest (High Sandstone Influence)	Crown cover greater than 10%	610m	West
33 - Western Sandstone Gully Forest	Crown cover greater than 10%	831m	South West
103 - Shale/Gravel Transition Forest	Crown cover less than 10% (urban areas)	872m	North East

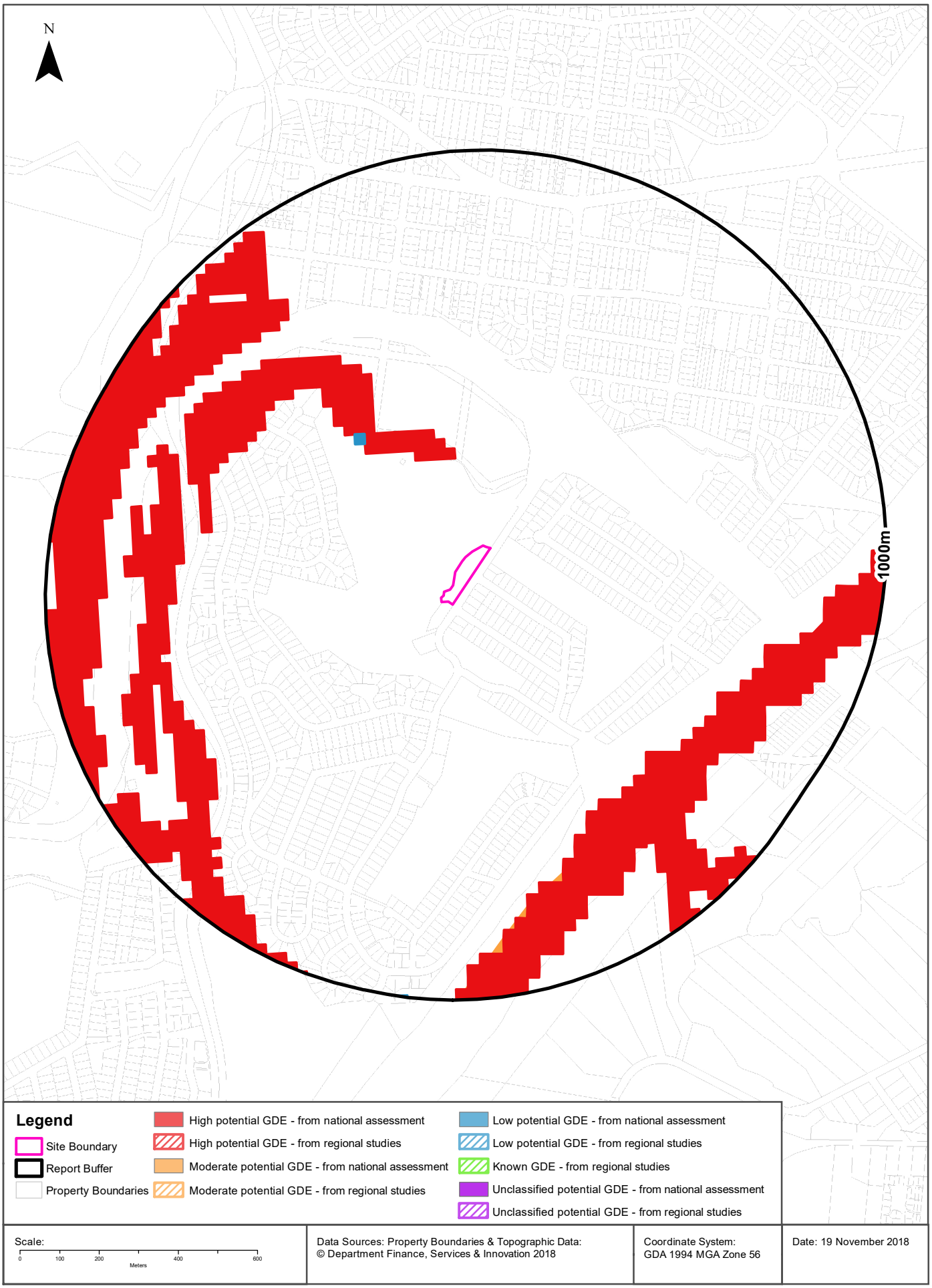
RAMSAR Wetlands

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

Leonay Parade, Leonay, NSW 2750



Ecological Constraints

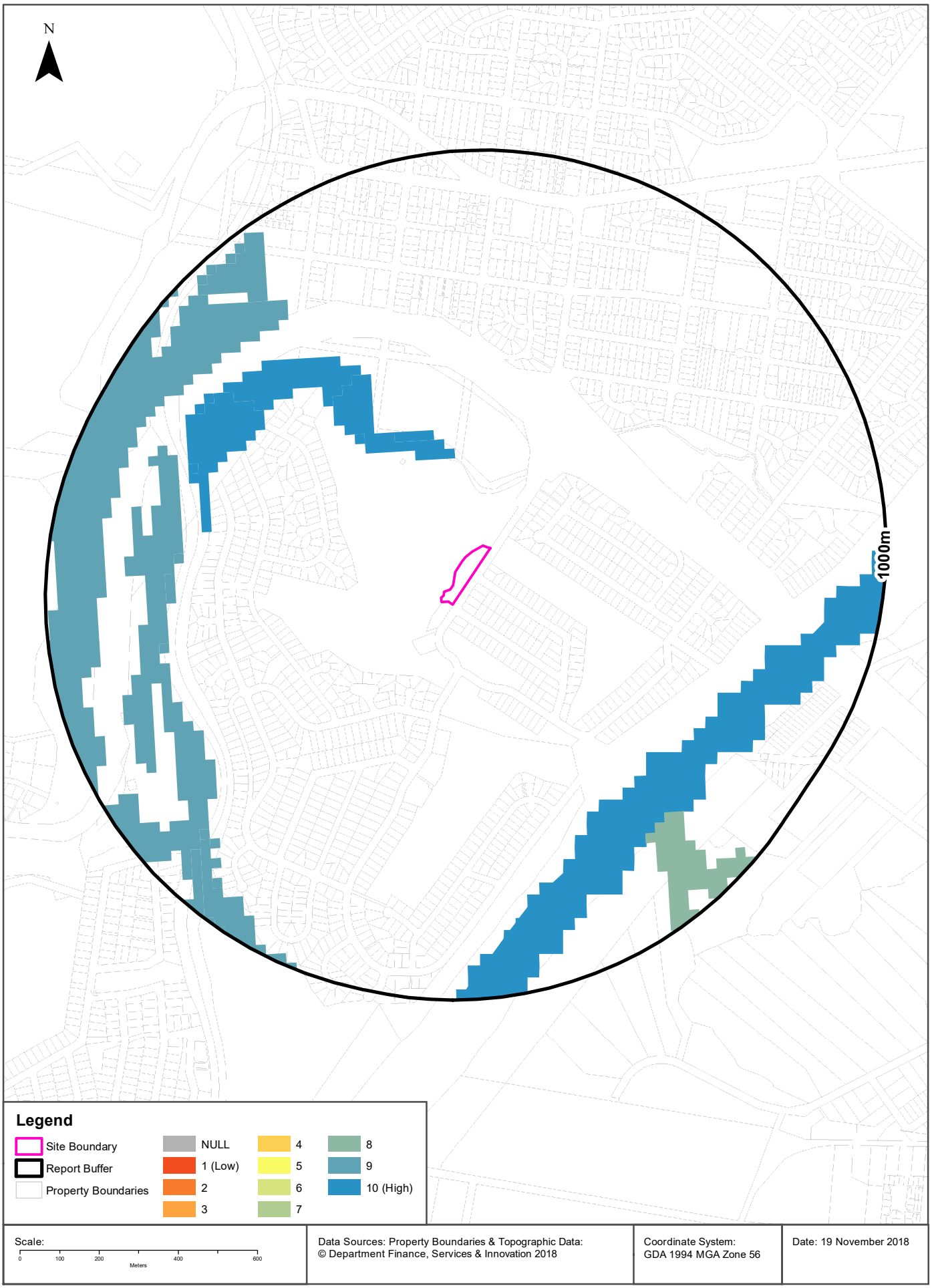
Leonay Parade, Leonay, NSW 2750

Groundwater Dependent Ecosystems Atlas

Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
Terrestrial	High potential GDE - from national assessment	Undulating to low hilly country, mainly on shale.	Vegetation	Unconsolidated sedimentary	230m
Terrestrial	Low potential GDE - from national assessment	Undulating to low hilly country, mainly on shale.	Vegetation	Unconsolidated sedimentary	382m
Aquatic	High potential GDE - from national assessment	Undulating to low hilly country, mainly on shale.	Wetland		614m
Aquatic	Moderate potential GDE - from national assessment	Undulating to low hilly country, mainly on shale.	River		688m

Ecological Constraints - Inflow Dependent Ecosystems Likelihood

Leonay Parade, Leonay, NSW 2750



Ecological Constraints

Leonay Parade, Leonay, NSW 2750

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
Terrestrial	10	Undulating to low hilly country, mainly on shale.	Vegetation	Unconsolidated sedimentary	230m
Aquatic	10	Undulating to low hilly country, mainly on shale.	Wetland		614m
Terrestrial	9	Undulating to low hilly country, mainly on shale.	Vegetation	Consolidated sedimentary	655m
Terrestrial	8	Undulating to low hilly country, mainly on shale.	Vegetation	Unconsolidated sedimentary	748m

Ecological Constraints

Leonay Parade, Leonay, NSW 2750

NSW BioNet Atlas

Species on the NSW BioNet Atlas that have a NSW or federal conservation status, a NSW sensitivity status, or are listed under a migratory species agreement, and are within 10km of the site?

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Amphibia	Heleioporus australiacus	Giant Burrowing Frog	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Amphibia	Litoria aurea	Green and Golden Bell Frog	Endangered	Not Sensitive	Vulnerable	
Animalia	Amphibia	Pseudophryne australis	Red-crowned Toadlet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Actitis hypoleucos	Common Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Not Sensitive	Critically Endangered	
Animalia	Aves	Apus pacificus	Fork-tailed Swift	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Ardea ibis	Cattle Egret	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	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	Callocephalon fimbriatum	Gang-gang Cockatoo	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Calyptorhynchus lathami	Glossy Black-Cockatoo	Vulnerable	Category 2	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	Ephippiorhynchus asiaticus	Black-necked Stork	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Gallinago hardwickii	Latham's Snipe	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; 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	CAMBA
Animalia	Aves	Hieraaetus morphnoides	Little Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hirundapus caudacutus	White-throated Needletail	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Lathamus discolor	Swift Parrot	Endangered	Category 3	Critically Endangered	
Animalia	Aves	Limosa limosa	Black-tailed Godwit	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Lophoictinia isura	Square-tailed Kite	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Merops ornatus	Rainbow Bee-eater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	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	Petroica boodang	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Petroica phoenicea	Flame Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Plegadis falcinellus	Glossy Ibis	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Stagonopleura guttata	Diamond Firetail	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Stictonetta naevosa	Freckled Duck	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Tringa glareola	Wood Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tyto longimembris	Eastern Grass Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Tyto novaehollandiae	Masked Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Tyto tenebricosa	Sooty Owl	Vulnerable	Category 3	Not Listed	
Animalia	Gastropoda	Meridolum corneovirens	Cumberland Plain Land Snail	Endangered	Not Sensitive	Not Listed	
Animalia	Gastropoda	Pommerhelix duralensis	Dural Land Snail	Endangered	Not Sensitive	Endangered	
Animalia	Insecta	Petalura gigantea	Giant Dragonfly	Endangered	Not Sensitive	Not Listed	
Animalia	Mammalia	Cercartetus nanus	Eastern Pygmy-possum	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	Falsistrellus tasmaniensis	Eastern False Pipistrelle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus australis	Little Bentwing-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Mormopterus norfolkensis	Eastern Freetail-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Myotis macropus	Southern Myotis	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Petauroides volans	Greater Glider	Not Listed	Not Sensitive	Vulnerable	
Animalia	Mammalia	Petaurus australis	Yellow-bellied Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Phascolarctos cinereus	Koala	Vulnerable	Not Sensitive	Vulnerable	
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	Mammalia	Vespadelus troughtoni	Eastern Cave Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Hoplocephalus bungaroides	Broad-headed Snake	Endangered	Category 2	Vulnerable	
Plantae	Flora	Acacia bynoeana	Bynoe's Wattle	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Allocasuarina glareicola		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Dillwynia tenuifolia		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Epacris purpurascens var. purpurascens		Vulnerable	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Eucalyptus benthamii	Camden White Gum	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus leucoxylon subsp. pruinosa	Yellow Gum	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus scoparia	Wallangarra White Gum	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Grevillea juniperina subsp. juniperina	Juniper-leaved Grevillea	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Hibbertia puberula		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Isotoma fluviatilis subsp. fluviatilis		Not Listed	Not Sensitive	Extinct	
Plantae	Flora	Leucopogon fletcheri subsp. fletcheri		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Macadamia tetraphylla	Rough-shelled Bush Nut	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Marsdenia viridiflora subsp. viridiflora	Native Pear	Endangered Population	Not Sensitive	Not Listed	
Plantae	Flora	Melaleuca deanei	Deane's Paperbark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Micromyrtus minutiflora		Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Persoonia acerosa	Needle Geebung	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Persoonia hirsuta	Hairy Geebung	Endangered	Category 3	Endangered	
Plantae	Flora	Persoonia nutans	Nodding Geebung	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Pimelea spicata	Spiked Rice-flower	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Pterostylis chaetophora		Vulnerable	Category 2	Not Listed	
Plantae	Flora	Pterostylis saxicola	Sydney Plains Greenhood	Endangered	Category 2	Endangered	
Plantae	Flora	Pultenaea parviflora		Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Pultenaea villifera		Endangered Population	Not Sensitive	Not Listed	
Plantae	Flora	Syzygium paniculatum	Magenta Lilly Pilly	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Tetratheca glandulosa		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Zieria involucrata		Endangered	Not Sensitive	Vulnerable	

Data does not include NSW category 1 sensitive species.

Data obtained 19/11/2018

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APPENDIX D: ALS REPORTS

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1834494**	Page	: 1 of 14
Amendment	: **2**		
Client	: **ENVIROTECH PTY. LTD.**	Laboratory	: Environmental Division Sydney
Contact	: SIMON DOBERER	Contact	: Customer Services ES
Address	:	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: Leonay Parade, Leonay	Date Samples Received	: 19-Nov-2018 16:45
Order number	: 705818	Date Analysis Commenced	: 20-Nov-2018
C-O-C number	: ----	Issue Date	: 04-Dec-2018 10:51
Sampler	: Jack Hinchliffe		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 12		
No. of samples analysed	: 12		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Christopher Owler	Team Leader - Asbestos	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- Amendment (04/12/18): This report has been amended to alter the site details, project reference code or order number, and to allow the removal of analytical data for samples erroneously applied to this workorder.
- 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.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- 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)			Client sample ID	TP1	TP2	TP3	TP4	TP5
			Client sampling date / time	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00
Compound	CAS Number	LOR	Unit	ES1834494-001	ES1834494-002	ES1834494-003	ES1834494-004	ES1834494-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	9.6	12.2	9.7	10.8	12.8
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	6	<5	8	7	7
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	20	16	18	16	19
Copper	7440-50-8	5	mg/kg	18	19	17	16	13
Lead	7439-92-1	5	mg/kg	20	20	24	22	23
Nickel	7440-02-0	2	mg/kg	8	9	8	7	7
Zinc	7440-66-6	5	mg/kg	41	52	50	60	50
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
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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP1	TP2	TP3	TP4	TP5
				Client sampling date / time	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00
Compound	CAS Number	LOR	Unit		ES1834494-001	ES1834494-002	ES1834494-003	ES1834494-004	ES1834494-005
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
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
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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP1	TP2	TP3	TP4	TP5
				Client sampling date / time	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00
Compound	CAS Number	LOR	Unit		ES1834494-001	ES1834494-002	ES1834494-003	ES1834494-004	ES1834494-005
					Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued									
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
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP1	TP2	TP3	TP4	TP5
			Client sampling date / time	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00
Compound	CAS Number	LOR	Unit	ES1834494-001	ES1834494-002	ES1834494-003	ES1834494-004	ES1834494-005
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	<50	<50	<50	<50	<50
^ **>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	%	**90.6**	**103**	**94.4**	**103**	**80.6**
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**87.3**	**119**	**132**	**128**	**96.6**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**74.9**	**95.3**	**99.4**	**89.0**	**79.4**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**65.4**	**67.6**	**70.2**	**70.6**	**66.8**
2-Chlorophenol-D4	93951-73-6	0.5	%	**69.2**	**71.9**	**74.3**	**75.1**	**70.9**
2.4.6-Tribromophenol	118-79-6	0.5	%	**53.9**	**58.7**	**60.0**	**58.6**	**57.9**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**78.1**	**80.6**	**82.5**	**83.8**	**79.0**
Anthracene-d10	1719-06-8	0.5	%	**74.5**	**77.5**	**80.6**	**81.0**	**76.2**
4-Terphenyl-d14	1718-51-0	0.5	%	**66.5**	**68.8**	**71.3**	**71.6**	**67.6**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**97.3**	**118**	**85.8**	**84.7**	**93.5**
Toluene-D8	2037-26-5	0.2	%	**97.6**	**116**	**101**	**94.5**	**110**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP1	TP2	TP3	TP4	TP5
				Client sampling date / time	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00
Compound	CAS Number	LOR	Unit		ES1834494-001	ES1834494-002	ES1834494-003	ES1834494-004	ES1834494-005
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		**103**	**124**	**103**	**97.4**	**107**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP6	ASB1	ASB2	ASB3	ASB4
			Client sampling date / time	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00
Compound	CAS Number	LOR	Unit	ES1834494-006	ES1834494-007	ES1834494-008	ES1834494-009	ES1834494-010
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	9.4	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	No	No	No	No
Asbestos (Trace)	1332-21-4	5	Fibres	----	No	No	No	No
Asbestos Type	1332-21-4	-	--	----	-	-	-	-
Sample weight (dry)	----	0.01	g	----	238	273	320	256
APPROVED IDENTIFIER:	----	-	--	----	C.OWLER	C.OWLER	C.OWLER	C.OWLER
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	8	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	25	----	----	----	----
Copper	7440-50-8	5	mg/kg	15	----	----	----	----
Lead	7439-92-1	5	mg/kg	25	----	----	----	----
Nickel	7440-02-0	2	mg/kg	8	----	----	----	----
Zinc	7440-66-6	5	mg/kg	47	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP6	ASB1	ASB2	ASB3	ASB4
				Client sampling date / time	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00
Compound	CAS Number	LOR	Unit		ES1834494-006	ES1834494-007	ES1834494-008	ES1834494-009	ES1834494-010
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Endrin	72-20-8	0.05	mg/kg		<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		<0.05	----	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg		<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg		<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg		<0.2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	----	----	----
Ethion	563-12-2	0.05	mg/kg		<0.05	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	----	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP6	ASB1	ASB2	ASB3	ASB4
				Client sampling date / time	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00
Compound	CAS Number	LOR	Unit		ES1834494-006	ES1834494-007	ES1834494-008	ES1834494-009	ES1834494-010
					Result	Result	Result	Result	Result
EP075(SIM)A: Phenolic Compounds - Continued									
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	----	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	----	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	----	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg		<2	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP6	ASB1	ASB2	ASB3	ASB4
				Client sampling date / time	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00
Compound	CAS Number	LOR	Unit		ES1834494-006	ES1834494-007	ES1834494-008	ES1834494-009	ES1834494-010
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**92.3**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**107**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**82.3**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**67.1**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**71.5**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**59.8**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**79.7**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP6	ASB1	ASB2	ASB3	ASB4
				Client sampling date / time	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00	16-Nov-2018 00:00
Compound	CAS Number	LOR	Unit		ES1834494-006	ES1834494-007	ES1834494-008	ES1834494-009	ES1834494-010
					Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued									
Anthracene-d10	1719-06-8	0.5	%		**76.5**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**67.8**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**92.3**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		**110**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**109**	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	ASB5	ASB6	----	----	----
			Client sampling date / time	16-Nov-2018 00:00	16-Nov-2018 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1834494-011	ES1834494-012	--------	--------	--------
				Result	Result	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	**No**	**----**	**----**	**----**
Asbestos (Trace)	1332-21-4	5	Fibres	**No**	**No**	**----**	**----**	**----**
Asbestos Type	1332-21-4	-	--	**-**	**-**	**----**	**----**	**----**
Sample weight (dry)	----	0.01	g	**251**	**232**	**----**	**----**	**----**
APPROVED IDENTIFIER:	----	-	--	**C.OWLER**	**C.OWLER**	**----**	**----**	**----**

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	ASB1 - 16-Nov-2018 00:00	Mid brown clay soil
EA200: Description	ASB2 - 16-Nov-2018 00:00	Mid brown clay soil
EA200: Description	ASB3 - 16-Nov-2018 00:00	Mid brown clay soil
EA200: Description	ASB4 - 16-Nov-2018 00:00	Mid brown clay soil
EA200: Description	ASB5 - 16-Nov-2018 00:00	Mid brown clay soil
EA200: Description	ASB6 - 16-Nov-2018 00:00	Mid brown clay soil

Surrogate Control Limits

Sub-Matrix: **SOIL**

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

Due date: 26/11/2018

CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
NEWCASTLE 5 Rose Gum Road Warabrook NSW 2304 Ph: 02 4968 9433 E: samples.newcastle@alsglobal.com
NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 02 4423 2063 E: nowra@alsglobal.com
PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Envirotech PTY LTD	TURNAROUND REQUIREMENTS: ☐ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)	
OFFICE: Prospect	(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: Ellis Lane, Ellis Lane	ALS QUOTE NO.:	Free ice / frozen ice bricks present upon receipt?	Yes / No / N/A
ORDER NUMBER: 707418		COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Simon Doberer	CONTACT PH: 029896 1568	OF: 1 2 3 4 5 6 7	Other comment:

SAMPLER: Jack Hinchliffe	SAMPLER MOBILE:	RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY: / RECEIVED BY:
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):	Simon Doberer		
Email Reports to (will default to PM if no other addresses are listed): simon@envirotech.com.au		DATE/TIME:	DATE/TIME: 19/11/18 1645	DATE/TIME: / DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed): accurateaccounts@bigpond.com		19/11/2018		

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 Totall (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 (present/non)							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	TP1	16-11-18	S		1	v								
2	TP2	16-11-18	S		1	v								
3	TP3	16-11-18	S		1	v								
4	TP4	16-11-18	S		1	v								
5	TP5	16-11-18	S		1	v								
6	TP6	16-11-18	S		1	v								
7	ASB1	16-11-18	S		1		v							
8	ASB2	16-11-18	S		1		v							
9	ASB3	16-11-18	S		1		v							
10	ASB4	16-11-18	S		1		v							
11	ASB5	16-11-18	S		1		v							
12	ASB6	16-11-18	S		1		v							
				TOTAL	12	6	6							

Subcon / Forward Lab / Split WO: Newcastle: Asbestos
Lab / Analysis:
Organised By / Date: Sample: 7-12
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

Environmental Division Sydney
Work Order Reference
ES1834494

Telephone : +61-2-8784 8555

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

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5 Rose Gum Road Warabrook NSW 2304 Ph: 02 4968 9433 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townesville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Envirotech PTY LTD	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics) ☐ Standard TAT **(List due date):** ☐ Non Standard or urgent TAT **(List due date):**	**FOR LABORATORY USE ONLY (Circle)** 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:
OFFICE: Prospect		
PROJECT: Leonay Parade, Leonay	**ALS QUOTE NO.:**	**COC SEQUENCE NUMBER (Circle)** COC: 1 2 3 4 5 6 7* OF: 1 2 3 4 5 6 7
ORDER NUMBER: 705818		
PROJECT MANAGER: Simon Doberer	**CONTACT PH:** 029896 1568	
SAMPLER: Jack Hinchliffe	**SAMPLER MOBILE:**	
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):**	
Email Reports to (will default to PM if no other addresses are listed): simon@envirotech.com.au		
Email Invoice to (will default to PM if no other addresses are listed): accurateaccounts@bigpond.com		

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Simon Doberer			
DATE/TIME: 19/11/2018	DATE/TIME: 19/11/18 1645	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL CONTAINERS	S-19								
13	TP1	19-11-18	S		1	✓								
14	TP2	19-11-18	S		1	✓								
				TOTAL	2	2								

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium 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.

QUALITY CONTROL REPORT

Work Order	: **ES1834494**	Page	: 1 of 11
Amendment	: **2**		
Client	: **ENVIROTECH PTY. LTD.**	Laboratory	: Environmental Division Sydney
Contact	: SIMON DOBERER	Contact	: Customer Services ES
Address	:	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: Leonay Parade, Leonay	Date Samples Received	: 19-Nov-2018
Order number	: 705818	Date Analysis Commenced	: 20-Nov-2018
C-O-C number	: ----	Issue Date	: 04-Dec-2018
Sampler	: Jack Hinchliffe		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 12		
No. of samples analysed	: 12		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Accreditation Category*
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Christopher Owler	Team Leader - Asbestos	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2048818)									
ES1834473-016	Anonymous	EA055: Moisture Content	----	0.1	%	16.6	15.3	8.19	0% - 50%
ES1834494-005	TP5	EA055: Moisture Content	----	0.1	%	12.8	13.1	2.12	0% - 50%
EG005T: Total Metals by ICP-AES (QC Lot: 2053632)									
ES1834439-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	25	35	31.6	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	6	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	5	<5	0.00	No Limit
ES1834494-006	TP6	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	25	19	28.2	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	8	8	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	7	17.4	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	15	17	10.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	25	25	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	47	45	3.35	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2053633)									
ES1834439-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1834494-006	TP6	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 2045503)									
ES1834494-001	TP1	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2045502)									
ES1834494-001	TP1	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2045502) - continued									
ES1834494-001	TP1	EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 2045502)									
ES1834494-001	TP1	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)A: Phenolic Compounds (QC Lot: 2045501)									
EW1804795-004	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.00	No Limit
ES1834494-001	TP1	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2045501)									
EW1804795-004	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 2045501) - continued									
EW1804795-004	Anonymous	EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
ES1834494-001	TP1	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2045500)									
EW1804795-004	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES1834494-001	TP1	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2045865)									
ES1834473-006	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1834494-002	TP2	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2045500)									
EW1804795-004	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES1834494-001	TP1	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2045500) - continued									
ES1834494-001	TP1	EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2045865)									
ES1834473-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1834494-002	TP2	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 2045865)									
ES1834473-006	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
ES1834494-002	TP2	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 2053632)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	101	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	95.8	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	94.6	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	98.1	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	96.8	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	102	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	108	80	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2053633)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	73.0	70	105
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2045503)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	91.0	62	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 2045502)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	95.0	69	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	94.5	65	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	77.6	67	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	81.2	68	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	104	65	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	88.8	67	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	90.8	69	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	89.6	62	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	93.2	63	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	102	66	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	103	64	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	93.4	66	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	106	67	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	92.2	67	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	102	69	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	105	69	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	90.0	56	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	108	62	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	94.7	66	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	104	64	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	95.2	54	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 2045502)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 2045502) - continued								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	76.7	59	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	108	62	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	81.4	54	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	76.1	67	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	84.8	70	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	91.5	72	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	89.0	68	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	100	68	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	95.1	69	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	100	76	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	94.8	64	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	100	70	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	91.4	69	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	92.0	66	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	89.5	68	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	102	62	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.7	68	120
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	99.6	65	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	70.8	41	123
EP075(SIM)A: Phenolic Compounds (QCLot: 2045501)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	6 mg/kg	106	71	125
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	6 mg/kg	100	72	124
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	6 mg/kg	111	71	123
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	12 mg/kg	113	67	127
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	6 mg/kg	60.8	54	114
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	6 mg/kg	72.7	68	126
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	6 mg/kg	70.1	66	120
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	6 mg/kg	74.4	70	120
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	6 mg/kg	77.4	70	116
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	6 mg/kg	67.4	54	114
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	6 mg/kg	60.3	60	114
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	12 mg/kg	18.5	10	57
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2045501)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	90.6	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	95.5	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	84.7	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	93.1	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	94.5	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	83.7	77	127

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2045501) - continued								
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	97.3	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	96.3	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	93.8	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	97.9	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	89.2	68	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	99.7	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	87.1	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	77.9	61	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	79.4	62	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	71.9	63	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2045500)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	108	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	116	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	112	71	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2045865)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	119	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2045500)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	98.4	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	104	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	90.2	63	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2045865)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	124	68	128
EP080: BTEXN (QCLot: 2045865)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	115	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	114	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	111	65	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	111	66	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	113	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	108	63	119

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

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

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 2053632)							
ES1834439-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	81.9	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	97.1	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	116	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	94.6	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	96.1	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	94.7	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	104	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2053633)							
ES1834439-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	90.8	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2045503)							
ES1834494-001	TP1	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	103	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 2045502)							
ES1834494-001	TP1	EP068: gamma-BHC	58-89-9	0.5 mg/kg	95.9	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	104	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	94.4	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	93.4	70	130
		EP068: Endrin	72-20-8	2 mg/kg	101	70	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	94.4	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 2045502)							
ES1834494-001	TP1	EP068: Diazinon	333-41-5	0.5 mg/kg	88.0	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	83.0	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	88.3	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	88.8	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	90.2	70	130
EP075(SIM)A: Phenolic Compounds (QCLot: 2045501)							
ES1834494-001	TP1	EP075(SIM): Phenol	108-95-2	10 mg/kg	95.7	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	104	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	88.5	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	98.6	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	72.1	20	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2045501)							
ES1834494-001	TP1	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	106	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	122	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2045500)							
ES1834494-001	TP1	EP071: C10 - C14 Fraction	----	523 mg/kg	98.8	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	109	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	124	52	132

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2045865)							
ES1834473-006	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	108	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2045500)							
ES1834494-001	TP1	EP071: >C10 - C16 Fraction	----	860 mg/kg	110	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	119	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	115	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2045865)							
ES1834473-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	111	70	130
EP080: BTEXN (QCLot: 2045865)							
ES1834473-006	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	99.9	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	104	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	103	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	102	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	104	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	96.6	70	130