Tier 1 Preliminary Site Investigation – 36-38 Rodley Avenue, Penrith NSW

Prepared for:

Inglow Investments Two Pty Ltd

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Main Author:	Setareh Pour Kazemi
Qualifications:	B Nat Sc, M Env M
Peer Review:	Ryan Jacka,
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ABBREVIATIONS

AC	Asbestos Cement
AEC	Areas of Environmental Concern
AHD	Australian Height Datum
AMG	Australian Map Grid
APHA	American Public Health Association
ASC	Assessment of Site Contamination
ASS	Acid Sulfate Soils
ASTM	ASTM International (previously American Society for Testing and Materials)
BaP	Benzo(a)pyrene
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
BTEXN	Benzene, Toluene, Ethylbenzene, Xylenes and Naphthalene
CEC	Cation Exchange Capacity
CLM	Contaminated Land Management Act
COC	Chain of Custody
CPAHs	Carcinogenic Polycyclic Aromatic Hydrocarbons
CRC CARE	Cooperative Research Centre for Contamination Assessment and Remediation or the Environment
CSM	Conceptual Site Model
DEC	Department of Environment and Conservation NSW
DECC	Department of Environment and Climate Change NSW
DECCW	Department of Environment, Climate Change and Water NSW
DLWC	Department of Land and Water Conservation
DP	Deposited Plan
DQO	Data Quality Objectives
DQI	Data Quality Indicator
DSI	Detailed Site Investigation
EILs	Ecological Investigation Levels.
EPA	NSW Environmental Protection Authority
EPL	Environmental Protection License
ESA	Environmental Site Assessment
ESLs	Ecological Screening Levels
GW	Ground Water
HILs	Health Investigation Levels
HSLs	Health Screening Levels
LEP	Local Environment Plan
LGA	Local Government Area
LCS	Laboratory Control Samples
LOR	Limit of Reporting
mAHD	Metres Australian Height Datum (above mean sea level)
MAHs	Monocyclic Aromatic Hydrocarbons
mbgs	Metres Below Ground Surface
NATA	The National Association of Testing Authorities
NEE	North east east
NEHF	National Environment and Health Forum
	National Environment Protection Council
NEPM	National Environment Protection Measure
NHMRC	National Health Medical Research Council
OCP	Organochlorine Pesticides
OEH	Office of Environment and Heritage NSW
OPP	Organophosphate Pesticides
ORP	Oxidation Reduction Potential
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
PCOC	Potential Contaminants of Concern
PPM	Parts Per Million
PSI	Preliminary Site Investigation
QA	Quality Assurance
QC	Quality Control
RAC	Remediation Acceptance Criteria
RAP	Remedial Action Plan
RPD	Relative Percent Difference
SAC	Soil Assessment Criteria
SAQP	Sample Analysis and Quality Plan
SESL	SESL Australia Pty Limited
SMP	Site Management Plan
SVOC	Semi-Volatile Organic Compounds

TEQ	Toxic Equivalence Quotient
TPH	Total Petroleum Hydrocarbons
TRH	Total Recoverable Hydrocarbon
UCL	Upper Confidence Limit
USCS	Unified Soil Classification System
USEPA	United States Environmental Protection Authority
UST	Underground Storage tank
UTM	Universal Transverse Mercator
VOC	Volatile Organic Compounds

1 EXECUTIVE SUMMARY

SESL Australia Pty Ltd (SESL) was engaged by Inglow Investments Two Pty Ltd (the client) to conduct a Tier 1 Preliminary Site Investigation (PSI) with limited sampling for two (2) properties located at 36-38 Rodley Avenue, Penrith NSW 2750 (the site). The legal definition of the site is Lot 58 & Lot 59 in Development Plan (DP) 33490. This investigation was required to address the Council requirements pertaining to potential contamination associated with current and former site uses.

The scope of works for this PSI included the following:

- Undertaking of a comprehensive site history review including a review of selected historical aerial photographs and certificates of title;
- Obtaining information pertaining to the site's environmental setting including the proximity of the site to sensitive receptors and information on site geology;
- Inspection of the site and immediate surrounds by SESL to support the findings of the desktop review and to identify site characteristics that may be suggestive of land contamination;
- Development of a Conceptual Site model (CSM) to identify potential data gaps that may require additional investigation;
- Preparation of this PSI is accordance with relevant guidelines for contaminated lands assessment;
- Proposal of additional assessments or suitable remedial and validation strategies for the site, if required.

The properties located at 36-38 Rodley Avenue, are currently occupied by two single level residential dwellings. SESL understands that the proposed development at the site includes demolition of the existing structures and construction of a five-level residential flat building with a two-level basement car park, with communal and landscaping areas along northern, southern and eastern boundaries. This assessment is required by Penrith City council as part of the Development Approval (DA) conditions.

This investigation has been performed in accordance with the scope of works in SESL proposal #Q10027. This PSI was prepared in August 2019, based on a desktop review of available information, a search of the historical records, a review of EPA licence documents and a site walkover conducted on 30th July 2019.

The objectives of this report were to:

- Prepare a PSI in consideration of the National Environment Protection (Assessment of Site Contamination) Measure 1999 (amended in April 2013), NEPC 2013, Canberra;
- Assess the potential for soil, groundwater and surface water contamination at the site;
- Identify the likelihood and/or extent of contamination occurring from current and former activities undertaken at the site; and
- Recommend management strategies including any additional investigations (if required).

Historical records and visual inspection of the site identified the following areas of concern (AEC):

- AEC 1: Contaminants associated with fill from unknown sources.
- AEC 2: Concrete and unsealed driveway and car parking areas where leaks and spill could have occurred.
- AEC 3: Storage of fuel/oil/paint and other chemical containers in the garage area.
- AEC 4: Asbestos containing material in the buildings that may have left residual particles in the garden soils, and if confirmed, will need management during demolition and disposal.

Based on the findings of this limited investigation, the results of the limited sampling and analysis suggest that the contaminant concentrations at the site are negligible, SESL recommends that the site is suitable for the proposed development. To help with management of identified building materials, the following is recommended:

- A destructive hazardous building material survey should be completed for the site prior to construction. If asbestos containing material is confirmed, as asbestos management plan during construction (or as part of the construction environmental management plan) should detail the require management procedures.

2 INTRODUCTION

SESL Australia Pty Ltd (SESL) was engaged by Inglow Investments Two Pty Ltd (the client) to conduct a Tier 1 Preliminary Site Investigation (PSI) for two properties located at 36-38 Rodley Avenue, Penrith NSW 2750 (the site). The legal definition of the site is Lot 58 & Lot 59 in Development Plan (DP) 33490.

This PSI report was prepared in August 2019, based on a desktop review of available information including the historical records, and EPA licence documents and a site walkover with limited sampling conducted on 30th July 2019.

2.1 BACKGROUND

The site is composed of two (2) main lots, currently occupied by two single level residential dwellings. SESL understands that the proposed development at the site includes demolition of the existing structures and construction of a five-level residential flat building with a two-level basement car park, and communal and landscaping areas along northern, southern and eastern boundaries. This assessment was required by Penrith City council as part of the Development Approval (DA) conditions.

The PSI has been conducted by SESL to accurately assess the status of the site pertaining to potential contamination. The scope of works for this assessment was agreed to by the client prior to the commencement of the works. This investigation has been performed in accordance with the scope of works in SESL proposal Q10027.

2.2 OBJECTIVES

The objectives of this PSI were to:

- Prepare a PSI report in consideration of the National Environment Protection (Assessment of Site Contamination) Measure 1999 (amended in April 2013), NEPC 2013, Canberra;
- Assess the potential for soil contamination at the site;
- Identify the likelihood and/or extent of contamination occurring from current and former activities undertaken at the site; and
- Recommend management strategies including any additional investigations (if required).

2.3 REGULATORY GUIDELINES

The investigation and preparation of this report was undertaken with reference to (but not limited to) the following regulatory guidance documents and standards:

- ASTM (2000). Standard Practice D2488 90 Description and Identification of Soils (Visual-Manual Procedure). American Society for Testing and Materials;
- CRC CARE (2011). Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater;

- CRC CARE (2013) Petroleum hydrocarbon vapour intrusion assessment: Australian guidance, CRC CARE Technical Report no. 23, CRC for Contamination Assessment and Remediation of the Environment, Adelaide, Australia;
- Enhealth (2012) Environmental Health Risk Assessment: Guidelines for assessing human health risks from environmental hazards, Department of Health and Ageing and EnHealth Council, Commonwealth of Australia (2012);
- National Environmental Protection Council (NEPC) (2013). National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended in April 2013);
- NHMRC & NRMMC (2011). Australian Drinking Water Guidelines (ADWG) - National Health and Medical Research Council & Natural Resource Management Ministerial Council;
- NSW DEC (2006) Guidelines for the NSW Site Auditor Scheme (2nd Ed.) (2006);
- NSW DEC (2007) Guidelines for the Assessment and Management of Groundwater Contamination (March 2007);
- NSW DECCW (2010) Vapour Intrusion: Technical Practice Note, September 2010;
- NSW Department of Urban Affairs and Planning (1998) Managing Land Contamination: Planning Guidelines: SEPP 55 Remediation of Land, August (1998);
- NSW EPA (1995). Sampling Design Guidelines (1995);
- NSW EPA (1996). Protection of the Environment Operations (Waste) Regulation (1996);
- NSW EPA (2014). Technical Note: Investigation of Service Station Sites, NSW EPA, April (2014);
- NSW EPA (2014). Waste Classification Guidelines (November 2014);
- NSW EPA (2015). Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997 (July 2015);
- NSW OEH (2011). Guidelines for Consultants Reporting on Contaminated Sites (2011). NSW Office of Environment and Heritage;
- Standards Australia (1993) AS1726-1993. Geotechnical Site investigations Australian Standard;
- Standards Australia (2005). Guide to the investigation and sampling of sites with potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds AS4482.1 (2005) and Part 2: Volatile substances, AS4482.2 (2005);
- USEPA (2000). Guidance for the Data Quality Objectives Process, EPAC QA/G-4 DEC/600/r-96/055, United States Environmental Protection Agency Office of Environmental Information, Washington DC; and
- Western Australia Department of Health (2009). Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia.

2.4 Scope of Works

The scope of works for this PSI included the following:

- Review of desktop information including:
  - Historical aerial photographs;
  - Acid sulfate soil risk identification; and
  - Available geological and hydrogeological information from literature pertaining to the site.
- Site description:
  - Location and ownership;
  - Identification and surrounding land use;
  - Layout and infrastructure;
  - Physical site characteristics including drainage and geology; and
  - Summary of site history.
- Site reconnaissance:
  - Site walkover investigating chemical & waste storage, potential cut and fill activities, waste management and evidence of soil or groundwater contamination (signs of leaks and spills, staining, odour etc.).
- Identification areas of environmental concerns, and the associated contaminants of potential concerns;
- Development of a preliminary Conceptual Site Model (CSM);
- Laboratory analysis of soil samples for potential contaminants of concern; and
- Preparation of a report detailing the findings of the desktop study and site history review, site inspection, intrusive soil sampling and general recommendations for future works at the site (if required).

2.5 Personnel

SESL's Environmental Scientist conducted the works associated with this PSI during May and June 2017. The personnel involved for this project is shown in Table 1.

Table 1 – Project Personnel

Personnel	Title	Project Task
Ryan Jacka B Env Sc, M Env Sc, MEIANZ, ASSSI, CEnvP	Senior Environmental Scientist	• Report review and authorisation
Setareh Pour Kazemi B Nat Sc, M Env	Environmental Scientist	• Report preparation • Historical review • Site inspection • Soil sampling
Eric Chen M Eng, M Eng Sci	Environmental Scientist	• Site inspection • Soil sampling

3 SITE DESCRIPTION

3.1 SITE LOCATION AND OWNERSHIP

The site is located at 36-38 Rodley Avenue, Penrith NSW 2767. The total site area is approximately 1,112 m². The site is occupied by two lots being lot 58 and Lot 59. The site is accessible via concrete driveways off Rodley Avenue along the northern boundary. (Appendix B: photo 3 & 11). The site is situated approximately 49 km East of Sydney CBD (Figure 1).

3.2 SITE IDENTIFICATION

The following details the portion of land subject to this PSI (Table 2).

Table 2 – Site Identification

Site Address	36-38 Rodley Avenue, Penrith NSW 2750
Lot and DP Number	Lot 58 DP 33490 (36 Rodley Avenue) Lot 59 DP 33490 (38 Rodley Avenue)
Local Government Area	Penrith Council Local Government Area
Current Zoning	R4 – High Density Residential
Distance from Sydney CBD	Approximately 49km East of the Sydney CBD
Geographical Coordinates	33°45'17.88"S 150°41'21.50"E
Site Area	1,112m²
Site Elevation	Approximately 26-27 m AHD
Locality Map	Figure 1
Site Plan	Figure 2

3.3 SITE LAYOUT AND INFRASTRUCTURE

The site lay out can be viewed in Figure 2. The site is currently comprised of two (2) lots (Lot 58 and Lot 59). The following observations were made during the site visit investigation:

36 Rodley Avenue:

- The site boundaries were defined by Rodley Avenue to the north and colourbond fences to the east, south and west.
- The site was occupied by a single level brick residential dwelling with tile roof in the centre (Fig.2) (Appendix B: photo1);
- A brick garage with a metal roller door in the front was located at the south west corner of the site. Access to the garage was not possible at the time of the inspection. (Fig.2) (Appendix B: photo 2);

- Access to the site was from Rodley Avenue to the north via a concrete driveway along western boundary all the way to the rear of the property. (Appendix B: photo 3);
- Driveway was covered by a metal awning adjacent to the house at the west side. (Appendix B: photo 4).
- Limited areas in the south central portion of the site were covered by the concrete slab.(Appendix B: photo 5).
- A sealed concrete slab also was covering a limited area along eastern boundary adjacent to the house. (Appendix B: photo 6).
- Minor oil staining and cracks were noted on the surface of the concrete.
- The remainder of the site was unsealed and covered by grass and trees. (Appendix B: photo 7).
- No standing water or sign of underground storage tanks were noted during the inspection.

38 Rodley Avenue

- The site boundaries were defined by Rodley Avenue to the north and colourbond fences to the south, east and west.
- The site was occupied by a single level residential fibro dwelling with tile roof in the centre. (Fig.2) (Appendix B: photo 9);
- Access to the site is from Rodely Avenue to the north via a concrete driveway along western boundary. (Appendix B: photo 10);
- Minor cracks and oil staining were noted on the surface of the concrete driveway. (Appendix B: photo 10);
- A sealed concrete slab also was covering a limited area along eastern boundary adjacent to the house. (Appendix B: photo 12)
- A fibro shed/garage with a metal awning in the front was located at the south west corner of the site. The garage was used for general storage area with floor covered by concrete. A lawn mower and paint/oil/ fuel containers were stored in the garage. Some paint and oil staining were noted on the surface of concrete. Concrete cracks were also observed. (Appendix B: photo 13-19, 24);
- A fibro dog house and a wire mesh animal house with colorbond roof were located at the south east corner of the site. (Appendix B: photo 20 & 21);
- Backyard was unsealed and grass covered with some limited areas adjacent to the fibro garage and along southern boundary as well as the centre of the yard covered with concrete slab. (Appendix B: photo 22);
- Two stormwater drains with stainless steel grate were observed at the south and central portion of the site next to the fibro garage. Rust stain generated from the steel drainage was noted on the surface of concrete footpath. (Appendix B: photo 23 & 24);

- Apart from the concrete footpath and concrete driveway the remainder of the site was unsealed and grass covered.
- No standing water sign of underground storage tanks were noted during the inspection.

3.4 SURROUNDING LAND USE

The site itself and the immediate surrounding areas to the north, east and west are zoned as R4 - High Density Residential within the Penrith City council local government area. Penrith Paceway cricket field adjacent to the southern boundary of the site is zoned RE2 - Private Recreation. The area located approximately 199m to the east and 273m to the south east of the site are zoned B4 – Mixed Use. Nepean Village shopping centre is identified along Station Street to the south east of the site was zoned B4 - Mixed zone. Other areas located approximately 279m north west, 304m south west and 451m east of the site are zoned RE1 - Public recreation. In addition, sites to the north west and south west of the site and west of the Mulgoa Road are zones SP3-Tourist.

4 ENVIRONMENTAL SETTING

4.1 TOPOGRAPHY AND DRAINAGE

The topography of the area is generally flat with a very slight down slope toward west. The site's elevation is approximately 28m AHD. Water runoff from the site is assumed to drain into the stormwater infrastructure present at the south west portion of No.38 and to the kerbside stormwater drain along Rodley Avenue.

4.2 GEOLOGY

Reference to the 1:100 000 Penrith Geological Series Sheet indicates the geological unit of the site is Cranebrook Formation, consisting of gravel, sand, silt and clay. A review of the Penrith Soil Landscape Series Sheet (1:100,000) map indicates that the site is within the Richmond soil landscape group. According to the Atlas of Australia Soils, the major soils are sandy neutral yellow mottled soils with leached sands. Refer to Appendix A for further details.

4.3 HYDROGEOLOGY

A search of NSW Office of Water record identified eight (8) groundwater bores within 500m of the site. Seven bores are privately owned and used for monitoring, industrial/recreational and industrial. One bore is owned by local government and used for public/municipal, recreation(groundwater) purposes.

There were forty-seven (47) groundwater bores identified within 2 km of the site and the majority were used for monitoring purpose except three used for recreation(groundwater), one for domestic, one for domestic irrigation, one for domestic stock and one for commercial purposes.

According to the record, the standing water levels for the bores within 500 m of the site were usually between 6 m to 8 m.

Geoscience Australia described the aquifer on site as porous, extensive and highly productive aquifers. Refer to Appendix A for further details.

4.4 ACID SULFATE SOIL

Information obtained from the Atlas of Australian Acid Sulfate Soils Data Source (CSIRO) indicated the site to be within a class B area of low probability of occurrence. Based on this information and the underlying geology of the area, acid sulfate soils are considered a low risk for this site.

4.5 PROXIMITY TO LOCAL SENSITIVE ENVIRONMENTS

The site is located with a UPSS environmentally sensitive zone as noted by the Department of Environment, Climate Change and Water (Appendix A).

The closest sensitive receptor is a waterway channel located to the immediately south of the site and water

eventually discharges to Peach Tree Creek located approximately 656m to the east side of the site. Penrith Cricket Club is located approximately 12m to the south of the site. Mountain View Retreat Retirement Village is located approximately 214m to the north west of the site and Penrith ambulance station 491m to the north west of the site.

Other sensitive receptors including, Penrith Park, Panthers Stadium and Howell Oval are located approximately 311m to the south west of the site. High Street Westfield Penrith is located 378m to the north east of the site. Penrith Nepean village is located approximately 283m to the south east of the site.

5 SITE HISTORY

A review of the site history was undertaken to assess the historical use of the site, and in particular to identify activities with potential to contaminate soil, groundwater and surface water at the site. The historical review included:

- Current and historical aerial photographs;
- Current and former EPA Licences; and
- EPA Contaminated Lands Register.

5.1 HISTORICAL AERIAL PHOTOGRAPHS

Aerial photographs taken in 1943, 1956, 1961, 1965, 1970,1982, 1991, 2002 and 2009 were obtained from the Land and Property Information (a division of the Department of Finance and Services) (Appendix C) and were reviewed to assess the history of the development of the site. Aerial photograph review observed the following:

1943 The site was vacant with no indication of regular activities at the site. A possible waterway channel was noted along the southern boundary in the immediate vicinity of the site. The cricket field border lines are visible a few metres to the south side of the site. No structures are visible with some vegetation noted in the north east and east portion of the field. The surrounding shows a number of dwellings within 150m boundary to the north west of the site which was connected by a concrete driveway to the Mulgoa Road to the west. A newly constructed and under construction residential area was also noted to the north of the site outside the 150m boundary.

1956 Vegetation appeared to be denser at the north portion of the site and in the area of north and north west. No other significant visible changes occurred at the site when compared against 1943 photograph. Cricket field outfield line is more developed with the vegetation appeared to be denser across the site specifically in the north east corner. A new dam was visible to the west while a small shed was built few metres away to the south east side of the site. Rodley Avenue has been constructed mostly to the north east of the site and is connected to the Union Road by Worth Street. Evidence of a new road connected to Worth Street from north east of the site is also visible. Western portion of the dwellings observed from previous photos development with few new structures and appears to have been covered by concrete towards Mulgrave Road. More new residential development also been constructed to the north of the site outside the 150m boundary across Union and Mulgoa Road.

1961 It appears as though the site has been subdivided in to two lots. A single level residential dwelling occupying centre of the Lot 59. A shed was built on the south west corner of the site, while the remainder of the site is unsealed and vacant. The dam to the west of the site is no longer exist. New development, which appears to be low density residential has been developed to the immediate east of the site across the water way channel. Boundary Road now has been completed and is connected to the Mulgoa Road

to the west. The lot to the south of the site (inside the 150m boundary) remains almost the same The cricket field is now more developed in to a play field with no noticeable vegetations. The surrounding properties to the north, north east and north west shows significant residential development. Vista Street construction has been completed and it is now connected to the Union Road by Worth Street.

1965 No significant visible changes have occurred at the site when compared against the 1961 photograph. Two small shed structures were noted on the west portion of the site adjacent to the house. New development, to be residential has occurred to the west side of the site across the waterway Channel. No notable changes have occurred at the cricket field site with the exception of vegetation are visible in the north east portion of the site with some road tracks appear in the centre of the field.

1970 The site has been further developed including a new single level dwelling now is occupying the centre of Lot 58, and it appears to be accessible via a concrete driveway to the north off Rodley Avenue. A shed also is visible on the south west corner of the site. The cricket field has remains similar to what observed from previous photo. Surrounding properties have become more residential to the north, east and west and more commercial to the south.

1982 No significant changes exist when compared to the 1970 photograph.

1991 No significant changes exist when compared to the 1982 photograph.

2002 No significant changes exist when compared to the 1991 photograph.

2009 No significant changes exist when compared to the 2002 photograph.

5.2 Heritage Items

No commonwealth, national or state heritage items exist at the site. Thirty-nine (39) local heritage items are located within 1 km of the site. Additional information is available in (Appendix A).

5.3 EPA Contaminated Sites Database

5.3.1 Contaminated Land Record Search

A search of the NSWESP contaminated land public record was performed to assess if the site or surrounding sites have been declared as contaminated sites. It should be noted that this database is not a comprehensive list of all contaminated land in NSW, this record only lists sites regulated under Part 3 of the *Contaminated Land Management Act 1997*. The search undertaken on the 18/07/2019 returned two notices relating to one site within 1km of the site. Shop 3 134.138 Henry Street (former dry clearance and jet 60 dry clearance) was issued Pollution notices. The site is located 693m north east of the study site. (refer to Appendix A)

5.3.2 Environmental Protection Licences Search

A search of activities with Environment Protection Licences (EPL) under the POEO Act (1997) identified three (3) sites with an EPL within a 1 km of the site. No licenses were pertaining to the site. One licence was listed for railway systems activities identified within 209m north of the site. The licence was for Mcconnell Dowell Constructors (Aus) Pty Ltd at Jane Street and Mulgrove Road.

5.3.3 EPA PFAS Investigation Program

A search of the NSW EPA perfluoroalkyl and polyfluroalkyl substances (PFAS) investigation program on 18/07/2019 did not identify any PFAS investigation sites within 1 km radius of the site.

5.4 Previous Environmental Investigations

SESL is unaware of any previous environmental investigations pertaining to the contamination status of the site that may have been conducted.

5.5 Integrity Assessment

The integrity of information provided in this PSI is considered reliable. The PSI followed appropriate methods of investigation with the desktop survey being consistent with field observation and anecdotal evidence presented. Details regarding the site history and present status of the site have been largely obtained from official records sourced from NSW EPA and NSW Land and Property Information Division. These documents are considered accurate and credible. All information provided, as part of this report was believed to be true, accurate and representative of the past and present status of the site at the time of this investigation.

6 SITE RECONNAISSANCE

SESL Environmental Scientists, Eric Chen & Setareh Pour Kazemi attended site on 30/07/2019 to conduct a site walkover and limited soil sampling as part of this investigation. The inspection and sampling were undertaken to support the findings of the desktop review, identify site characteristics that may be suggestive of site contamination and provide an initial indication of the contamination status of site soils.

6.1 On-site operations

On the day of on-site investigation, No.36 was occupied by a single level brick residential house, and No.38 was a single level fibro residential house with a fibro garage used as storage area for chemical containers of paint and fuel. The concrete floor was generally in good condition with few cracks and oil staining. No activities of major contamination concern were observed during the site visit.

6.1 Stormwater

The site is located in the immediate vicinity of a waterway channel to the south which eventually discharges in to Peach Tree Creek located approximately 385m to the east side of the site. The southern portion of No.36 is predominately unsealed and grass covered, however, it was noted that the exposed area was not used for any chemical storage or as parking area. It is assumed that water run off to flow towards the waterway channel.

The southern portion of No.38 is also unsealed and grass covered with limited footpath concrete areas. The stormwater runoff in this portion of site is anticipated to flow towards the two stormwater drainages to the south west portion of the site.

The northern portion of both properties are predominately unsealed and grass covered with concrete driveway along north west boundary. The water run off is expected to be diverted to the kerbside stormwater drainage along Rodley avenue to the north.

6.2 Chemical Use and Storage

A fibro garage was occupying south west corner of No.58. On the day of investigation the garage was used to keep fuel/paint and some chemical containers inside the garage. The garage floor was sealed with concrete. Some oil staining and cracks noted on the surface of the concrete. (Appendix B: 13, 14, 15, 16, 17, 18 & 19)

6.3 Vegetation Stress

The vegetations on both properties have been seen to be in a healthy condition. No evidence of stress was observed within the existing vegetations at the time of the assessment.

6.4 HAZARDOUS BUILDING MATERIALS

No.59 has been occupied by a fibro single level dwelling with potential hazardous building materials. A small fibro dog house was also located in the south east corner of the site. A HAZMAT assessment will be undertaken as part of council request for the purpose of this investigation.

6.5 CUT AND FILL

Fill materials was found in two sampling locations. The depth of this fill was approximately from surface to 0.15m.

6.6 POTENTIAL CONTAMINATION

Potential for contamination to exist at the site is due to fill materials, potential asbestos containing materials in the building structures and spills and leaks from chemical storage through potential cracks within the concrete slabs.

7 RELEVANT GUIDELINES FOR CONTAMINATION ASSESSMENT AND MANAGEMENT

7.1 RELEVANT GUIDELINES

Assessment criteria will be based on guidelines made or approved by the NSW EPA under Section 105 of the *Contaminated Land Management Act 1997*. These include EPA's Contaminated Sites series of guidelines, and fundamental guideline documents such as the Australian and New Zealand Guidelines for the *Assessment and Management of Contaminated Sites* (ANZECC/NHMRC 2000) and *National Environmental Protection (Assessment of Site Contamination) Measure 1999*, published by the NEPC (henceforth referred to as the NEPM).

The NEPM incorporates a recommended general process for the assessment of site contamination and a set of nine specific guidelines. The process and guidelines are closely based on previous documentation widely used for assessing site contamination (such as ANZECC/NHRMC 2000 and the various National Environmental Health Forum monographs and proceedings). Assessment criteria have been drawn from other guidelines and information sources, if not available in the above guidelines.

7.2 NATIONAL ENVIRONMENTAL PROTECTION (ASSESSMENT OF SITE CONTAMINATION) MEASURE

National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013) (NEPC 2013, Canberra) (hereafter NEPM) provides a national framework for conducting assessments of contaminated sites in Australia.

The purpose of the NEPM is to establish a nationally consistent approach to the assessment of site contamination to ensure sound environmental management practices by the community which includes regulators, site assessors, environmental auditors, landowners, developers and industry.

The NEPM addresses assessment of contamination and does not provide specific guidance on prevention of site contamination. The desired environmental outcome for the NEPM is to provide adequate protection of human health and the environment, where site contamination has occurred, through the development of an efficient and effective national approach to the assessment of site contamination.

Schedule A in the NEPM outlines the general process for assessment of site contamination, with reference to Schedules B (1) to B (9) for guidance on each step of the process. In broad terms, the assessment process as provided in Schedule A can be described as:

Tier 1 PSI Preliminary investigation, laboratory analysis and interpretation, and assessment of results with reference to investigations levels;

Tier 1 DSI — Where required, detailed investigation, laboratory analysis and interpretation is completed, and the need for risk assessment to derive response levels and/or the need for remediation is evaluated; and

Tier 2 or 3 — Site-specific risk assessment to confirm/define appropriate health and ecological investigation levels.

Overarching guidance is provided on community consultation and risk communication, protection of health and safety during assessment of site contamination, and expected competencies of environmental auditors and related professionals.

NEPM provides a framework for the use of investigation and screening levels for the protection of human health, ecosystems, groundwater resources and aesthetics. Investigation levels and screening levels are applicable to the Tier 1 site assessment. The adopted investigation and screening levels for this assessment is as follow:

i) Health Investigation Levels (HILs);
ii) Health Screening Levels (HSLs);
iii) Ecological Investigation Levels (EILs); and
iv) Ecological Screening Levels (ESLs).

7.2.1 Health Investigation Levels (HILs)

HILs are scientifically based, generic assessment criteria designed to be used in the Tier 1 assessment for assessing human health risk via all relevant pathways of exposure. HILs are designed to be intentionally conservative and based on a reasonable worst-case scenario for the following generic land use settings:

A — **Residential with garden/accessible soil (home grown produce contributing less than 10% of vegetable and fruit intake; no poultry) this category includes children's day-care centres, preschools and primary schools.**

B — Residential with minimal opportunities for soil access, including dwellings with fully and permanently paved yard space such as high-rise apartments and flats.

C — Public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. It does not include undeveloped public open space (such as urban bushland and reserves), which should be subject to a site-specific assessment where appropriate.

D — Commercial/industrial includes shops and offices as well as factories and industrial sites.

As the site is currently utilised as a low density residential and is proposed for residential units, following the completion of the development, HIL-A was determined to be the most appropriate assessment criteria for the site.

NEPM Schedule B7 defined the HILs as the concentration of a contaminant above, which further appropriate investigation and evaluation will be required. It is also stated "levels in excess of the HILs do not imply unacceptability or that a significant health risk is likely to be present".

The NEPM Schedule B7 states at the very least, the maximum and the 95% UCL of the arithmetic mean contaminant as well as localised elevated values must be compared to the HILs. Two additional (secondary) criteria should also be met, namely that the standard deviation of the results must be <50% of the relevant investigation level and that no single value exceeds 250% of the relevant investigation level.

NEPM also states that the HILs are not intended to be used as clean-up levels for contaminated sites. The requirement of clean-up should be based on site-specific assessment and risk management options.

The adopted HIL is shown in Table .

Table 3 – Health Investigation Levels for Soil Contaminants

Health-based investigation levels (mg/kg)				
Chemical	***Residential[1] A***	Residential[1] B	Recreational[1] C	Commercial/ Industrial[1] D
Metals and Inorganics				
Arsenic[2]	***100***	500	300	3,000
Beryllium	***60***	90	90	500
Boron	***4,500***	40,000	20,000	300,000
Cadmium	***20***	150	90	900
Chromium (VI)	***100***	500	300	3,600
Cobalt	***100***	600	300	4,000
Copper	***6,000***	30,000	17,000	240,000
Lead[3]	***300***	1,200	600	1,500
Manganese	***3800***	14,000	19,000	60,000
Mercury (Inorganic) [5]	***40***	120	80	730
Methyl Mercury[4]	***10***	30	13	180
Nickel	***400***	1,200	1,200	6,000
Selenium	***200***	1,400	700	10,000
Zinc	***7,400***	60,000	30,000	400,000
Cyanide	***250***	300	240	1,500
Polycyclic Aromatic Hydrocarbons (PAHs)				
Carcinogenic PAHs (as BaP TEQ)[6] Total PAHs[7]	***3*** ***300***	4 400	3 300	40 4000
Phenols				
Phenol	***3,000***	45,000	40,000	240,000
Pentachlorophenol	***100***	130	120	660
Cresols	***400***	4,700	4,000	25,000

Organochlorine Pesticides				
DDT+DDE+DDD	***240***	600	400	3,600
Aldrin and Dieldrin	***6***	10	10	45
Chlordane	***50***	90	70	530
Endosulfan	***270***	400	340	2,000
Endrin	***10***	20	20	100
Heptachlor	***6***	10	10	50
HCB	***10***	15	10	80
Methoxychlor	***300***	500	400	2,500
Mirex	***10***	20	20	100
Toxaphene	***20***	30	30	160
Herbicides				
2,4,5-T	***600***	900	800	5,000
2,4-D	***900***	1,600	1,300	9,000
MCPA	***600***	900	800	5,000
MCPB	***600***	900	800	5,000
Mecoprop	***600***	900	800	5,000
Picloram	***4,500***	6,600	5,700	35,000
Other Pesticides				
Atrazine	***320***	470	400	2,500
Chlorpyrifos	***160***	340	250	2,000
Bifenthrin	***600***	840	730	4,500
Other Organics				
PCBs[8]	***1***	1	1	7
PBDE Flame Retardants (Br1-Br9)	***1***	2	2	10

Notes: This table is adapted from Table 2 in Schedule B7: Derivation of Health-Based Investigation Levels, *National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013* (NEPC 2013).

7.2.2 Health Screening Levels (HSLs)

Petroleum Hydrocarbon Compounds

NEPM 2013 adopts the Health Screening Levels for various petroleum hydrocarbon compounds developed by the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE). Friebel and Nadebaum 2011 provide the methodology for assessing human health risk via the inhalation and direct contact pathways of selected petroleum compounds and fractions.

The HSLs apply to the same landuse scenarios with additional consideration of soil texture and depth to determine the appropriate soil, groundwater and soil vapour criteria.

The NEPM 2013 provides HSL fractions and corresponding equivalent carbon range for petroleum hydrocarbon compounds. HSLs are given only for F1, F2 and BTEX as the heavier petroleum compounds of F3 and F4 are non-volatile and do not pose a concern for vapour intrusion. However, exposure can be via direct contact pathways (dermal contact, incidental oral ingestion and dust in halation). Friebel and Nadebaum 2011 provides the HSLs for direct contact, however for most site assessments, these levels are unlikely to trigger further investigation or site management as the values are substantially higher than most soil screening levels.

Table 3 – Health Investigation Levels for Soil Contaminants

Fraction Number	Equivalent Carbon Number Range
F1	*C6 – C10*
F2	*>C10 – C16*
F3	*>C16 – C34*
F4	*>C34 – C40*

As discussed earlier, HSLs for soil, groundwater and soil vapour haven been developed based on soil texture. The HSLs assume a uniform soil profile and the highest proportion of the soil texture from the soil profile should be used selecting the appropriate HSLs. For Tier 1 soil assessment, the HSL classifications of sand, silt and clay may be broadly applied to soil texture classification in Table A1 of Australian Standard 1726 as follow:

1) Coarse grained soil: >50% of particles (by weight) <63mm and >0.075mm
   - Sand: >50% of particles (by weight) <2.36mm; or
   - Gravel: >50% of particles (by weight) >2.36mm.

2) Fine-grained soil: >50% of particles (by weight) <0.075mm
   - Silts and clays (liquid limit >50%);
   - Silts and clays (liquid limit <50%); or
   - Highly organic soils.

Asbestos

NEPM 2013 adopted the HSLs from the Western Australia Department of Health (WA DoH) *Guidelines of Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia 2009.* The HSLs are based on scenario-specific likely exposure levels, that includes bonded and friable asbestos levels.

Asbestos only poses human health risk when asbestos fibres are made airborne and inhaled. Bonded asbestos is not readily made airborne except through substantial physical damage. NEPM 2013 states "the assessment and management of asbestos contamination should take into account the condition of the asbestos materials and the potential for damage and resulting release of asbestos fibres".

The HSLs are to be used for Tier 1 assessment, in the event of an exceedance that triggers the need for a Tier 2 site-specific assessment. Site-specific assessments of asbestos contaminated sites should be designed to describe the nature and quantity of asbestos present in the soil that can sufficiently develop a risk management plan for the current and proposed landuse of the site.

Table 4 – Health Screening Levels for Asbestos Contamination in Soil

Health Screening Level (w/w)				
Form of asbestos	**Residential A[1]**	**Residential B[2]**	**Recreational C[3]**	**Commercial/ Industrial D[4]**
Bonded ACM	0.01%	0.04%	0.02%	0.05%
Fibrous Asbestos (FA) and Asbestos Fines (AF) [5] (Friable Asbestos)	**0.001%**			
All forms of asbestos	**No visible asbestos for surface soil**			

Note: This table is adapted from Table 7 in Schedule B1: Health Screening Levels of Asbestos Contamination in Soil, *National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013* (NEPC 2013).
1 Residential A with garden/accessible soil also includes childcare centres, preschools and primary schools.
2 Residential B with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.
3 Recreational C includes public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and unpaved footpaths.
4 Commercial/industrial D includes premises such as shops, offices, factories and industrial sites.
5 The screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres.

7.3 The Managing Land Contamination: Planning Guidelines – Remediation of Land, NSW EPA 1997 (SEPP55 Guidelines)

The Managing Land Contamination: Planning Guidelines – Remediation of Land, NSW EPA 1997 (SEPP55 Guidelines) establishes the best practice for managing land contamination through the planning and development control process. The planning and development control process as provided for in the Environmental Planning and Assessment Act 1979 plays an important role in the management of land contamination. The integration of land contamination management into the planning and development control process will:

- Ensure that changes of land use will not increase the risk to health or the environment;
- Avoid inappropriate restrictions on land use; and
- Provide information to support decision-making and to inform the community.

The SEPP55 Guidelines include:

- Information to assist in the investigation of contamination possibilities;
- A decision making process that responds to the information obtained from an investigation;
- Information on how planning and development control can cover the issues of contamination and remediation;
- A suggested policy approach for planning authorities;
- Discussion of information management systems and notification and notation schemes, including the use of Section 149 planning certificates notations; and
- Approaches to prevent contamination and reduce the environmental impact from remediation activities.

SEPP 55 Guidelines provides consistent statewide planning and development controls for the remediation of contaminated land and ensures the following:

- Landuse changes do not occur until planning authorities consider whether the land is contaminated and whether it needs to be remediated to make it suitable for the proposed use;
- Remediation of contaminated land is permissible throughout the State;
- Remediation requires consent only where it has the potential for significant environmental impacts or does not comply with a council's policy for contaminated land;
- Most remediation proposal which require consent are advertised for public comment;
- All remediation is carried out in accordance with appropriate standards and guidelines;
- Applications for remediation are not refused without substantial justification; and
- Councils are notified at commencement and completion of remediation.

7.4 RELEVANT LEGISLATION

NSW has a comprehensive suite of guidelines relating to assessment and management of contamination, administered under the *Contaminated Land Management Act (CLM Act) 1997* and the *Environmental Planning and Assessment Act 1997*. These include the following:

- Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites, NSW OEH, 2011;
- Contaminated Sites: Guidelines for the NSW Site Auditor Scheme, NSW DEC, April 2006;
- Contaminated Sites: Sampling Design Guidelines, NSW EPA, 1995;
- Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land, NSW EPA 1998;
- Waste Classification Guidelines Part 1: Classifying Waste, NSW EPA 2014; and
- Guidelines for the Assessment and Management of Groundwater Contamination, NSW DEC, 2007.

Guidelines approved under the CLM Act also include ADWG (2011) Australian Drinking Water Guidelines, ANZECC/ARMCANZ (2000) Water Quality Guidelines and GMRRW (2008) Guidelines for Managing Risk in Recreational Waters.

8 SAMPLING, ANALYSIS PLAN AND METHODOLOGY

8.1 SAMPLING TEAM

The details and duties (see Table) of the soil sampling team were as follows:

a) Sample collector and logger:
- Soil sample collection according to sampling regime including location and depths;
- Described soil profile information and field conditions;
- Labelled sample containers and filled out CoC with analytes to be tested for each sample;
- Responsible for decontamination between sampling; and
- Recorded analytes to be tested for each sample.

Table 6 – Soil Sampling Team Personnel

Personnel	Position	Qualifications	Project Task
Setareh Pour Kazemi	Environmental Scientist	Bachelor of Environmental Science Master of Environmental Management Workcover Construction Work in NSW (White Card)	- Conduct site visual assessment - Identify sampling locations - Conduct soil sampling
Eric Chen	Environmental Scientist	Bachelor of Engineering (Applied Chemistry) Master of Engineering (Environmental Management) Master of Engineering Science (Project Management) Workcover Construction Work in NSW (White Card) Senior First Aid Certificate Manual Handling Training	- Conduct site visual assessment - Identify sampling locations - Conduct soil sampling - Record field notes

8.2 SAMPLING REGIME

The fieldwork for the assessment was devised to identify potential contamination associated with current and former land use within accessible soils on site. The sampling objective was to gather information with regard to the type, location, concentration and extent of potential contamination in the limited sampling locations. This process provided sufficient supporting data (according the DQO's) to allow recommendations to be made as to the contamination status of the site.

8.3 SAMPLE COLLECTION - SOIL

Sampling was only conducted on the open areas which were not covered by hardstand. Samples were collected from surface and deepest depths at eight sampling locations across the site using a hand auger. Sixteen samples were collected in total. Two samples were collected next to the driveway areas, one sample was collected next to the fibro garage, one sample was collected in the vicinity of the fibro house. The remainder of the samples were collected from open and grass covered areas.

All samples were placed directly from the source soils into laboratory-supplied glass sampling jars with Teflon lined lids. Samples were then placed into 2 chilled containers and submitted to a NATA accredited laboratory, under Chain of Custody (CoC) procedures. The samples were analysed for 8 heavy metals (As, Cd, Cr, Cu, Ni, Pb, Zn and Hg), TRH, BTEX, OCP, PCB and PAH. Additional samples collected were submitted to the laboratory and placed on hold pending the outcome of the initial sample analysis.

8.4 Composite Sample Procedure

No composite samples were taken during this assessment.

8.5 Decontamination Procedure

The sampling and decontamination procedures adopted during the fieldwork for this assessment included hand tools and drill decontaminated prior to use and in between samples to prevent cross contamination. Disposable gloves were used for the collection of soil samples.

9 QUALITY ASSURANCE & QUALITY CONTROL PLAN

9.1 DATA QUALITY OBJECTIVES

The purpose of establishing data quality objectives (DQOs) is to ensure the field investigations and analyses are undertaken in a way that enables the collection and reporting of reliable data on which to base the site validation. The DQOs and the procedures designed to achieve these objectives are listed below.

Table 7 – Data Quality Objectives

Process	Response
Step 1. Define the problem	Contamination status of the site was unknown, and a baseline investigation was required to understand the environmental condition of the site which may be used for change of landuse in the future.
Step 2. Identify the goal of the study	The objective of sampling was to determine the existence of contamination, and if present determine the extent of the contamination and provide recommendations as to the likely contamination status of the site and the need for further investigative work.
Step 3. Identify information inputs	Data inputs for the project: - Findings from desktop review - Review of previous investigation findings and results if available - Results of soil sampling and analysis undertaken as part of this assessment - Visual inspection to determine the depth of fill material
Step 4. Define the boundaries of the study	The area of the investigation is 36-38 Rodley Avenue, Penrith NSW 2750. The legal definition of the site is Lot 58 & Lot 59 in DP 33490. As a baseline assessment to obtain an initial understanding of site contamination status, the sampling locations were limited to accessible areas (not beneath building footprints) and shallow soils. Groundwater and vapour were not investigated.
Step 5. Develop the analytical approach	Review of the previous site usage and site history to identify the main contaminants of potential concern. Concentrations of potential contaminants in the soil samples were compared to criteria set in Section 7 to assess the extent of contamination.
Step 6. Specify performance or acceptance criteria	The HILs and HSLs for soil contaminants within residential land use sites, as tabulated in Section 7, were used as the performance/acceptance criteria to assess the contamination status of the soil within the areas of investigation.
Step 7. Develop the plan for obtaining data	Qualified environmental consultants conducted sampling, with the rationale behind the selection of sample locations provided in Section 8. QAQC procedures were followed as described in Section 9.

9.2 DATA QUALITY INDICATORS AND DATA EVALUATION

SESL has selected the following Data Quality Indicators (DQIs) to ensure that the data obtained from the assessment is of sufficient quality to be used to draw reliable and representative conclusions in an assessment of the environmental conditions of the investigation area.

9.2.1 Documentation and Data Completeness

The completeness of data is defined as the percentage of analytical results that are considered valid. Valid chemical data values that have been identified as acceptable or acceptable as qualified during the data validation process. The completeness is a comparison of the total number of samples accepted against the

total number of samples, calculated as a percentage. The project goal for completeness is greater than 95%. QA/QC for completeness includes the following:

- All critical locations sampled (in this case initial accessible and representative locations);
- All required samples collected (for initial assessment);
- Well informed, qualified and experienced sampling team;
- Correct and complete documentation;
- Appropriate analysis methods and PQLs;
- Compliance of sample holding times; and
- All data correctly and properly entered into the database and any typographical errors in the database corrected.

9.2.2 Data Comparability

Comparability expresses the confidence that the data may be considered to be equivalent for each sampling and analytical event and deemed suitable for comparison. In order to assess comparability, field procedures, laboratory sample preparation procedures, analytical procedures and reporting units must be known and similar to establish protocols (Standard Operating Procedures). Qualitatively, data subject to strict QA/QC procedures will be deemed more reliable, therefore more comparable, than other data.

9.2.3 Data Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of parameter variations at sample points or environmental conditions and obtaining suitable samples from these sites.

Sample selection and analysis will be conducted in order to meet the specific objectives of the particular phase of work. Analysis for the contaminants of concern will be selectively conducted based on the identified contaminants of concern, and the field observations.

9.2.4 Precision and Accuracy for Sampling and Analysis

Precision and accuracy for sampling and analysis expresses the quantitative measure of the variability and closeness of the data. This DQI is crucial to provide information to data users of the reliability, unreliability or qualitative value of the data representing each analyte in each environmental matrix. QA/QC includes:

- Correct and appropriate Standard Operating Procedures applied and complied with;
- Assessment of RPDs are satisfactory; and
- Independent review of QA/QC data satisfactory.

9.3 Field and Laboratory Quality Assurance Program

Quality Assurance (QA) and Quality Control (QC) practices were applied to all stages of data gathering and subsequent sample handling procedures. These are designed to provide control over both field and laboratory operations. Additionally, the analytical laboratories will complete their own internal QA procedures during the analysis of samples. Details of the QA/QC program are described below.

9.3.1 Quality Assurance

All fieldwork followed the SESL procedure to ensure that all environmental samples were collected by a set of uniform and systematic methods as required by the QA system.

The SESL field procedures describe the following:

- Decontamination procedures;
- Sample identification procedures;
- Information requirements for soil bore logs;
- Chain of custody information requirements;
- Sample duplicate frequency; and
- Field calibration requirements (if necessary).

9.3.2 Quality Control Results

The results of the field and laboratory quality control samples were assessed to determine:

- The quality of the data generated;
- Whether the data meets the objectives of the study; and
- Whether the data is acceptable for the intended use.

9.3.3 Field QC

One blind duplicate sample was collected during the sampling works conducted at the site and would be analysed to check the results of the primary samples.

9.3.4 Laboratory Quality Control

The following data quality criteria were used for the investigation:

- Maximum acceptable sample holding times per analyte;
- Samples were appropriately handled;
- Laboratory method blank analyses were required to be below the limits of reporting PQL;
- All compound concentrations were (if required) spiked at similar concentration to sample results;
- All PQLs must be less than the assessment criteria;

- The relative percent difference of duplicates was determined and compared to the following criteria for acceptability. The acceptance criteria are:
    i. Less than 30% for field duplicates. Where concentrations were less than 5 times the LOR, RPDs were not calculated;
    ii. Less than 30% for inter laboratory duplicates;
    iii. No limit for laboratory duplicates where the detection is less than 10 times the PQL;
    iv. Less than 50% for laboratory duplicates where the detection is between 10 and 20 times the PQL; and
    v. Less than 20% for laboratory duplicates where the detection limit is greater than 20 times the PQL.
- RPDs for control spike duplicates to be compared to an acceptable limit of 30%;
- RPDs for Matrix Spike Duplicates to be compared to an acceptable limit of 30%; and
- Percent recoveries of control spikes and matrix spikes to be compared to an acceptable range of 70-130%. In addition, percent recoveries of surrogates were also compared to the USEPA surrogate recovery limits.

All laboratory analysis was conducted at a NATA accredited laboratory under chain of custody procedures. Primary analysis was conducted by ALS Environmental Division Sydney, located in Smithfield, NSW (NATA #825).

9.3.5 Laboratory Blanks

Laboratory or control blanks consist of reagents specific to each individual method and are prepared and analysed by laboratories in the same manner as regular samples. The preparation and analysis of laboratory blanks enable the measurement of contamination within the laboratory.

Ideally, no contamination should be present in blanks. However, in the event that contamination is detected, the following actions are taken:

- The organic test results are not to be corrected by subtracting any blank value;
- If any analyte is found in blank but not a sample, no action is taken;
- No absolute results are reported unless the analyte concentration within a sample exceeds 10 times the amount in any blank for common contaminates, or five times the amount for any other analyte; and
- Professional judgment is used where little or no contamination is present in the associated blanks, but contamination is suspected in actual samples.

9.3.6 Laboratory Duplicates

Laboratory duplicate samples are prepared in the laboratory by splitting a field sample and analysing it as two independent samples. The analysis of laboratory duplicate samples provides an indication of analytical precision and may be influenced by sample heterogeneity. The laboratory duplicate RPDs are used to assess the laboratory precision.

9.4 QAQC Results

QAQC procedures conducted as part of the preliminary environmental investigation included standard laboratory procedures.

9.4.1 Field Duplicate Samples

Field duplicate sample was submitted to the same laboratory for analysis. Data for primary and duplicate samples was collated and reported as a relative percentage difference (RPD) of the concentration of both samples.

9.5 Laboratory QAQC

Laboratory QA/QC for soil analysis comprised chain-of-custody documentation, sample integrity and holding times, sample temperatures on receipt, use of acceptable NATA-registered laboratory methods and laboratory QA/QC results.

ALS has provided a QA/QC report of laboratory control samples performance, and other quality performance records provided with laboratory certificates in Appendix C.

9.6 Statement on Data Quality

Overall, the data quality objectives were met during the investigation, as demonstrated throughout the report. Documentation was maintained and complete, sufficient data was collected to characterise the site in accordance with statutory requirements, the data have been shown to be of sufficient quality to provide confidence that the data is representative of site conditions, and precision and accuracy has been demonstrated in the field and laboratory QA/QC programs.

The overall data quality performance against DQOs indicates the analytical data is considered to be representative of site conditions at the time the investigation, and suitable to enable valid assessment of the site.

9.7 REPORTING

On completion of this investigation, the SESL Environmental Scientists have prepared this report summarising the works performed and assessed the results and findings in order to demonstrate compliance with the objectives of the investigation.

Based on the identified contaminants of concern and field observations and screening, selected soil samples were submitted for analysis of heavy metals, TRH, BTEX, PAH, OCP and PCB.

Table 5 – Summary of Sample Analysis

Sample Type and Analysis	Number of Samples	QA Samples
Heavy metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg)	8	1
Benzene, Toluene, Ethylbenzene & Xylene (BTEX)	8	1
Total Recoverable Hydrocarbons (TRH)	8	1
Organochlorine Pesticides (OCP)	8	1
Polychlorinated Biphenyls (PCB)	8	1
Polycyclic Aromatic Hydrocarbons (PAH)	8	1

10 SUMMARY OF RESULTS

10.1 SITE STRATIGRAPHIC CONDITIONS

The site area is approximately 1,112 m², with two single level residential dwellings occupying the site in the centre. The remaining areas of the site are either exposed soil or concrete.

10.2 HAZARDOUS MATERIALS

38 Rodley Avenue, was occupied by a fibro dwelling and a fibro garage located in the south west corner of the site with potential hazardous building materials and it is considered possible that they could be present in the internal structures.

10.3 FIELD INVESTIGATION RESULTS

During the site investigation sampling work was conducted on the areas considered to raise potential contamination concerns. Based on the visual observation at the time of the site visit, the site was occupied by two low density residential dwellings with concrete driveways. The concrete surface was generally in good condition with minor cracks and oil staining. The fibro garage located at south west corner of 38 Rodley Avenue, was used for goods storage and carparking. Chemical paint and fuel containers were stored in this area.

Soil sampling was limited to shallow soils and fill material. The fill materials consisted predominantly of dark brown sandy and clayey mixed material used for the construction of driveway with no discoloration or odours.

In total, sixteen (16) primary samples and one duplicate sample were collected and analysed from the site. Additional samples collected were submitted to the laboratory and placed on hold pending the outcome of the initial sample analysis.

10.4 LABORATORY RESULTS

Soil samples collected from the surface fill materials and were analysed at a NATA accredited laboratory. The results of this analysis are presented in Appendix C. The results have been compared against the assessment criteria (discussed in Section 7).

Concentrations of metals were considered to be acceptable in all sampling locations, with concentrations of all analysed metals considered to be low. The results for OCP, PCB, BTEX and PAH were below LOD for all samples.

In addition, no asbestos was detected in any of the sample collected from the site.

Due to the low sensitivity of the land use (commercial/industrial), none of the observed contaminant elevations exceed the assessment criteria.

11 CONCLUSIONS

11.1 SITE CHARACTERISATION

The site is located at 36-38 Rodley Avenue, Penrith NSW 2750. The legal definition of the site is Lot 58 & Lot 59 in Development Plan (DP) 33490. This limited preliminary site investigation was based on the assessment of historical records for the site and a limited intrusive on-site investigation. A number of AECs were identified based on historical information and site inspection. These AEC were investigated in the sampling program, and determined not to pose an actual risk.

This investigation was required as part of the development permit process for the demolition of existing structures and construction of a five-level residential flat building with a two-level basement car park, with communal and landscaping areas along northern, southern and eastern boundaries.

11.2 SUMMARY

The objectives of this preliminary site investigation were to Identify the likelihood and/or extent of contamination occurring from current and former activities undertaken at the site and recommend management strategies including any additional investigations (if required).

Based on the findings of this limited investigation, the results of the limited sampling and analysis suggest that the contaminant concentrations at the site are negligible, SESL recommends that the site is suitable for the proposed development. To help with management of identified building materials, the following is recommended:

- A destructive hazardous building material survey should be completed for the site prior to construction. If asbestos containing material is confirmed, as asbestos management plan during construction (or as part of the construction environmental management plan) should detail the require management procedures.

12 REFERENCES

Australian Standard AS1726:1994 *Geotechnical Site Investigations*

Australian Standards AS4482.1:2005 *Guide to the Sampling and Investigation of Potentially Contaminated Soil (Part 1 & 2)* enHealth 2012, Australian exposure factor guidance. Environmental Health Subcommittee (enHealth) of the Australian Health Protection Principal Committee, Canberra, Australia.

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NSW EPA (2014) *Waste Classification Guidelines Part 1: Classifying Waste*

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WA DoH (2009) Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2009)

13 LIMITATIONS

This report only covers the conditions at the time of investigation. Should there be any variation in the conditions beyond this date, further assessment will be required.

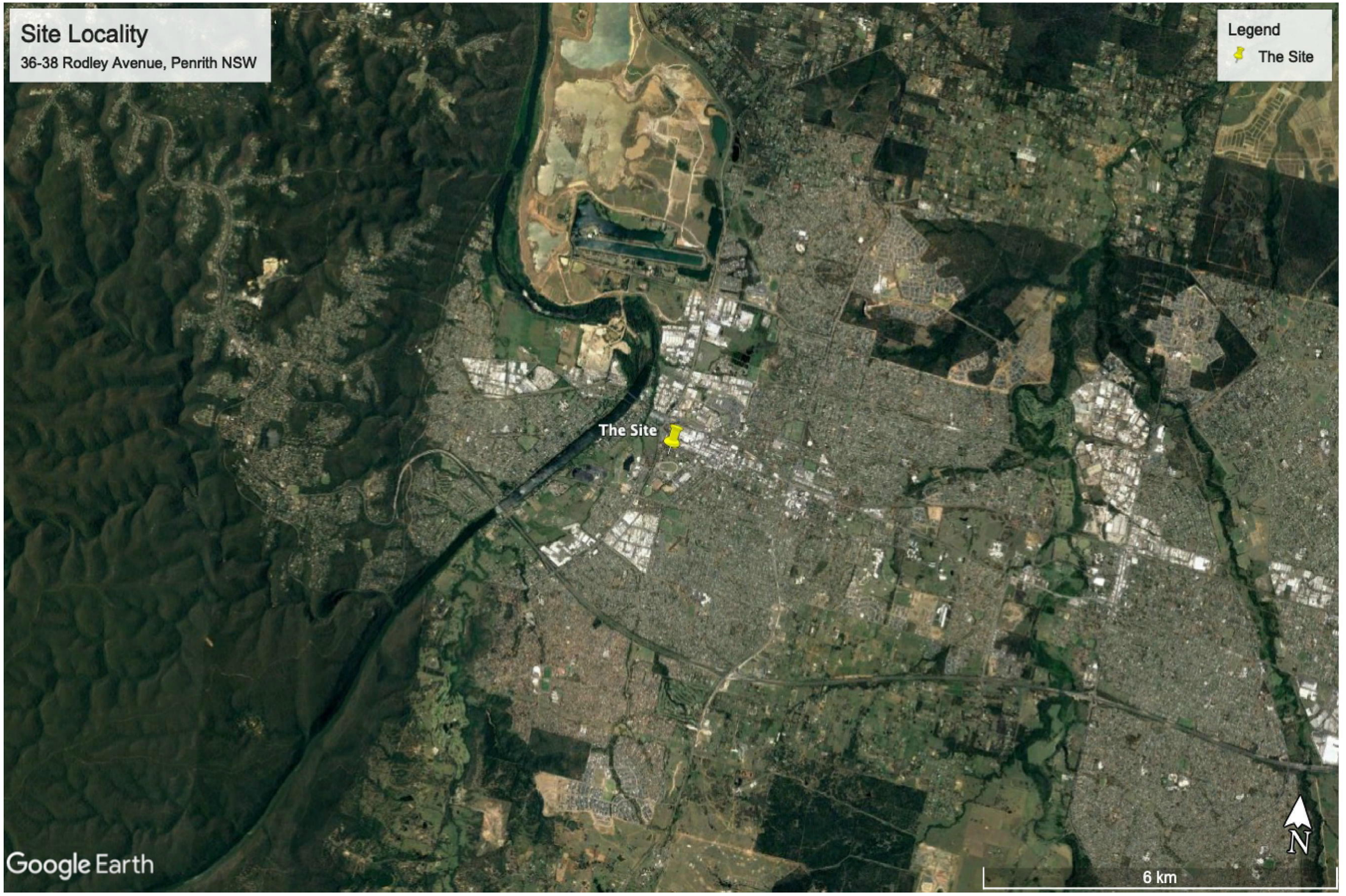
This report is for the use of the client and any relevant authorities that rely on the information for development applications and approval processes. Any reliance on this report by third parties shall be at such party's sole risk. This report shall only be presented in full and may not be used to support any other objective other than those set out in the report.

SESL's assessment is necessarily based on the result of limited site investigations and upon the restricted program of visual assessment of the surface and consultation of available records. Neither SESL, nor any other reputable consultant, can provide unqualified warranties nor does SESL assume any liabilities for site conditions not observed, or accessible during the time of investigations.

No site investigations can be thorough enough to provide absolute confirmation of the presence or absence of substances, which may be considered contaminating, hazardous or polluting. Similarly, the level of testing undertaken cannot be considered to unequivocally characterise the degree or extent of contamination on site. In addition, regulatory or guideline criteria for the evaluation of environmental soil and groundwater quality are frequently being reviewed and concentrations of contaminants which are considered acceptable at present may in the future be considered to exceed acceptance criteria. Similar changes over time may prevail regarding site remediation standards as different regulatory mechanisms are developed and implemented.

ABN 70 106 810 708
T 1300 30 40 80
F 1300 64 46 89
E info@sesl.com.au
W sesl.com.au

POST PO Box 357, Pennant Hills NSW 1715
LAB 16 Chilvers Rd, Thornleigh NSW 2120
ACT Level 5 Tower A, 7 London Cct, Canberra ACT 2601
VIC Level 1, 21 Shields St, Flemington VIC 3031
QLD Level 10, 15 Green Square Cl, Fortitude Valley QLD 4006



VER	DATE	AMENDMENTS	DRW	CKD
01	09/08/2019	First draft - Sampling map location	SP	

COMMERCIAL IN CONFIDENCE

SESL AUSTRALIA
Environment & Soil Sciences
16 Chilvers Road, Thornleigh NSW 2120 www.sesl.com.au
ABN 70 106 810 708 L 1300 30 40 80 F 1300 64 46 89

Figure 1
Map 1: Site Locality

Project Ref:	J001922
Project:	Preliminary Site Investigation
Location:	36-38 Rodley Avenue, Penrith NSW 2750
Client:	Inglow Investments Two Pty Ltd
GPS Coordinates:	30˚50'43.30" S 151˚06'29.00" E

PRINT: A3 (P)

Site Plan & Investigation Area

36-38 Rodley Avenue, Penrith NSW 2750

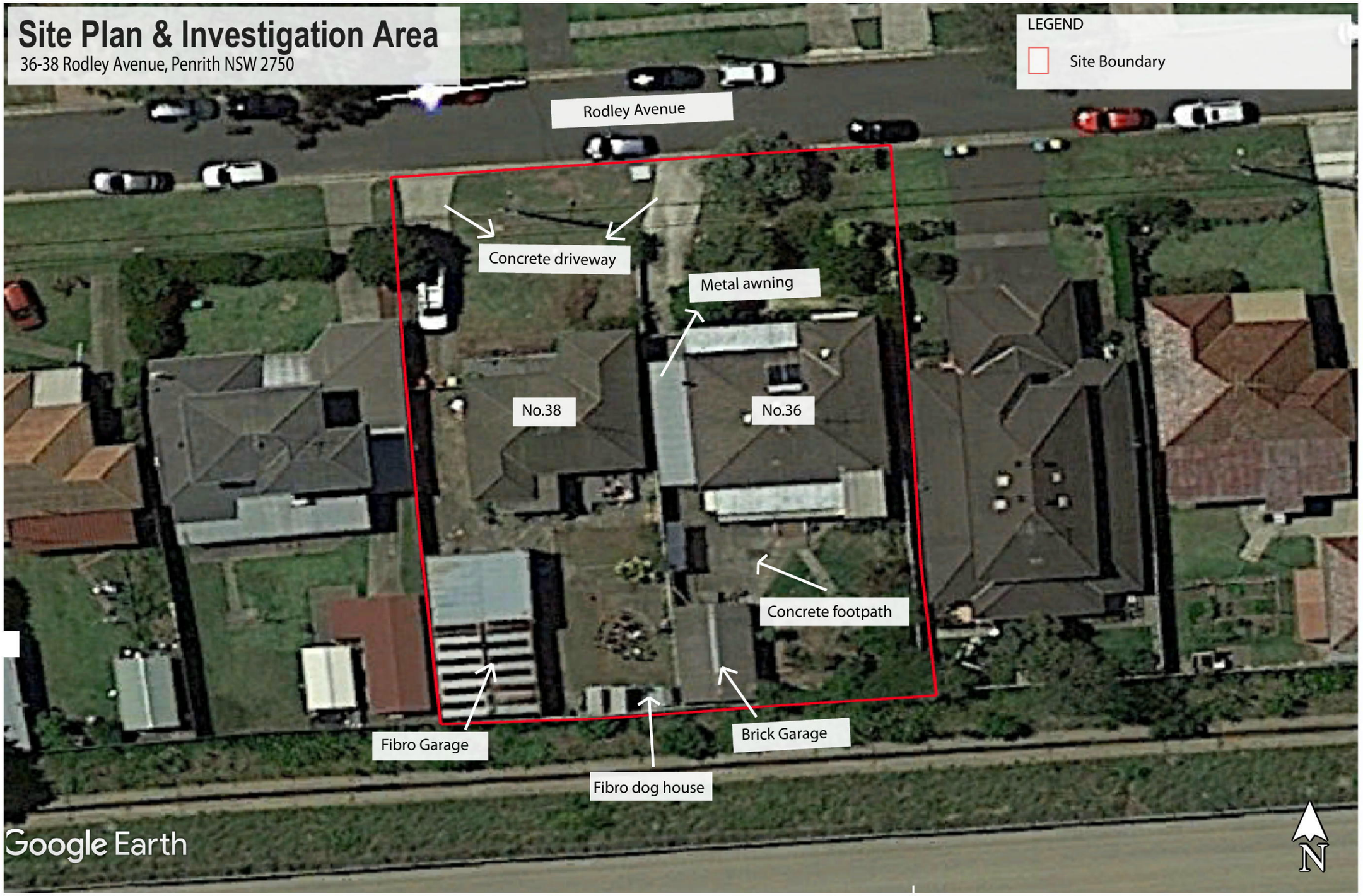


Figure 2

Site Plan and Investigation Area

Project Ref: J001922

Project: Preliminary Site Investigation

Location: 36-38 Rodley Avenue, Penrith NSW 2750

Client: Inglow Investment Two Pty Ltd

SESL AUSTRALIA
Environment & Soil Sciences

16 Chilvers Road, Thornleigh NSW 2120

L 1300 30 40 80 F 1300 64 46 89

VER	DATE	AMENDMENTS	DRW	CKD
01	06/08/2019	First draft - Sampling map location	SP	

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Environment & Soil Sciences
16 Chilvers Road, Thornleigh NSW 2120 www.sesl.com.au
ABN 70 106 810 708 L 1300 30 40 80 F 1300 64 46 89

Figure 3
Site location and sampling map

Project Ref:	J001922
Project:	Preliminary Site Investigation
Location:	36-38 Rodley Avenue, Penrith NSW 2137
Client:	Inglow Investments Two pty Ltd
GPS Coordinates:	33˚45'17.82" S 150˚41'21.51" E

PRINT: A3 (P)

Results Summary Table 1

Chemical/attribute	Sample ID Unit	LOR	HIL-A / HSL-A mg/kg	BH1 0.05-0.15m	BH2 0.05-0.15m	BH3 0.05-0.15m
Heavy Metals						
Arsenic	mg/kg	5	100	<5	6	<5
Cadmium	mg/kg	1	20	<1	<1	<1
Chromium	mg/kg	2	100*	9	18	11
Copper	mg/kg	5	6000	12	44	14
Lead	mg/kg	5	300	24	68	20
Mercury	mg/kg	0.1	40	<0.1	<0.1	<0.1
Nickel	mg/kg	2	400	6	8	6
Zinc	mg/kg	5	7400	44	308	41
BTEX						
Benzene	mg/kg	0.2	0.5	<0.2	<0.2	<0.2
Toluene	mg/kg	0.5	160	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	0.5	55	<0.5	<0.5	<0.5
Xylenes (Total)	mg/kg	0.5	40	<0.5	<0.5	<0.5
Napthalene	mg/kg	1	3	<1	<1	<1
Total Petroleum Hydrocarbons**						
C_6 - C_9	mg/kg	10	N/A	<10	<10	<10
C_{10} - C_{14}	mg/kg	50	N/A	<50	<50	<50
C_{15} - C_{28}	mg/kg	100	N/A	<100	<100	<100
C_{29} - C_{36}	mg/kg	100	N/A	<100	<100	<100
C_{10} - C_{36}	mg/kg	50	N/A	<50	<50	<50
Total Recoverable Hydrocarbons						
C_6-C_{10} minus BTEX (F1)	mg/kg	10	45	<10	<10	<10
>C_{10}-C_{16} minus Naphthalene (F2)	mg/kg	50	110	<50	<50	<50
Sum of Polycyclic Aromatic Hydrocarbons (PAH)**	mg/kg	0.5	300	<0.5	<0.5	<0.5
Benzo(a)pyrene	mg/kg	0.5	N/A	<0.5	<0.5	<0.5
Carcinogenic PAHs (as BAP TEQ)	mg/kg	0.5	3	0.6	0.6	0.6
Organochlorine Pesticides						
DDT + DDE + DDD	mg/kg	0.05	240	<0.05	<0.05	<0.05
Aldrin and Dieldrin	mg/kg	0.05	6	<0.05	<0.05	<0.05
Chlordane	mg/kg	0.05	50	<0.05	<0.05	<0.05
Endosulfan (sum)	mg/kg	0.05	270	<0.05	<0.05	<0.05
Endrin	mg/kg	0.05	10	<0.05	<0.05	<0.05
Heptachlor	mg/kg	0.05	6	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	mg/kg	0.05	10	<0.05	<0.05	<0.05
Lindane/BHC	mg/kg	0.05	N/a	<0.05	<0.05	<0.05
Methoxychlor	mg/kg	0.2	300	<0.2	<0.2	<0.2
Total Polychlorinated Biphenyls	mg/kg	0.1	1	<0.1	<0.1	<0.1
Asbestos						
Asbestos Detection	g/kg	0.1	Not detected	Not detected	Not detected	Not detected
Asbsetos Trace	fibres	5	Not detected	Not detected	Not detected	Not detected
Synthetic Mineral Fibre	g/kg	0.1	Not detected	Not detected	Not detected	Not detected
Organic Fibre	g/kg	0.1	Not detected	Not detected	Not detected	Not detected

Note:
HIL- A values adopted from ASC NEPM 2013, for residential with accessible soils.
HSL-A values adopted from ASC NEPM 2013, for sand materials at 0-<1m for low density residential.
** This limit apply to Benzo(a)pyrene only
Highlighted cells indicates level above Table 1 criteria

Chemical/attribute	Sample ID Unit	LOR	HIL-A / HSL-A mg/kg	BH4 0.05-0.15m	BH5 0.05-0.15m	BH6 0.05-0.15m
Heavy Metals						
Arsenic	mg/kg	5	100	<5	<5	<5
Cadmium	mg/kg	1	20	<1	<1	<1
Chromium	mg/kg	2	100*	10	7	8
Copper	mg/kg	5	6000	12	17	18
Lead	mg/kg	5	300	56	34	32
Mercury	mg/kg	0.1	40	<0.1	<0.1	<0.1
Nickel	mg/kg	2	400	7	23	11
Zinc	mg/kg	5	7400	60	64	129
BTEX						
Benzene	mg/kg	0.2	0.5	<0.2	<0.2	<0.2
Toluene	mg/kg	0.5	160	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	0.5	55	<0.5	<0.5	<0.5
Xylenes (Total)	mg/kg	0.5	40	<0.5	<0.5	<0.5
Napthalene	mg/kg	1	3	<1	<1	<1
Total Petroleum Hydrocarbons**						
C_6 - C_9	mg/kg	10	N/A	<10	<10	<10
C_{10} - C_{14}	mg/kg	50	N/A	<50	<50	<50
C_{15} - C_{28}	mg/kg	100	N/A	<100	<100	<100
C_{29} - C_{36}	mg/kg	100	N/A	<100	<100	<100
C_{10} - C_{36}	mg/kg	50	N/A	<50	<50	<50
Total Recoverable Hydrocarbons						
C_6-C_{10} minus BTEX (F1)	mg/kg	10	45	<10	<10	<10
>C_{10}-C_{16} minus Naphthalene (F2)	mg/kg	50	110	<50	<50	<50
Sum of Polycyclic Aromatic Hydrocarbons (PAH)**	mg/kg	0.5	300	<0.5	<0.5	<0.5
Benzo(a)pyrene	mg/kg	0.5	N/A	<0.5	<0.5	<0.5
Carcinogenic PAHs (as BAP TEQ)	mg/kg	0.5	3	0.6	0.6	0.6
Organochlorine Pesticides						
DDT + DDE + DDD	mg/kg	0.05	240	<0.05	<0.05	<0.05
Aldrin and Dieldrin	mg/kg	0.05	6	<0.05	<0.05	<0.05
Chlordane	mg/kg	0.05	50	<0.05	<0.05	<0.05
Endosulfan (sum)	mg/kg	0.05	270	<0.05	<0.05	<0.05
Endrin	mg/kg	0.05	10	<0.05	<0.05	<0.05
Heptachlor	mg/kg	0.05	6	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	mg/kg	0.05	10	<0.05	<0.05	<0.05
Lindane/BHC	mg/kg	0.05	N/a	<0.05	<0.05	<0.05
Methoxychlor	mg/kg	0.2	300	<0.2	<0.2	<0.2
Total Polychlorinated Biphenyls	mg/kg	0.1	1	<0.1	<0.1	<0.1
Asbestos						
Asbestos Detection	g/kg	0.1	Not detected	Not detected	Not detected	Not detected
Asbsetos Trace	fibres	5	Not detected	Not detected	Not detected	Not detected
Synthetic Mineral Fibre	g/kg	0.1	Not detected	Not detected	Not detected	Not detected
Organic Fibre	g/kg	0.1	Not detected	Not detected	Not detected	Not detected

Note:

HIL- A values adopted from ASC NEPM 2013, for residential with accessible soils.

HSL-A values adopted from ASC NEPM 2013, for sand materials at 0-<1m for low density residential.

** This limit apply to Benzo(a)pyrene only

Highlighted cells indicates level above Table 1 criteria

Chemical/attribute	Sample ID Unit	LOR	HIL-A / HSL-A mg/kg	BH7 0.05-0.15m	D1
Heavy Metals					
Arsenic	mg/kg	5	100	<5	<5
Cadmium	mg/kg	1	20	<1	<1
Chromium	mg/kg	2	100*	10	8
Copper	mg/kg	5	6000	15	19
Lead	mg/kg	5	300	196	39
Mercury	mg/kg	0.1	40	<0.1	<0.1
Nickel	mg/kg	2	400	4	24
Zinc	mg/kg	5	7400	627	73
BTEX					
Benzene	mg/kg	0.2	0.5	<0.2	<0.2
Toluene	mg/kg	0.5	160	<0.5	<0.5
Ethylbenzene	mg/kg	0.5	55	<0.5	<0.5
Xylenes (Total)	mg/kg	0.5	40	<0.5	<0.5
Napthalene	mg/kg	1	3	<1	<1
Total Petroleum Hydrocarbons**					
C_6 - C_9	mg/kg	10	N/A	<10	<10
C_{10} - C_{14}	mg/kg	50	N/A	<50	<50
C_{15} - C_{28}	mg/kg	100	N/A	<100	<100
C_{29} - C_{36}	mg/kg	100	N/A	<100	<100
C_{10} - C_{36}	mg/kg	50	N/A	<50	<50
Total Recoverable Hydrocarbons					
C_6-C_{10} minus BTEX (F1)	mg/kg	10	45	<10	<10
>C_{10}-C_{16} minus Naphthalene (F2)	mg/kg	50	110	<50	<50
Sum of Polycyclic Aromatic Hydrocarbons (PAH)**	mg/kg	0.5	300	<0.5	<0.5
Benzo(a)pyrene	mg/kg	0.5	N/A	<0.5	<0.5
Carcinogenic PAHs (as BAP TEQ)	mg/kg	0.5	3	0.6	0.6
Organochlorine Pesticides					
DDT + DDE + DDD	mg/kg	0.05	240	<0.05	<0.05
Aldrin and Dieldrin	mg/kg	0.05	6	<0.05	<0.05
Chlordane	mg/kg	0.05	50	<0.05	<0.05
Endosulfan (sum)	mg/kg	0.05	270	<0.05	<0.05
Endrin	mg/kg	0.05	10	<0.05	<0.05
Heptachlor	mg/kg	0.05	6	<0.05	<0.05
Hexachlorobenzene (HCB)	mg/kg	0.05	10	<0.05	<0.05
Lindane/BHC	mg/kg	0.05	N/a	<0.05	<0.05
Methoxychlor	mg/kg	0.2	300	<0.2	<0.2
Total Polychlorinated Biphenyls	mg/kg	0.1	1	<0.1	<0.1
Asbestos					
Asbestos Detection	g/kg	0.1	Not detected	Not detected	Not detected
Asbsetos Trace	fibres	5	Not detected	Not detected	Not detected
Synthetic Mineral Fibre	g/kg	0.1	Not detected	Not detected	Not detected
Organic Fibre	g/kg	0.1	Not detected	Not detected	Not detected

Note:

HIL- A values adopted from ASC NEPM 2013, for residential with accessible soils.

HSL-A values adopted from ASC NEPM 2013, for sand materials at 0-<1m for low density residential.

** This limit apply to Benzo(a)pyrene only

Highlighted cells indicates level above Table 1 criteria

LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 18 Jul 2019 14:22:37

Reference: LS007443 EP

Address: 36-38 Rodley Avenue, Penrith, 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	NSW Department of Finance, Services & Innovation	18/07/2019	18/07/2019	Daily	-	-	-	-
Topographic Data	NSW Department of Finance, Services & Innovation	11/04/2019	10/04/2019	As required	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	17/07/2019	09/07/2019	Monthly	1000	0	0	2
Contaminated Land Records of Notice	Environment Protection Authority	10/07/2019	10/07/2019	Monthly	1000	0	0	0
Former Gasworks	Environment Protection Authority	01/07/2019	11/10/2017	Monthly	1000	0	0	0
National Waste Management Facilities Database	Geoscience Australia	07/05/2019	07/03/2017	Quarterly	1000	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	01/07/2019	01/07/2019	Monthly	2000	0	0	0
Defence PFAS Investigation & Management Program	Department of Defence	01/07/2019	01/07/2019	Monthly	2000	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	01/07/2019	01/07/2019	Monthly	2000	0	0	0
Defence 3 Year Regional Contamination Investigation Program	Department of Defence	01/07/2019	01/07/2019	Monthly	2000	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	13/12/2018	13/12/2018	Annually	1000	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	27/06/2019	27/06/2019	Monthly	1000	0	0	3
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority	27/06/2019	27/06/2019	Monthly	1000	0	0	1
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	27/06/2019	27/06/2019	Monthly	1000	3	3	5
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	-	2	2
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	-	1	2
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	-	2	2
UBD Business Directory 1950 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	1
UBD Business Directory 1950 (Road & Area Matches)	Hardie Grant			Not required	150	-	2	2
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500	0	0	60
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500	-	0	27

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Points of Interest	NSW Department of Finance, Services & Innovation	11/04/2019	10/04/2019	Quarterly	1000	0	0	69
Tanks (Areas)	NSW Department of Finance, Services & Innovation	11/04/2019	11/04/2019	Quarterly	1000	0	0	0
Tanks (Points)	NSW Department of Finance, Services & Innovation	11/04/2019	10/04/2019	Quarterly	1000	0	0	0
Major Easements	NSW Department of Finance, Services & Innovation	11/04/2019	11/04/2019	Quarterly	1000	0	0	8
State Forest	NSW Department of 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	16/01/2019	14/11/2018	Annually	1000	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000	1	1	1
Botany Groundwater Management Zones	NSW Department of Primary Industries	15/03/2018	01/10/2005	As required	1000	0	0	0
Groundwater Boreholes	NSW Dept. of Primary Industries - Water NSW; Commonwealth of Australia (Bureau of Meteorology)	24/07/2018	23/07/2018	Annually	2000	0	0	55
Geological Units 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	1	-	2
Geological Structures 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	0	-	0
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000	0	0	0
Soil Landscapes	NSW Office of Environment & Heritage	12/08/2014		None planned	1000	1	-	3
Atlas of Australian Soils	CSIRO	19/05/2017	17/02/2011	As required	1000	1	1	3
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning and Environment	15/07/2019	28/06/2019	Weekly	500	0	-	-
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000	1	1	2
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1000	0	0	0
Dryland Salinity Potential of Western Sydney	NSW Office of Environment & Heritage	12/05/2017	01/01/2002	None planned	1000	1	1	4
Mining Subsidence Districts	NSW Department of Finance, Services & Innovation	11/04/2019	11/04/2019	Quarterly	1000	0	0	0
Environmental Planning Instrument SEPP State Significant Precincts	NSW Department of Planning and Environment	15/07/2019	07/12/2018	Weekly	1000	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning and Environment	15/07/2019	05/07/2019	Weekly	1000	1	2	47
Commonwealth Heritage List	Australian Government Department of the Environment and Energy - Heritage Branch	16/01/2019	31/07/2018	Unknown	1000	0	0	0
National Heritage List	Australian Government Department of the Environment and Energy - Heritage Branch	16/01/2019	28/09/2018	Unknown	1000	0	0	0
State Heritage Register - Curtilages	NSW Office of Environment & Heritage	15/07/2019	09/11/2018	Quarterly	1000	0	0	0
Environmental Planning Instrument Heritage	NSW Department of Planning and Environment	15/07/2019	28/06/2019	Weekly	1000	0	0	39
Bush Fire Prone Land	NSW Rural Fire Service	28/05/2019	05/04/2019	Quarterly	1000	0	0	3
Remnant Vegetation of the Cumberland Plain	NSW Office of Environment & Heritage	07/10/2014	04/08/2011	Unknown	1000	0	0	2
Ramsar Wetlands of Australia	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	1
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	1
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	18/07/2019	18/07/2019	Weekly	10000	-	-	-

Aerial Imagery 2018

36-38 Rodley Avenue, Penrith, NSW 2750

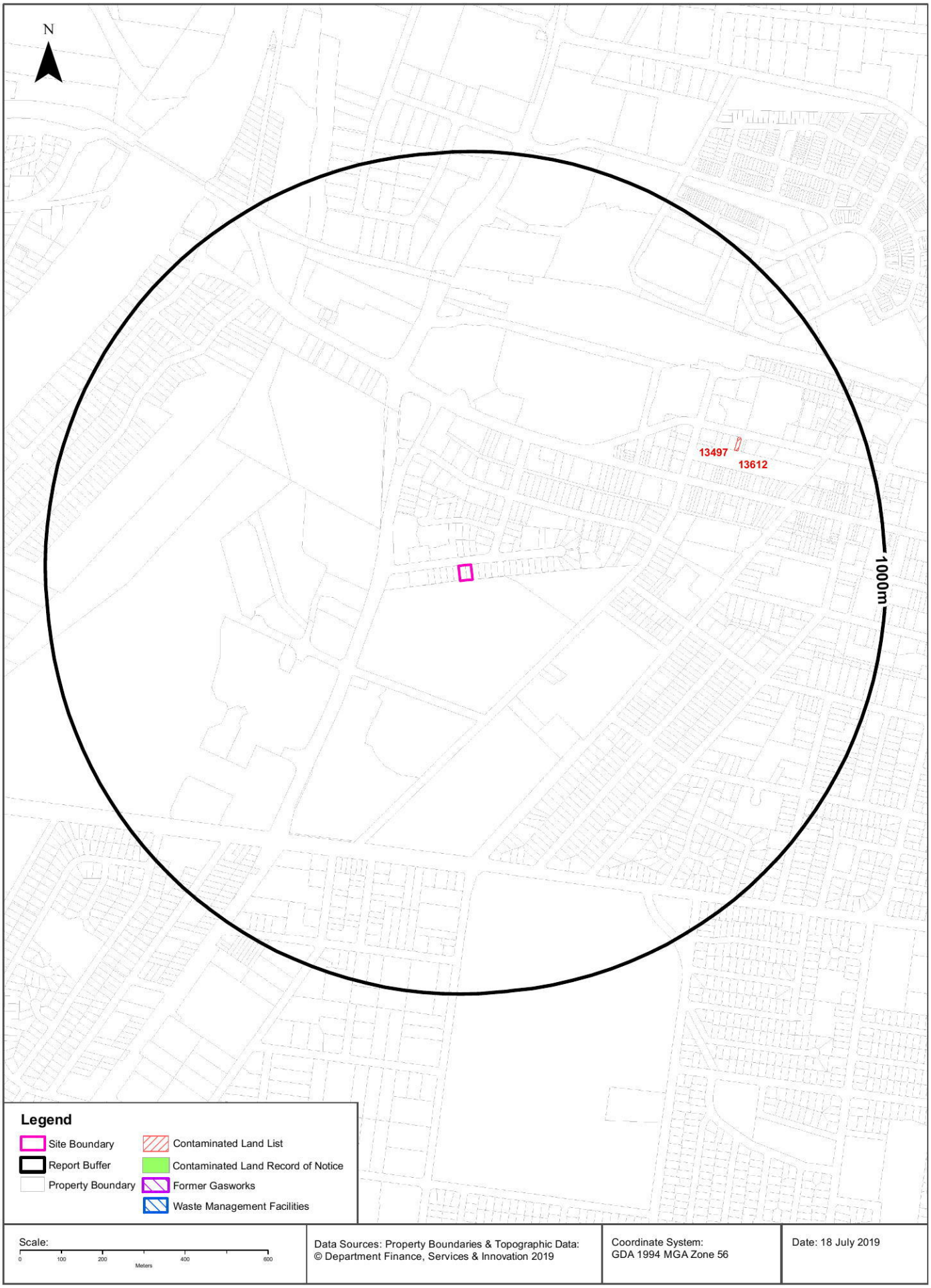
Data Sources: Aerial Imagery © Department Finance, Services & Innovation

Coordinate System: GDA 1994 MGA Zone 56

Date: 18 July 2019

Contaminated Land & Waste Management Facilities

36-38 Rodley Avenue, Penrith, NSW 2750



Contaminated Land & Waste Management Facilities

36-38 Rodley Avenue, Penrith, 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
13497	Jet 60 Dry Cleaners	Shop 3 134-138 Henry Street	PENRITH	Unclassified	Regulation under CLM Act not required	Current EPA List	Premise Match	693m	North East
13612	Former Dry Cleaners	Shop 3, 134-138 Henry STREET	PENRITH	Other Industry	Regulation under CLM Act not required	Current EPA List	Premise Match	693m	North East

The values within the EPA site management class in the table above, are given more detailed explanations in the table below:

EPA site management class	Explanation
Contamination being managed via the planning process (EP&A Act)	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. The contamination of this site is managed by the consent authority under the Environmental Planning and Assessment Act 1979 (EP&A Act) planning approval process, with EPA involvement as necessary to ensure significant contamination is adequately addressed. The consent authority is typically a local council or the Department of Planning and Environment.
Contamination currently regulated under CLM Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). Management of the contamination is regulated by the EPA under the CLM Act. Regulatory notices are available on the EPA's Contaminated Land Public Record of Notices.
Contamination currently regulated under POEO Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. Management of the contamination is regulated under the Protection of the Environment Operations Act 1997 (POEO Act). The EPA's regulatory actions under the POEO Act are available on the POEO public register.
Contamination formerly regulated under the CLM Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). The contamination was addressed under the CLM Act.
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

36-38 Rodley Avenue, Penrith, 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

PFAS Investigation Sites

36-38 Rodley Avenue, Penrith, NSW 2750

EPA PFAS Investigation Program

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

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

EPA PFAS Investigation Program: Environment Protection Authority

Defence PFAS Investigation & Management Program

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

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

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

Airservices Australia National PFAS Management Program

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

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

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

Defence Sites

36-38 Rodley Avenue, Penrith, NSW 2750

Defence 3 Year Regional Contamination Investigation Program

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

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

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

EPA Other Sites with Contamination Issues

36-38 Rodley Avenue, Penrith, 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:

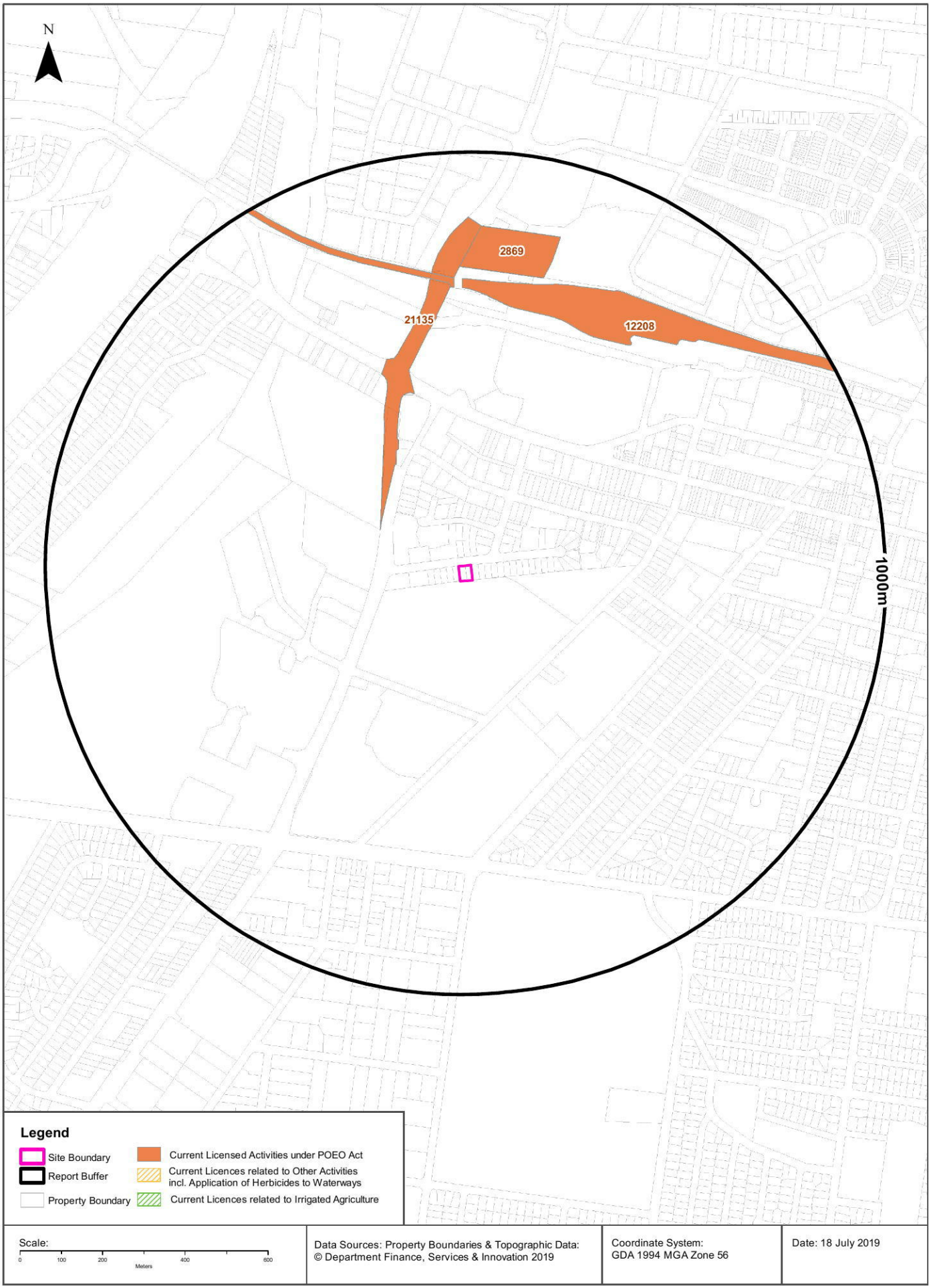
- James Hardie asbestos manufacturing and waste disposal sites
- Radiological investigation sites in Hunter's Hill
- Pasminco Lead Abatement Strategy Area

Sites within the dataset buffer:

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

Current EPA Licensed Activities

36-38 Rodley Avenue, Penrith, NSW 2750



EPA Activities

36-38 Rodley Avenue, Penrith, NSW 2750

Licensed Activities under the POEO Act 1997

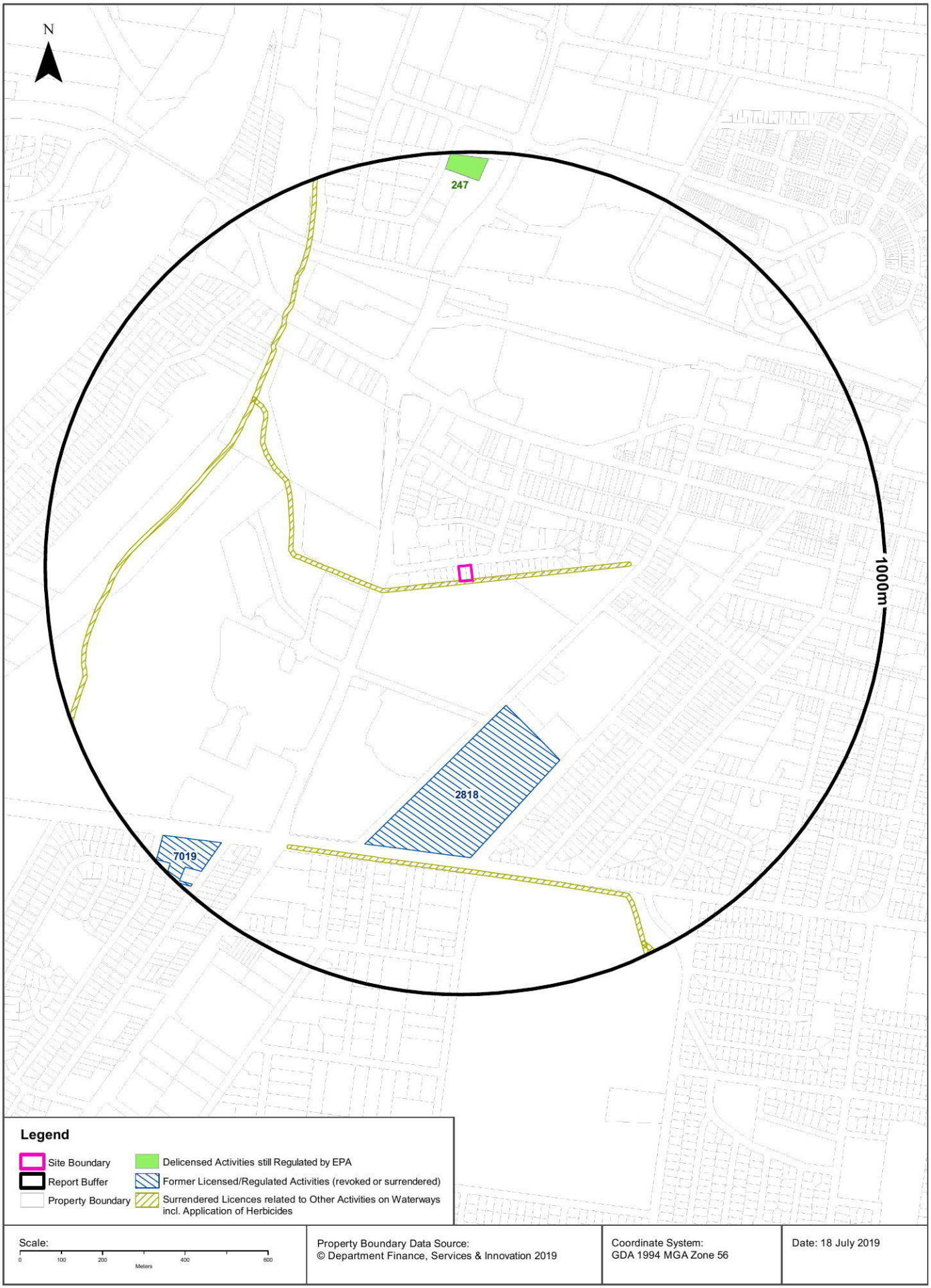
Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
21135	MCCONNELL DOWELL CONSTRUCTORS (AUST) PTY LTD		Jane Street and Mulgoa Road Infrastructure Upgrade , PENRITH, NSW 2740		Railway systems activities	Network of Features	209m	North
12208	SYDNEY TRAINS		PO BOX K349, HAYMARKET, NSW 1238		Railway systems activities	Network of Features	624m	North East
2869	LD&D MILK PTY LTD	LD&D MILK	2257 - 2265 CASTLEREAGH ROAD	PENRITH	Dairy processing	Premise Match	711m	North

POEO Licence Data Source: Environment Protection Authority

Delicensed & Former Licensed EPA Activities

36-38 Rodley Avenue, Penrith, NSW 2750



EPA Activities

36-38 Rodley Avenue, Penrith, 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
247	BORAL RESOURCES (NSW) PTY LTD	BORAL CONCRETE	PEACHTREE ROAD	PENRITH	Concrete works	Premise Match	931m	North

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	0m	Onsite
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	0m	Onsite
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	0m	Onsite
2818	PANASONIC AVC NETWORKS AUSTRALIA PTY LTD	164 STATION STREET, PENRITH, NSW 2750	Surrendered	24/03/2000	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	313m	South
7019	JAMISON PRIVATE HOSPITAL PROPERTY PTY LTD	366 JAMISON ROAD, PENRITH, NSW 2750	Surrendered	20/03/2001	Hazardous, Industrial or Group A Waste Generation or Storage	Premise Match	856m	South West

Former Licensed Activities Data Source: Environment Protection Authority

UPSS Sensitive Zones

36-38 Rodley Avenue, Penrith, NSW 2750

Historical Business Directories

36-38 Rodley Avenue, Penrith, 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:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
	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:

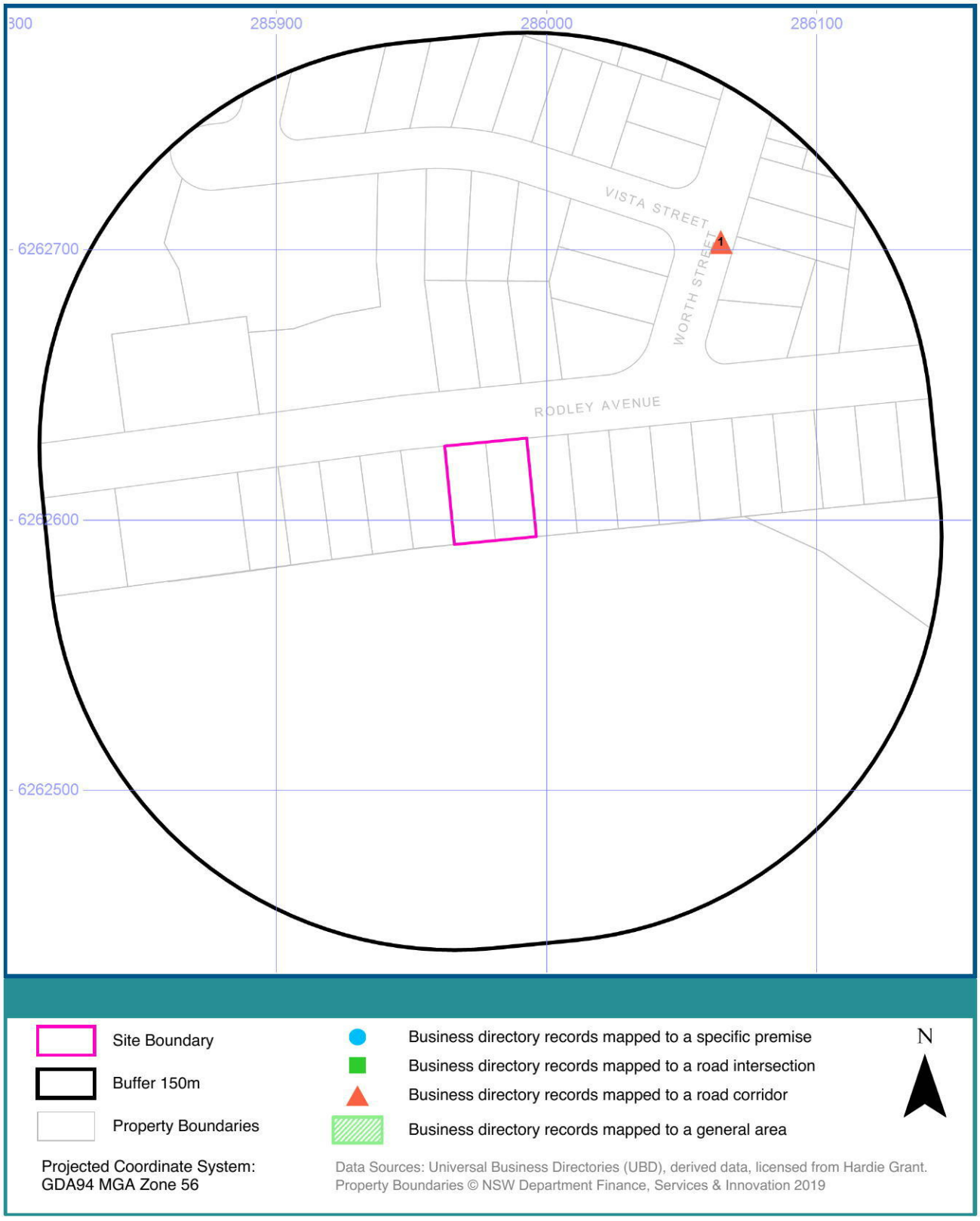
Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
	No records in buffer				

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

Historical Business Directories

36-38 Rodley Avenue, Penrith, NSW 2750

1986 Business to Business Directory Records



Historical Business Directories

36-38 Rodley Avenue, Penrith, 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:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
	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:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
1	MOTOR ACCESSORIES – RETAIL .	Scotts Spare Parts Pty, Ltd., Worth St., Penrith. 2750	61178	Road Match	58m
	MOTOR SPARE PARTS DEALERS RETAIL	Scotts Spare Parts Pty. Ltd., Worth St., Penrith. 2750	67473	Road Match	58m

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

Historical Business Directories

36-38 Rodley Avenue, Penrith, 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:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
	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:

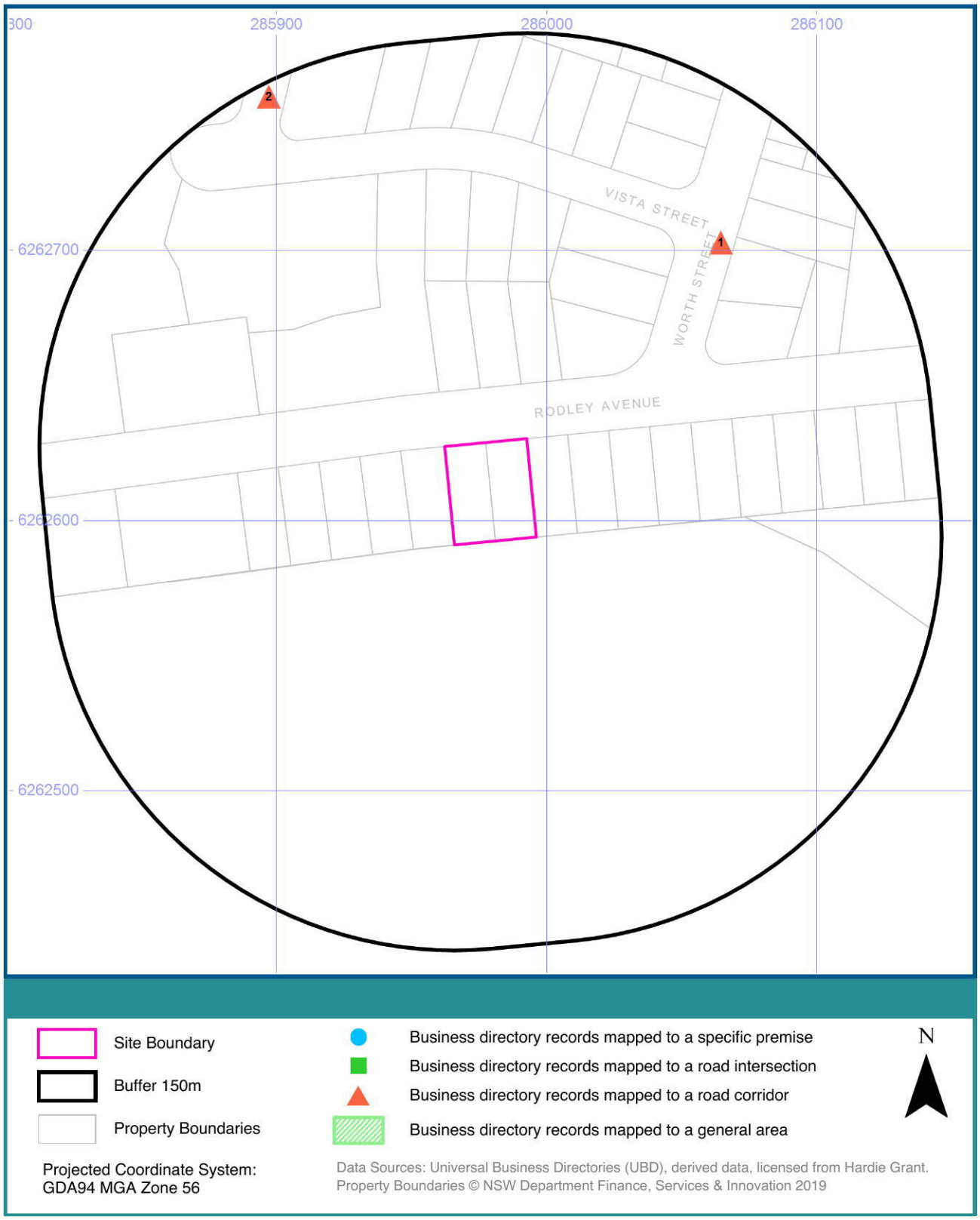
Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
	No records in buffer				

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

Historical Business Directories

36-38 Rodley Avenue, Penrith, NSW 2750

1970 Business Directory Records



Historical Business Directories

36-38 Rodley Avenue, Penrith, 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:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
	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:

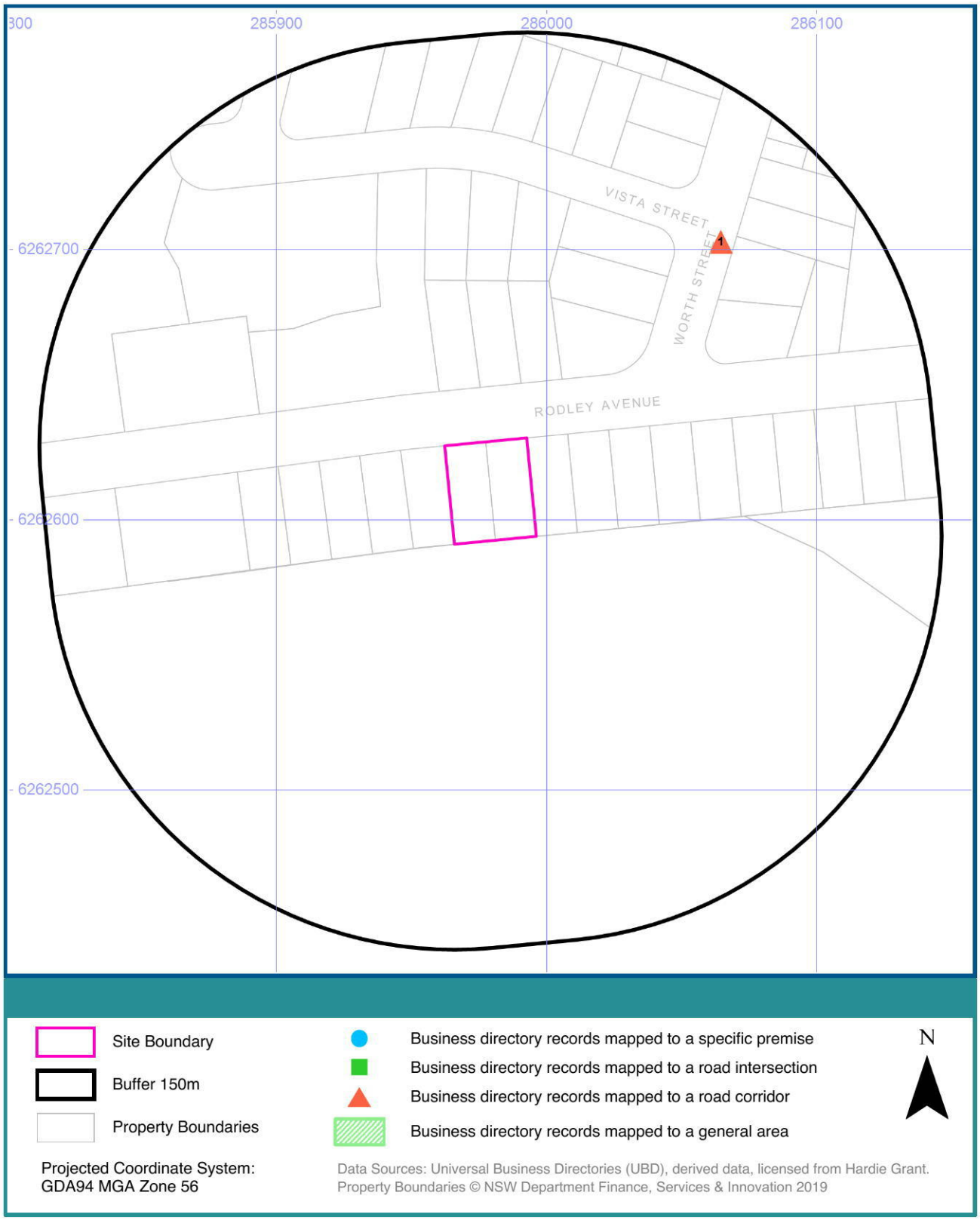
Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
1	FUEL MERCHANTS-COAL, COKE & WOOD	Byrnes, L. and H., Worth St. Penrith	535870	Road Match	58m
2	TAXI TRUCK OPERATORS	Penrith Taxi Trucks, De Vilnits Pde. Penrith	536181	Road Match	136m

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

Historical Business Directories

36-38 Rodley Avenue, Penrith, NSW 2750

1961 Business Directory Records



Historical Business Directories

36-38 Rodley Avenue, Penrith, 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:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
	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:

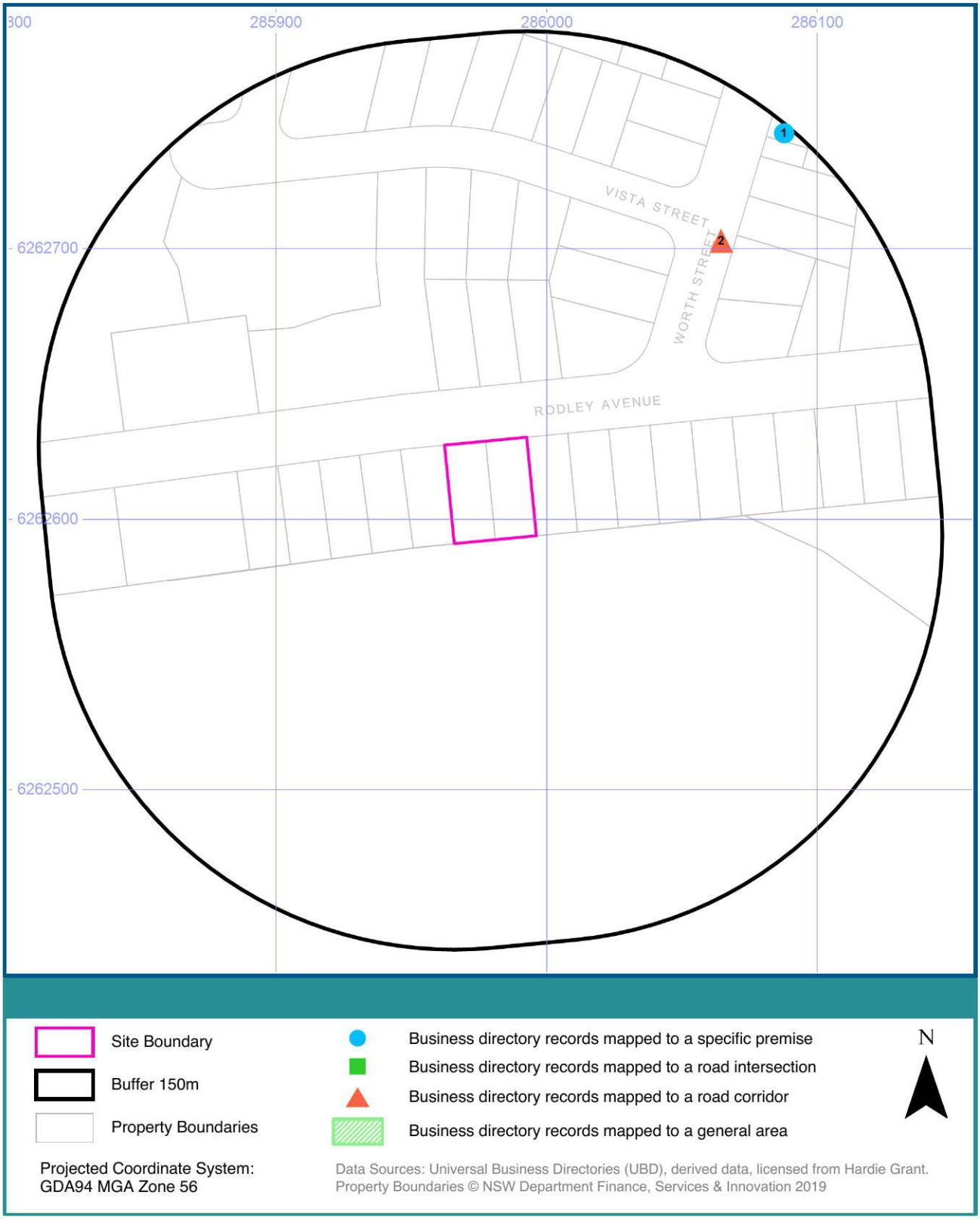
Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
1	CARRIERS & CARTAGE CONTRACTORS	Byrnes, L. and H., Worth St., Penrith	222246	Road Match	58m
	FUEL MERCHANTS-COAL, COKE & WOOD	Byrnes, L. and H., Worth St., Penrith	222369	Road Match	58m

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

Historical Business Directories

36-38 Rodley Avenue, Penrith, NSW 2750

1950 Business Directory Records



Historical Business Directories

36-38 Rodley Avenue, Penrith, 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:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	DRY CLEANERS, PRESSERS & DYERS	Beaucaire Dry Cleaners and Dyers (Tolano and Buckley), 56 Union Rd. Penrith	151134	Premise Match	142m	North East

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:

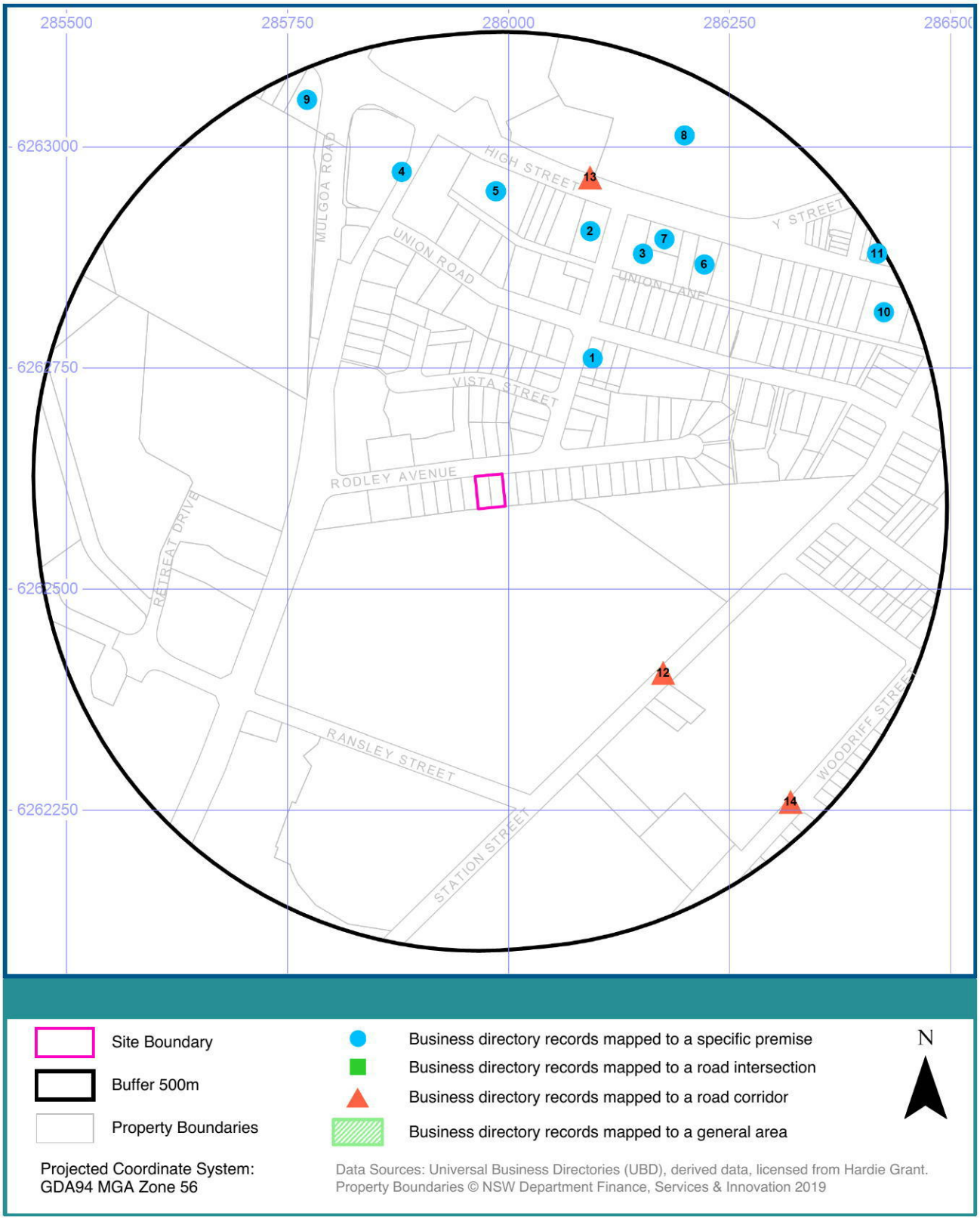
Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
2	CARRIERS & CARTAGE CONTRACTORS	Byrnes L and H., Worth St. Penrith	151063	Road Match	58m
	WOOD MERCHANTS-COAL &/OR COKE	Byrnes, L. and H., Worth St. Penrith	151542	Road Match	58m

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

Historical Business Directories

36-38 Rodley Avenue, Penrith, NSW 2750

Dry Cleaners, Motor Garages & Service Stations (1948-1993)



Historical Business Directories

36-38 Rodley Avenue, Penrith, NSW 2750

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

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

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

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	DRY CLEANERS, PRESSERS & DYERS	Beaucaire Dry Cleaners and Dyers (Tolano and Buckley), 56 Union Rd. Penrith	151134	1950	Premise Match	142m	North East
2	MOTOR GARAGES & SERVICE STATIONS.	Penrith Auto Port, 598 High St., Penrith. 2750	11982	1990	Premise Match	260m	North
	MOTOR GARAGE & SERVICE STATIONS.	Pennth Auto Port, 598 High St., Penrith. 2750	5398	1989	Premise Match	260m	North
	MOTOR GARAGES & SERVICE STATIONS.	Penrith Auto Port, 598 High St., Penrith. 2750	59777	1988	Premise Match	260m	North
	MOTOR GARAGES & SERVICE STATIONS.	Penrith Auto Port, 598 High St., Penrith. 2750	65255	1986	Premise Match	260m	North
	MOTOR GARAGES & SERVICE STATIONS.	Penrith Auto Port, 598 High St., Penrith. 2750	45364	1985	Premise Match	260m	North
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Penrith Auto Port, 598 High St., Penrith. 2750	33936	1984	Premise Match	260m	North
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Penrith Auto Port, 598 High St., Penrith. 2750	65783	1983	Premise Match	260m	North
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Penrith Auto Port, 598 High St., Penrith. 2750.	57371	1982	Premise Match	260m	North
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Penrith Auto Port., 598 High St., Penrith 2750	3919	1981	Premise Match	260m	North
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Penrith Auto Port., 598 High St., Penrith. 2750	58662	1980	Premise Match	260m	North
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Penrith Auto Port., 598 High St., Penrith. 2750.	46156	1979	Premise Match	260m	North
	MOTOR GARAGES & ENGINEERS	Penrith Auto Port, 598 High St. Penrith	536049	1970	Premise Match	260m	North
	MOTOR GARAGES & ENGINEERS	Scott's Garage, 598 High St., Penrith	222560	1961	Premise Match	260m	North
	MOTOR GARAGES & ENGINEERS	Scott's Garage (J. Scott, Propr.), 598 High St. Penrith	151380	1950	Premise Match	260m	North
3	MOTOR GARAGES & SERVICE STATIONS.	Amoco Penrith Service Station, 590 High St., Penrith. 2750	5793	1990	Premise Match	264m	North East
	MOTOR GARAGE & SERVICE STATIONS.	Amoco Penrith Service Station, 590 High St., Penrith. 2750	64279	1989	Premise Match	264m	North East
	MOTOR GARAGES & SERVICE STATIONS.	Amoco Pennth Service Station, 590 High St., Penrith. 2750	53384	1988	Premise Match	264m	North East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
3	MOTOR GARAGES & SERVICE STATIONS.	Amoco Penrith Service Station, 590 High St., Penrith. 2750	63899	1986	Premise Match	264m	North East
	MOTOR GARAGES & SERVICE STATIONS.	Amoco Penrith Service Station, 590 High St., Penrith. 2750	38923	1985	Premise Match	264m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Amoco Penrith Service Station, 590 High St., Penrith. 2750	22304	1984	Premise Match	264m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Amoco Penrith Service Station., 590 High St., Penrith. 2750	8896	1983	Premise Match	264m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Amoco Penrith Service Station, 590 High St., Penrith. 2750.	55981	1982	Premise Match	264m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Amoco Penrith Service Station., 590 High St., Penrith. 2750	63650	1981	Premise Match	264m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Amoco Penrith Service Station., 590 High St., Penrith. 2750	50121	1980	Premise Match	264m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Amoco Service Station., 590 High St., Penrith. 2750.	35659	1979	Premise Match	264m	North East
4	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Sinclair Ford., 638 High St., Penrith. 2750.	46339	1979	Premise Match	267m	North
	MOTOR GARAGES & ENGINEERS	Wood, Ken, 638 High St. Penrith	536053	1970	Premise Match	267m	North
5	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Central Motors., 616 High St., Penrith. 2750.	41249	1979	Premise Match	271m	North
	MOTOR GARAGES & ENGINEERS	Central Garage Penrith Pty. Ltd., 616 High St. Penrith	536047	1970	Premise Match	271m	North
	MOTOR GARAGES & ENGINEERS	Central Motors Pty. Ltd., 616-632 High St., Penrith	222553	1961	Premise Match	271m	North
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Central Motors Pty. Ltd.; 616-632 High St., Penrith	222578	1961	Premise Match	271m	North
6	MOTOR GARAGES & SERVICE STATIONS.	BP Aust. Ltd., 570 High St., Penrith. 2750	6016	1990	Premise Match	297m	North East
	MOTOR GARAGE & SERVICE STATIONS.	BP Aust. Ltd., 570 High St., Penrith. 2750	64521	1989	Premise Match	297m	North East
	MOTOR GARAGES & SERVICE STATIONS.	BP Aust. Ltd., 570 High St., Penrith. 2750	53631	1988	Premise Match	297m	North East
	MOTOR GARAGES & SERVICE STATIONS.	BP Aust. Ltd., 570 High St., Penrith. 2750	64090	1986	Premise Match	297m	North East
	MOTOR GARAGES & SERVICE STATIONS.	BP Aust. Ltd., 570 High St., Penrith. 2750	39103	1985	Premise Match	297m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Aust. Ltd., 570 High St., Penrith. 2750	27708	1984	Premise Match	297m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Aust. Ltd., 570 High St., Penrith 2750	9069	1983	Premise Match	297m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	BP Aust. Ltd., 570 High St., Penrith. 2750.	56163	1982	Premise Match	297m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Aust. Ltd., 570 High St., Penrith. 2750	63837	1981	Premise Match	297m	North East

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
6	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Aust. Ltd., 570 High St., Penrith. 2750	51331	1980	Premise Match	297m	North East
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Great Western Service Station., 570 High St., Penrith. 2750.	41008	1979	Premise Match	297m	North East
	MOTOR GARAGES & ENGINEERS	Great Western Service Station, 570 High St. Penrith	536048	1970	Premise Match	297m	North East
7	MOTOR GARAGES & SERVICE STATIONS.	BP Nepean, 584 High St., Penrith. 2750	18673	1993	Premise Match	303m	North East
	Motor Garages & Service Stations	BP Nepean, 584 High St., Penrith 2750	97629	1991	Premise Match	303m	North East
8	MOTOR GARAGES & ENGINEERS	Nepean Motors Pty. Ltd., 593 High St., Penrith	222556	1961	Premise Match	353m	North East
	MOTOR GARAGES & ENGINEERS	O'Meagher, D, 593 High St., Penrith	222557	1961	Premise Match	353m	North East
	MOTOR GARAGES & ENGINEERS	Penrith Tyre Service Pty. Ltd., 593 High St., Penrith	222559	1961	Premise Match	353m	North East
	MOTOR GARAGES & ENGINEERS	Ferguson, A. D., 593 High St, Penrith	151372	1950	Premise Match	353m	North East
	MOTOR GARAGES & ENGINEERS	Nepean Motor Works, 593 High St. Penrith	151377	1950	Premise Match	353m	North East
	MOTOR SERVICE STATIONS	Nepean Motor Works, 593 High St. Penrith	151400	1950	Premise Match	353m	North East
9	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Willington & Knaggs Pty. Ltd., 660 High St., , Penrith	222582	1961	Premise Match	430m	North West
	MOTOR GARAGES & ENGINEERS	Willington & Knaggs Pty. Ltd., 660 High St., Penrith	222562	1961	Premise Match	430m	North West
10	MOTOR SERVICE STATIONS-PETROL, OIL, Etc.	Penrith Lube Service, 524 High St. Penrith	536069	1970	Premise Match	431m	North East
	MOTOR GARAGES & ENGINEERS	Penrith Steering Service, 520 High St., Penrith	222558	1961	Premise Match	431m	North East
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Sheens Motors, 524 High St., Penrith	222580	1961	Premise Match	431m	North East
	MOTOR GARAGES & ENGINEERS	Welch, C. J. (Machinery) Pty. Ltd., 518 High St. Penrith	151381	1950	Premise Match	431m	North East
11	MOTOR GARAGES & ENGINEERS	Howell, A. G., 549 High St. Penrith	151374	1950	Premise Match	482m	North East
	MOTOR SERVICE STATIONS	Howell, A. G., 549 High St. Penrith	151399	1950	Premise Match	482m	North East

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

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

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

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
12	DRY CLEANERS & PRESSERS.	Turbo Turtle, Shop 23D Nepean Sq., Station St., Penrith. 2750	53316	1988	Road Match	253m
	DRY CLEANERS & PRESSERS.	Turbo Turtle, Shop 23D Nepean Sq. Station St., Penrith. 2750	25549	1986	Road Match	253m
	DRY CLEANERS & PRESSERS.	Turbo Turtle, Shop 23D Nepean Sq, Station St., Penrith. 2750	38825	1985	Road Match	253m
13	MOTOR GARAGES & SERVICE STATIONS.	Barrett Ron Pty. Ltd., 645 High St., Penrith. 2750	5967	1990	Road Match	324m
	MOTOR GARAGES & SERVICE STATIONS.	Nepean Auto Port, High St., Penrith. 2750	11922	1990	Road Match	324m
	MOTOR GARAGE & SERVICE STATIONS.	Barrett Ron Pty. Ltd., 645 High St., Penrith. 2750	64464	1989	Road Match	324m
	MOTOR GARAGE & SERVICE STATIONS.	Nepean Auto Port, High St., Penrith. 2750	5331	1989	Road Match	324m
	MOTOR GARAGES & SERVICE STATIONS.	Barrett Ron Pty. Ltd., 645 High St., Penrith. 2750	53567	1988	Road Match	324m
	MOTOR GARAGES & SERVICE STATIONS.	Nepean Auto Port, High St., Penrith. 2750	59701	1988	Road Match	324m
	MOTOR GARAGES & SERVICE STATIONS.	Nepean Auto Port, High St., Penrith. 2750	65177	1986	Road Match	324m
	MOTOR GARAGES & SERVICE STATIONS.	Barrett Ron Pty. Ltd., 645 High St., Penrith. 2750	39037	1985	Road Match	324m
	MOTOR GARAGES & SERVICE STATIONS.	Nepean Auto Port, High St., Penrith. 2750	45279	1985	Road Match	324m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Barrett Ron Pty. Ltd., 645 High St., Penrith. 2750	27643	1984	Road Match	324m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Nepean Auto Port, High St., Penrith. 2750	33854	1984	Road Match	324m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Barrett Ron Pty. Ltd., 645 High St., Penrith 2750	9004	1983	Road Match	324m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Nepean Auto Port., High St., Penrith 2750	15205	1983	Road Match	324m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Nepean Auto Port, High St., Penrith. 2750.	57283	1982	Road Match	324m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Barrett, Ron Pty. Ltd., 645 High St., Penrith. 2750	63766	1981	Road Match	324m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Nepean Auto Port., High St., Penrith 2750	3840	1981	Road Match	324m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Barrett, Ron Pty. Ltd., 645 High St., Penrith. 2750	50237	1980	Road Match	324m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Nepean Auto Port., High St., Penrith. 2750	58584	1980	Road Match	324m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Barrett Ron Pty. Ltd., 645 High St., Penrith. 2750.	40865	1979	Road Match	324m

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
13	MOTOR GARAGES & ENGINEERS	Barrett, Ron Pty. Ltd., 645-649 High St. Penrith	536046	1970	Road Match	324m
	MOTOR GARAGES & ENGINEERS	Barrett, Ron Pty. Ltd., 645-649 High St., Penrith	222552	1961	Road Match	324m
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Wood, K., High St., Penrith	222583	1961	Road Match	324m
	MOTOR GARAGES & ENGINEERS	Wood, Ken, High St., Penrith	222563	1961	Road Match	324m
14	MOTOR GARAGES & ENGINEERS	Penrith Brake Service Pty. Ltd., Woodriffe St. Penrith	536050	1970	Road Match	459m

Aerial Imagery 2009

36-38 Rodley Avenue, Penrith, NSW 2750

Aerial Imagery 2002

36-38 Rodley Avenue, Penrith, NSW 2750

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Coordinate System: GDA 1994 MGA Zone 56

Date: 16 July 2019

Aerial Imagery 1991

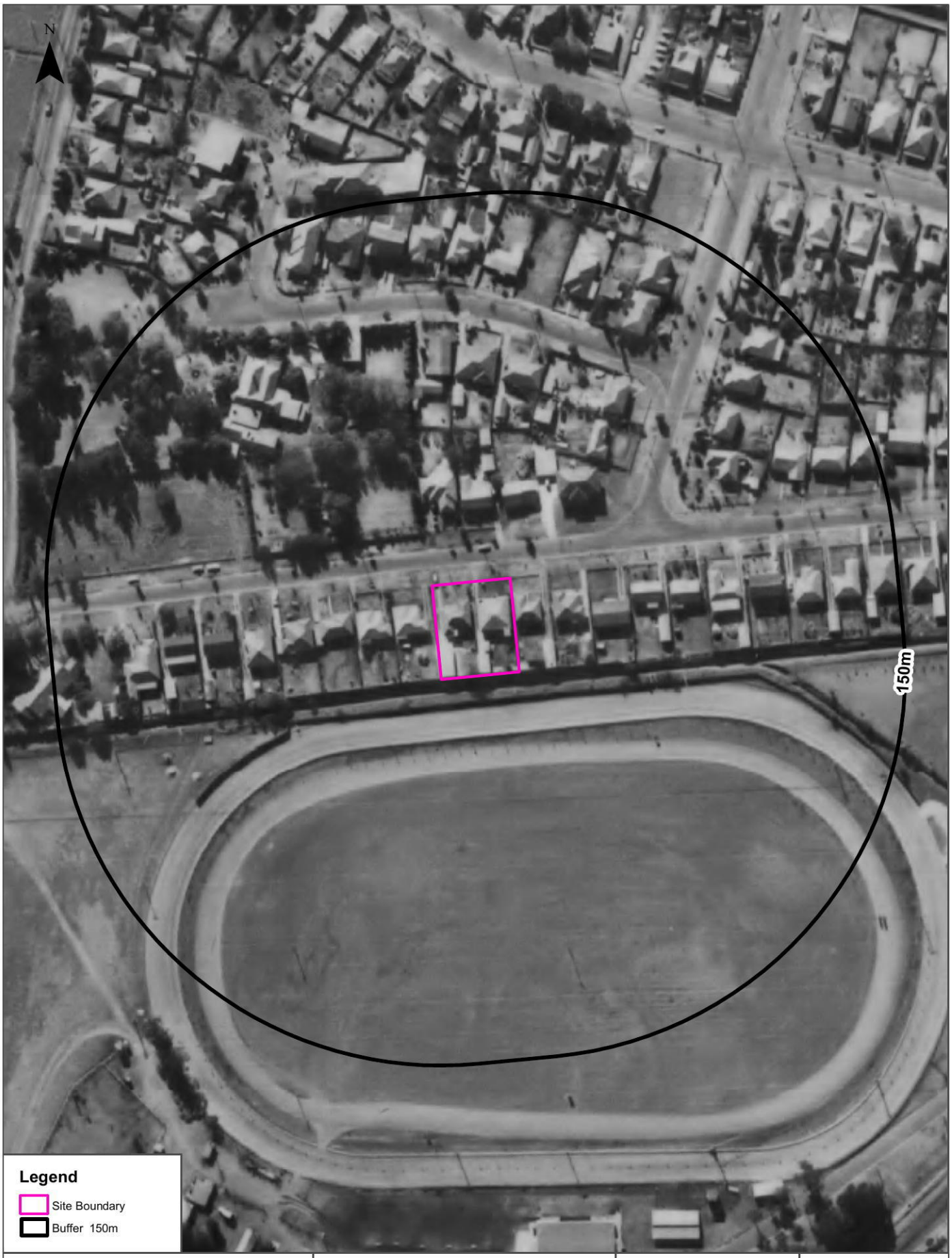
36-38 Rodley Avenue, Penrith, NSW 2750

Aerial Imagery 1982

36-38 Rodley Avenue, Penrith, NSW 2750

Aerial Imagery 1970

36-38 Rodley Avenue, Penrith, NSW 2750



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

Coordinate System: GDA 1994 MGA Zone 56

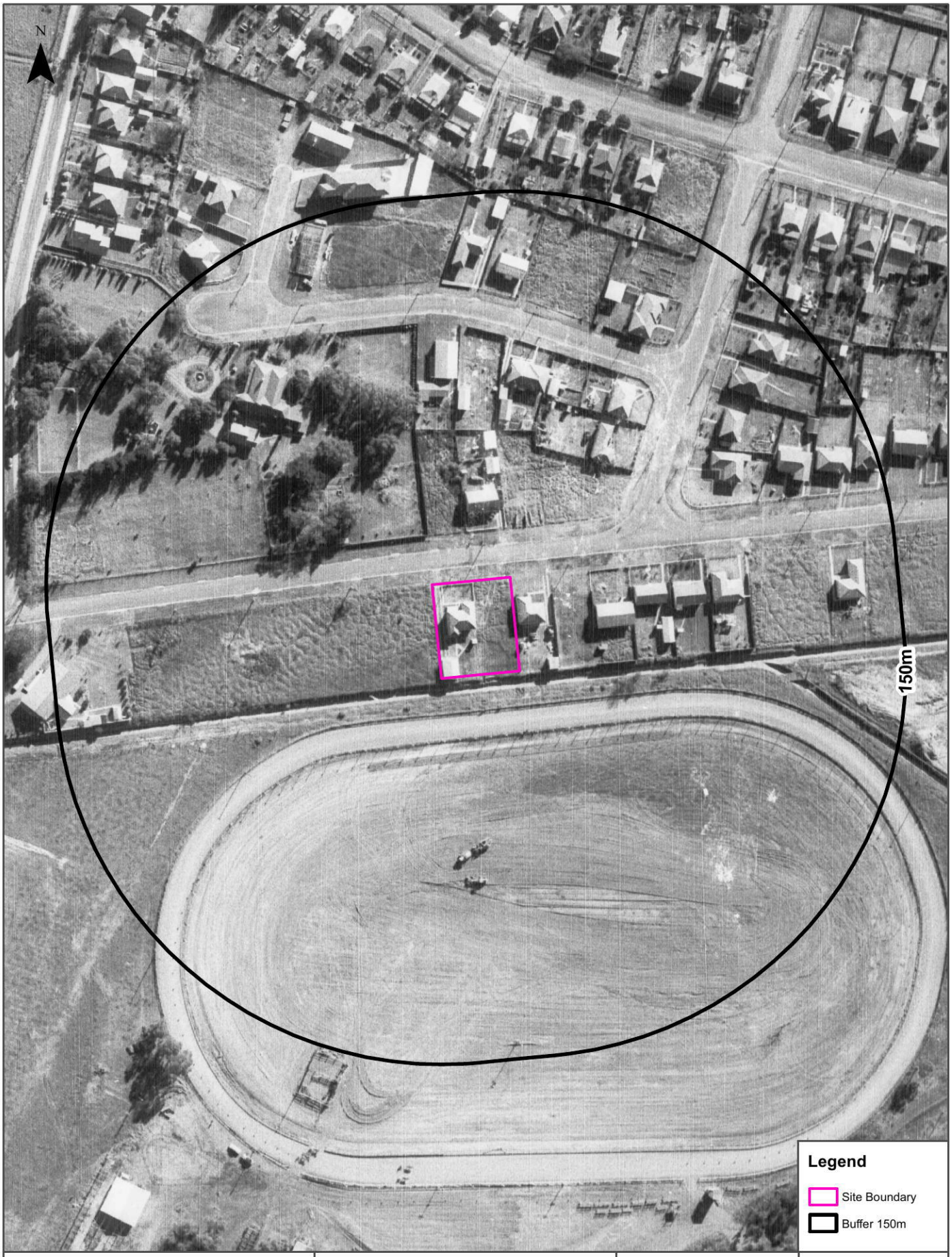
Date: 18 July 2019

Aerial Imagery 1965

36-38 Rodley Avenue, Penrith, NSW 2750

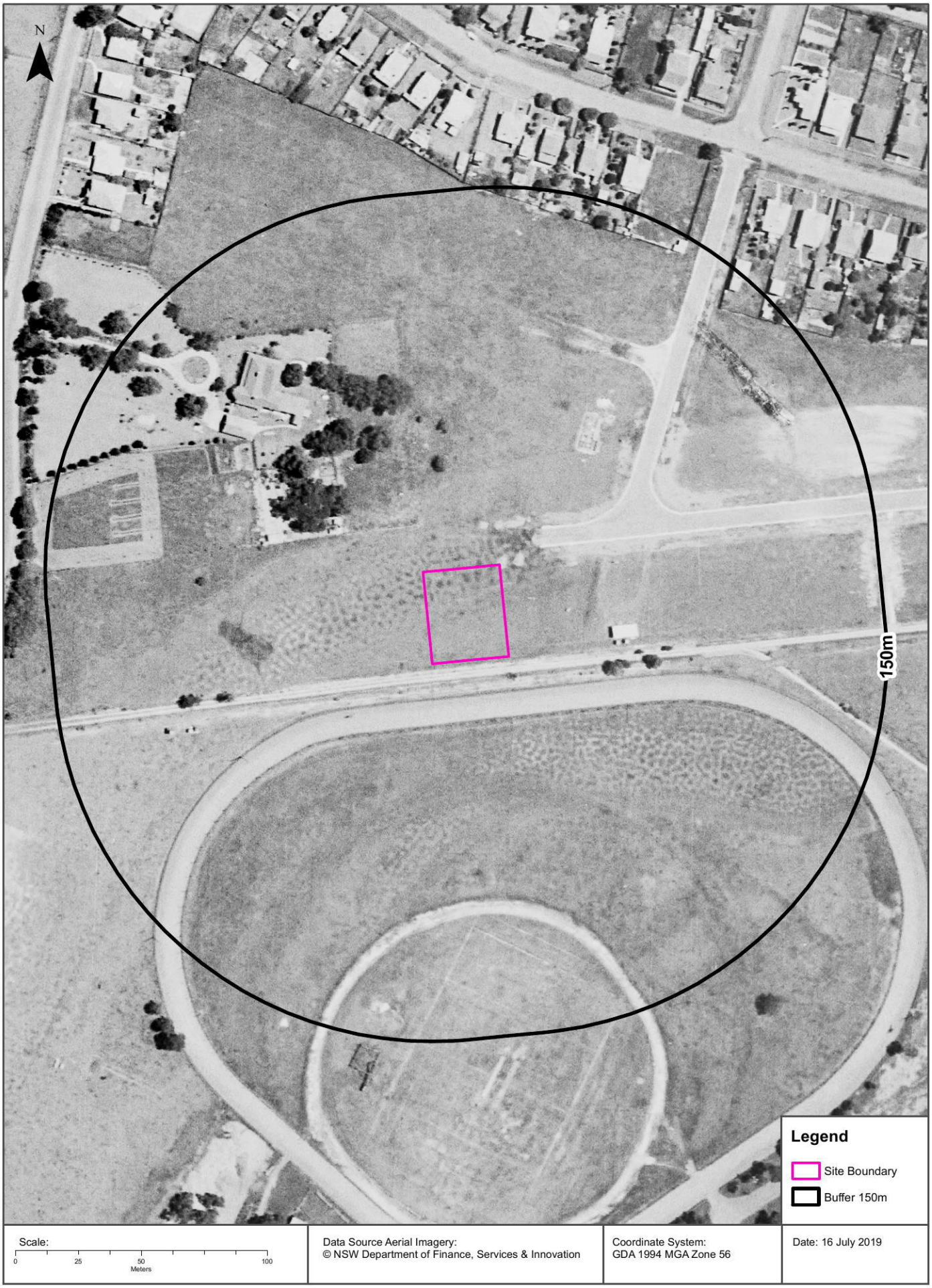
Aerial Imagery 1961

36-38 Rodley Avenue, Penrith, NSW 2750



Aerial Imagery 1956

36-38 Rodley Avenue, Penrith, NSW 2750



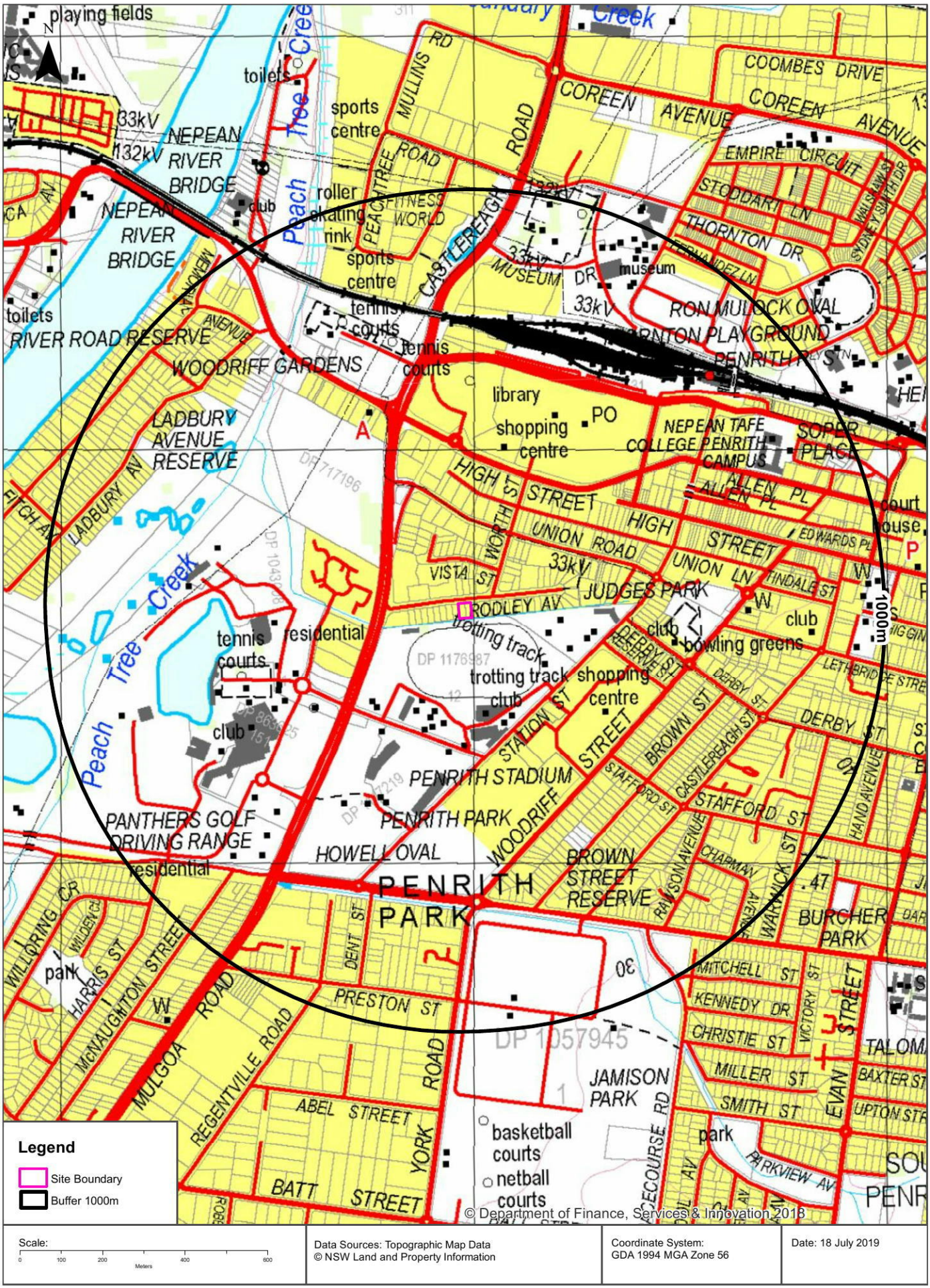
Aerial Imagery 1943

36-38 Rodley Avenue, Penrith, NSW 2750

Scale: 0 25 50 Metres	Data Sources: Aerial Imagery © Department of Finance, Services & Innovation	Coordinate System: GDA 1994 MGA Zone 56	Date: 18 July 2019

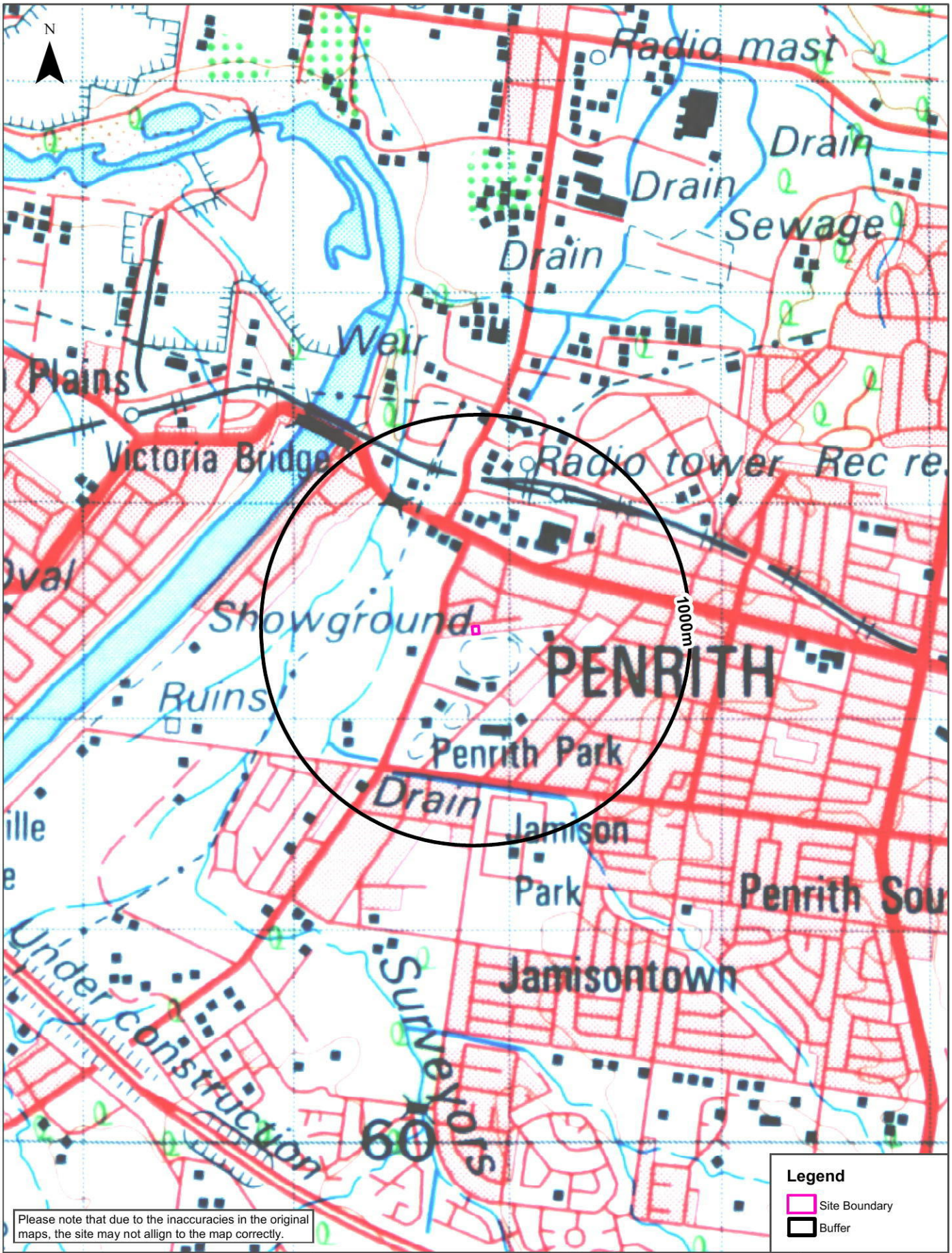
Topographic Map 2015

36-38 Rodley Avenue, Penrith, NSW 2750



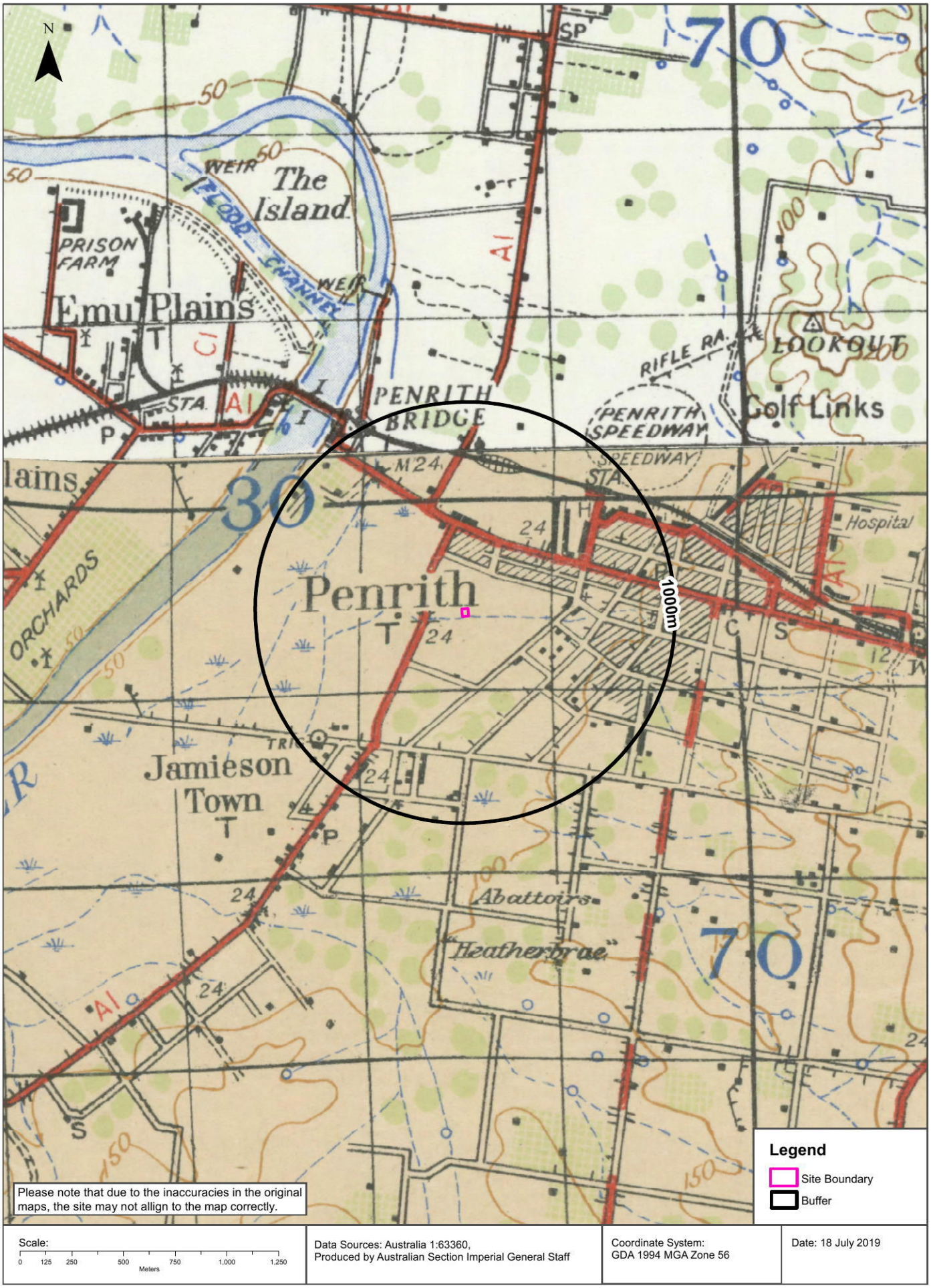
Historical Map 1975

36-38 Rodley Avenue, Penrith, NSW 2750



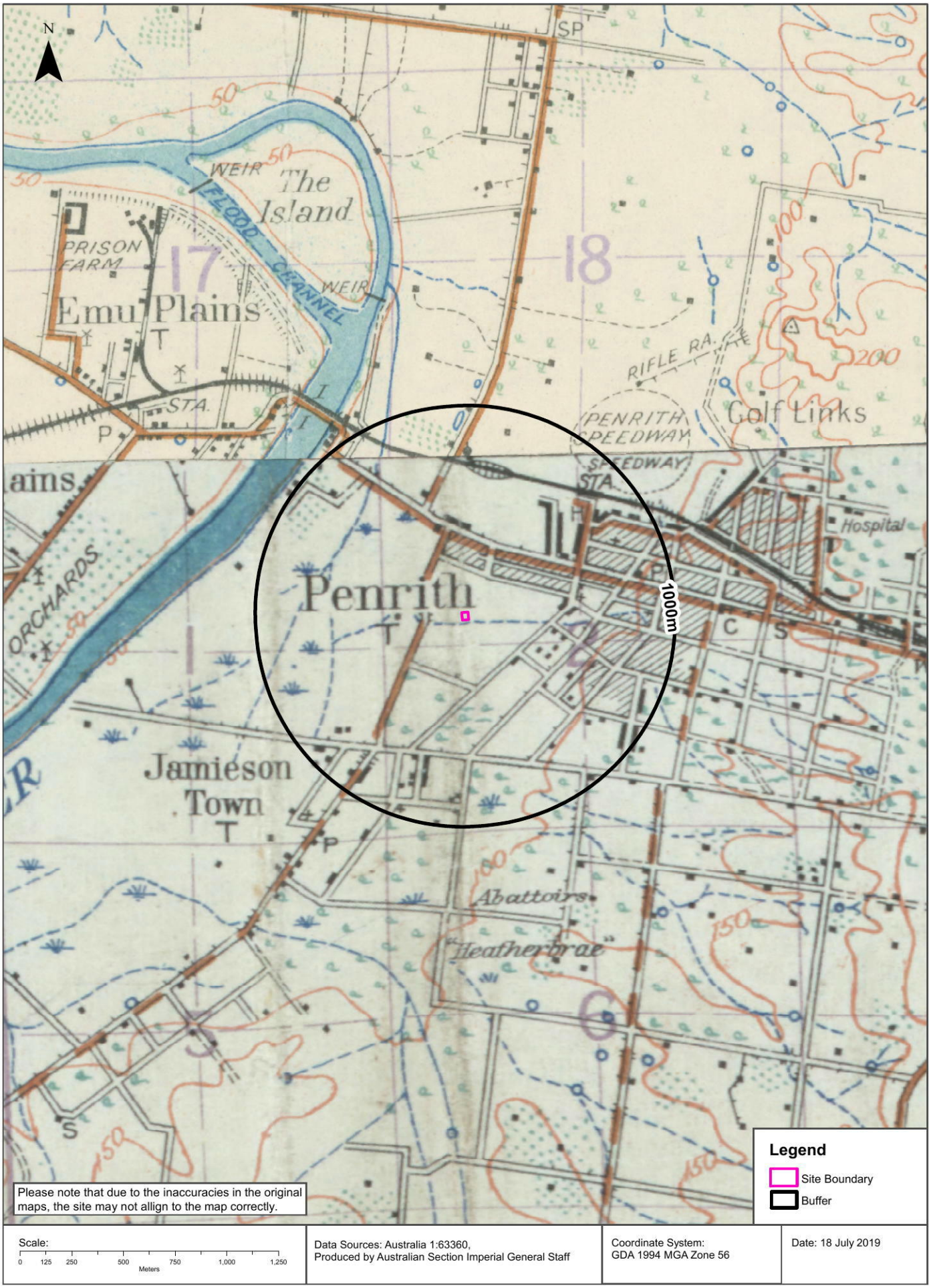
Historical Map c.1942 - 1942

36-38 Rodley Avenue, Penrith, NSW 2750



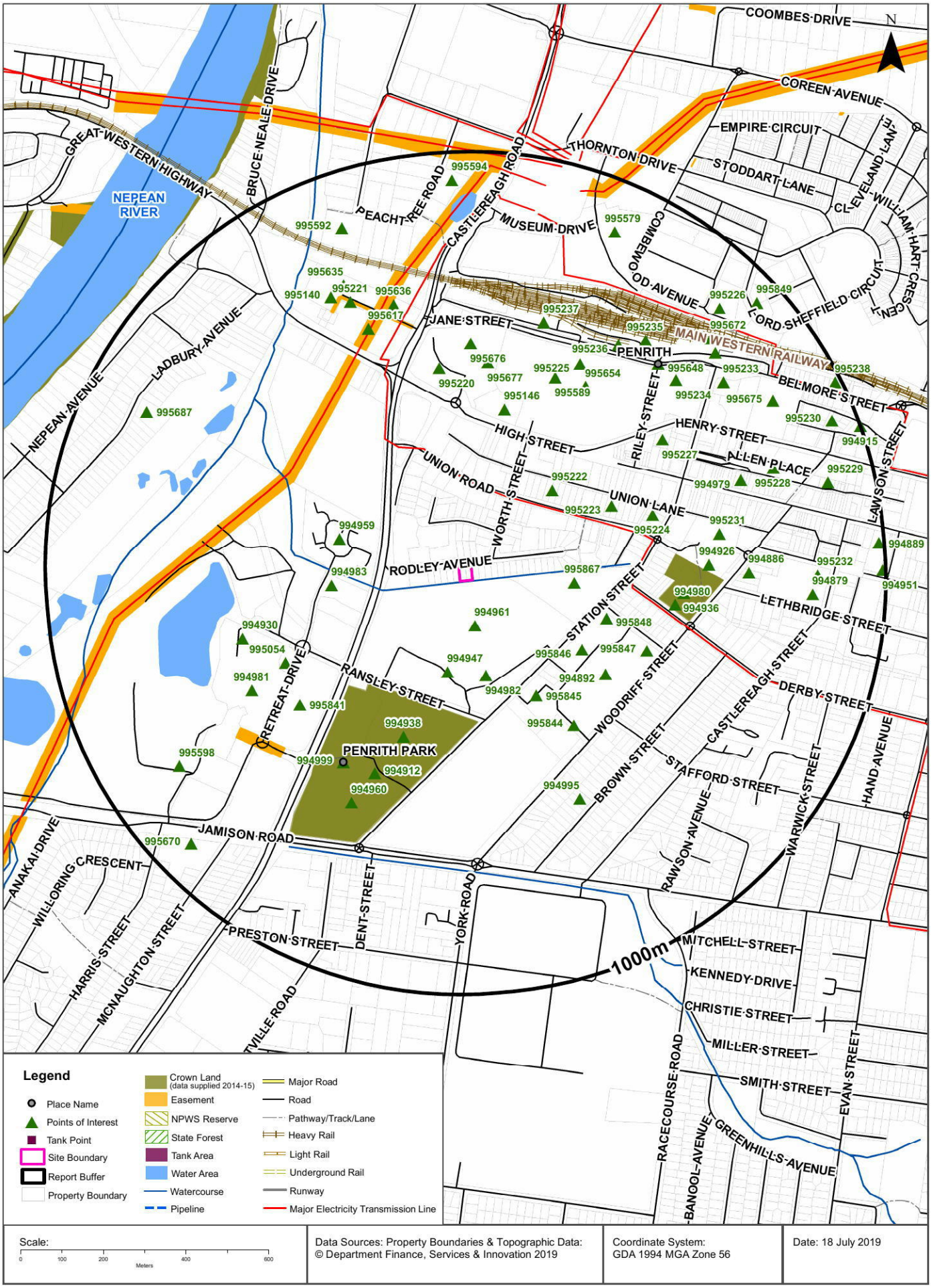
Historical Map c.1929 - 1929

36-38 Rodley Avenue, Penrith, NSW 2750



Topographic Features

36-38 Rodley Avenue, Penrith, NSW 2750



Topographic Features

36-38 Rodley Avenue, Penrith, NSW 2750

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
994961	Trotting Track	PENRITH PACEWAY	111m	South
994947	Showground	PENRITH SHOWGROUND	222m	South
994982	Club	CLUB PACEWAY	233m	South
995867	Swimming Pool Facility	PENRITH WAR MEMORIAL SWIMMING POOL	245m	East
995222	Parking Area	Parking Area	266m	North East
994959	Retirement Village	MOUNTAINVIEW RETREAT RETIREMENT VILLAGE	296m	West
994983	Community Home	MOUNTAINVIEW NURSING HOME	311m	West
995846	Parking Area	Parking Area	313m	South East
995845	Parking Area	Parking Area	318m	South East
995848	Parking Area	Parking Area	336m	East
995223	Parking Area	Parking Area	367m	North East
995146	Community Facility	JOAN SUTHERLAND PERFORMING ARTS CENTRE	384m	North
994892	Shopping Centre	NEPEAN SQUARE	393m	South East
994938	Sports Field	PENRITH STADIUM	400m	South
995844	Parking Area	Parking Area	428m	South East
995847	Parking Area	Parking Area	454m	South East
995224	Parking Area	Parking Area	454m	East
995054	Tourist Information Centre	PENRITH VALLEY VISITOR INFORMATION CENTRE	467m	South West
995220	Parking Area	Parking Area	481m	North
995841	Parking Area	Parking Area	490m	South West
995677	Library	PENRITH CITY LIBRARY	491m	North
994980	Club	PENRITH BOWLING AND REC CLUB	492m	East
995589	Shopping Centre	PENRITH PLAZA	496m	North East
994912	Park	PENRITH PARK	508m	South West
994936	Sports Field	BOWLING GREENS	511m	East
995654	Post Office	PENRITH WESTFIELD POST OFFICE	512m	North East
994999	Urban Place	PENRITH PARK	522m	South West
995676	Local Government Chambers	PENRITH CITY COUNCIL	536m	North
994930	Sports Court	TENNIS COURTS	545m	West
995225	Parking Area	Parking Area	552m	North East

Map Id	Feature Type	Label	Distance	Direction
995227	Parking Area	Parking Area	552m	North East
994981	Club	PENRITH RUGBY LEAGUE CLUB	569m	South West
994926	Park	JUDGES PARK	572m	East
994995	Park	BROWN STREET RESERVE	589m	South East
994960	Sports Field	HOWELL OVAL	597m	South West
995231	Parking Area	Parking Area	604m	East
995237	Parking Area	Parking Area	611m	North
995617	Park	WOODRIFF GARDENS	614m	North
995236	Parking Area	Parking Area	640m	North East
995636	Sports Court	TENNIS COURTS	652m	North
995648	City	PENRITH	663m	North East
995234	Parking Area	Parking Area	667m	North East
994886	Place Of Worship	CHRISTIAN SCIENTIST CHURCH	668m	East
994979	Medical Centre	PENRITH COMMUNITY CHILD AND ADOLESCENT SERVICE	683m	East
995235	Parking Area	Parking Area	687m	North East
995221	Parking Area	Parking Area	691m	North West
995140	Community Facility	NEPEAN DISTRICT TENNIS ASSOCIATION	720m	North West
995635	Sports Court	TENNIS COURTS	734m	North West
995233	Parking Area	Parking Area	753m	North East
995228	Parking Area	Parking Area	766m	East
995866	Bus Interchange	PENRITH BUS INTERCHANGE	781m	North East
995672	Railway Station	PENRITH RAILWAY STATION	797m	North East
995598	Golf Course	PANTHERS GOLF DRIVING RANGE	813m	South West
994879	Club	PENRITH RSL CLUB	822m	East
995675	TAFE College	NEPEAN TAFE COLLEGE PENRITH CAMPUS	830m	North East
995232	Parking Area	Parking Area	833m	East
995687	Park	LADBURY AVENUE RESERVE	842m	North West
995226	Parking Area	Parking Area	863m	North East
995592	Sports Centre	Sports Centre	866m	North
995579	Museum	MUSEUM OF FIRE	876m	North East
995229	Parking Area	Parking Area	885m	East
995670	Community Home	SUMMITCARE PENRITH	910m	South West
995594	Sports Centre	FITNESS WORLD	932m	North
995849	Parking Area	Parking Area	937m	North East
995230	Parking Area	Parking Area	939m	North East
995238	Parking Area	Parking Area	984m	North East
994889	Place Of Worship	CATHOLIC CHURCH	986m	East

Map Id	Feature Type	Label	Distance	Direction
994951	Primary School	ST NICHOLAS OF MYRA PRIMARY SCHOOL	991m	East
994915	Park	SOPER PLACE	999m	East

Topographic Features

36-38 Rodley Avenue, Penrith, 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
	No records in buffer					

Major Easements

What Major Easements exist within the dataset buffer?
Note. Easements provided by LPI are not at the detail of local governments. They are limited to major easements such as Right of Carriageway, Electrical Lines (66kVa etc.), Easement to drain water & Significant subterranean pipelines (gas, water etc.).

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
120111583	Primary	Undefined		449m	South West
120111539	Primary	Undefined		569m	North
120109568	Primary	Undefined		586m	North
120117166	Primary	Undefined		586m	South West
120113365	Primary	Undefined		650m	North West
120115427	Primary	Undefined		728m	South West
120111560	Primary	Undefined		937m	North East
120107673	Primary	Undefined		956m	North

Topographic Features

36-38 Rodley Avenue, Penrith, 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		

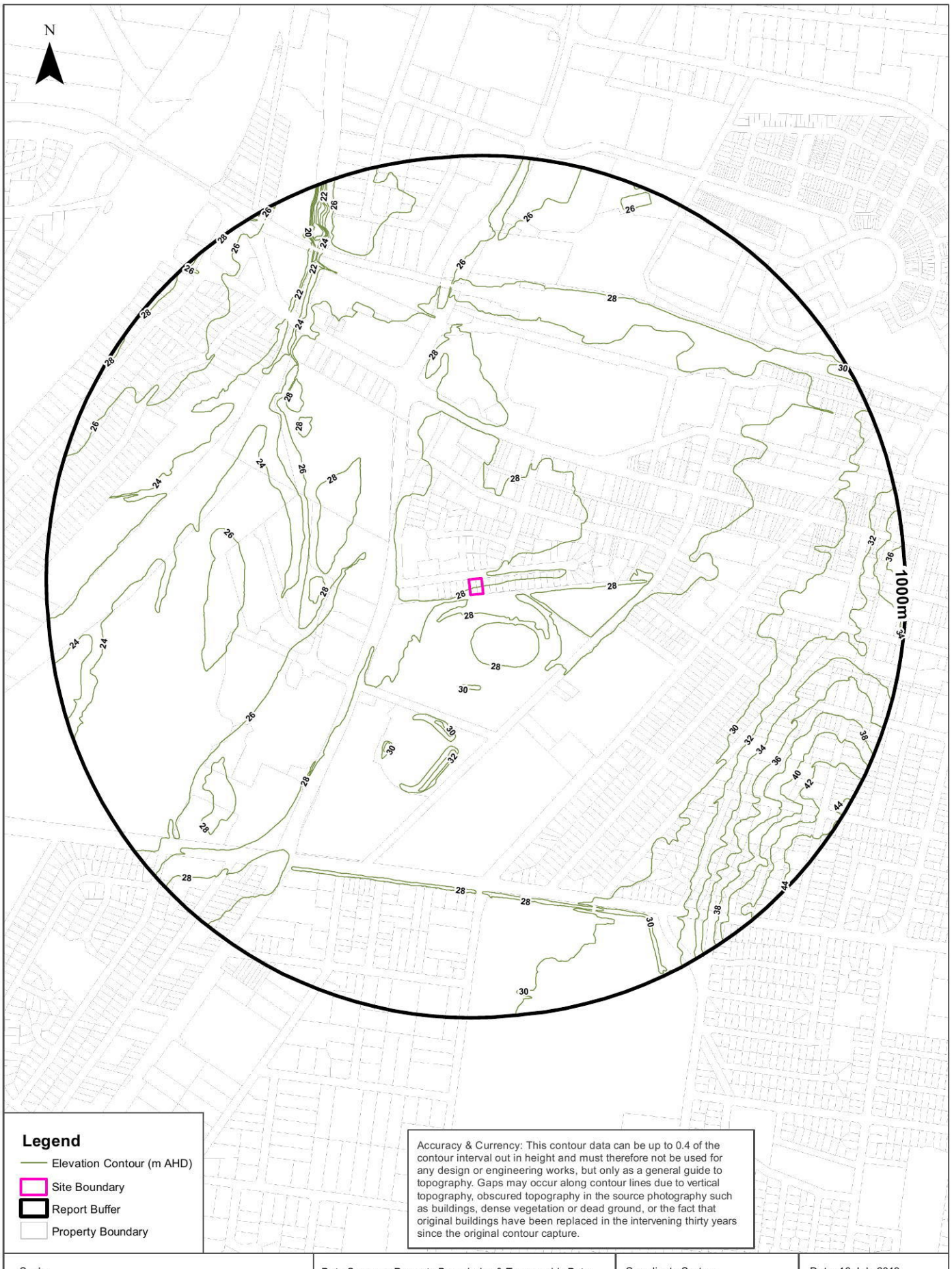
National Parks and Wildlife Service Reserves

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)

36-38 Rodley Avenue, Penrith, NSW 2750



Hydrogeology & Groundwater

36-38 Rodley Avenue, Penrith, NSW 2750

Hydrogeology

Description of aquifers on-site:

Description
Porous, extensive highly productive aquifers

Description of aquifers within the dataset buffer:

Description
Porous, extensive highly productive aquifers

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

Botany Groundwater Management Zones

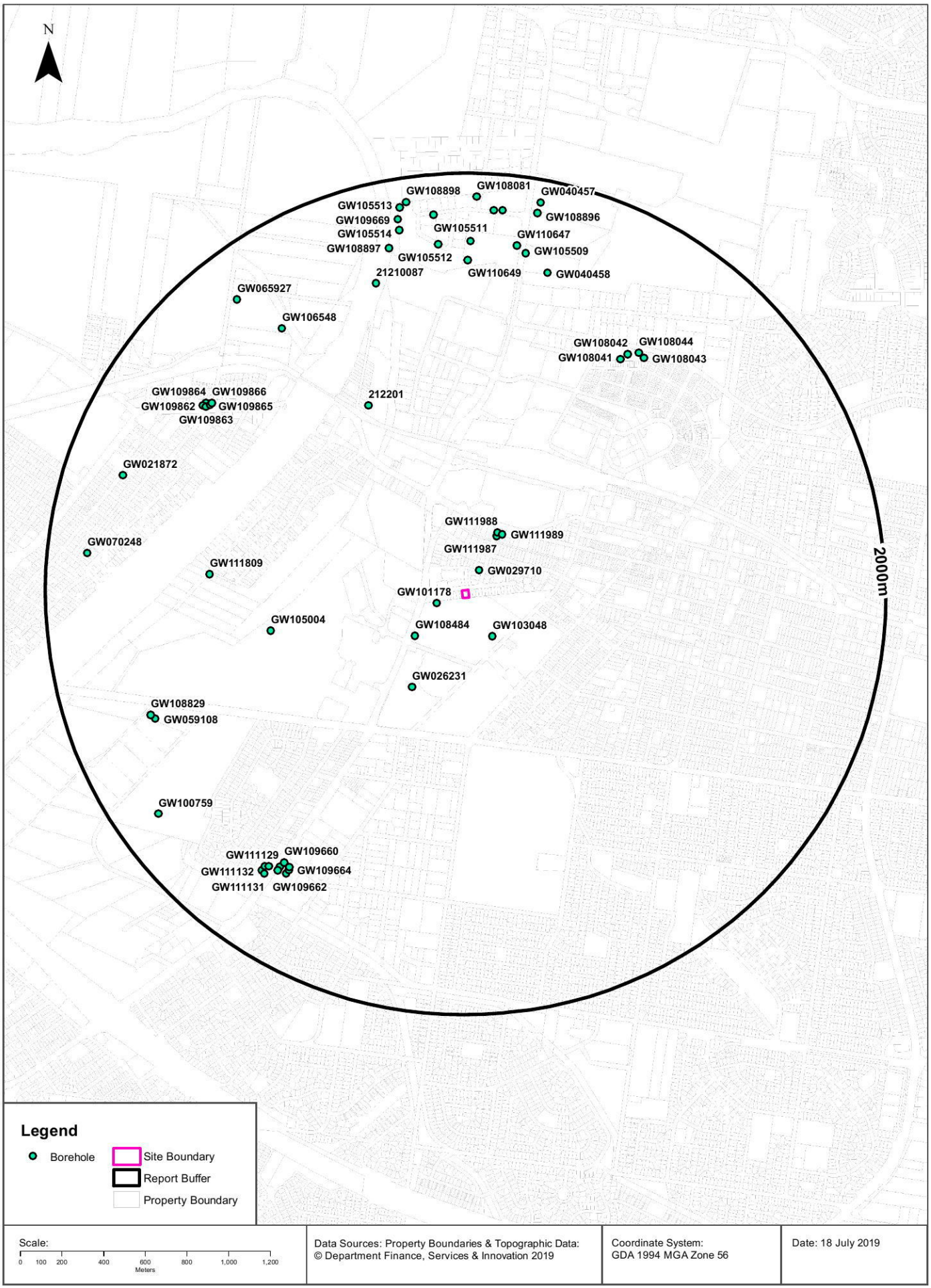
Groundwater management zones relating to the Botany Sand Beds aquifer within the dataset buffer:

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

36-38 Rodley Avenue, Penrith, NSW 2750



Hydrogeology & Groundwater

36-38 Rodley Avenue, Penrith, 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
GW029710	10BL018657, 10WA112614	Well	Private	Domestic	General Use		01/04/1969	7.90	7.90					108m	North East
GW101178	10BL158273, 10BL158422, 10WA112767	Bore	Private	Industrial, Recreation (groundwater), Test Bore	Industrial, Recreation (groundwater)		15/01/1998	11.20	11.20	180	8.00	0.600		125m	West
GW103048	10BL141316, 10WA112767	Bore		Industrial, Recreation (groundwater)	Recreation (groundwater)		01/01/1990	8.00	8.00		6.00	1.000		220m	South East
GW111987	10BL603225	Well	Private	Monitoring Bore	Monitoring Bore		24/03/2010	9.00	9.00					291m	North East
GW108484	10BL163999, 10WA112767	Well	Private	Industrial, Recreation (groundwater)	Recreation (groundwater)		06/09/2006	11.00	11.00	550				292m	South West
GW111988	10BL603225	Well	Private	Monitoring Bore	Monitoring Bore		24/03/2010	9.00	9.00					308m	North East
GW111989	10BL603225	Well	Private	Monitoring Bore	Monitoring Bore		24/03/2010	9.00	9.00					313m	North East
GW026231	10BL019074	Well	Local Govt	Public/municipl, Recreation (groundwater)	Irrigation		01/01/1966	8.50	8.50	1001-3000 ppm				492m	South West
GW105004	10BL162036, 10BL162489, 10WA112773	Bore		Recreation (groundwater), Test Bore	Recreation (groundwater)		24/09/2003	183.00	183.00	450	12.00	2.200		933m	West
212201					UNK								24.71	993m	North West
GW111809	10BL600900, 10WA112710	Bore	Private	Domestic	Domestic		30/05/2007	15.00	15.00		13.00	1.000		1212m	West
GW108041	10BL600263	Bore		Monitoring Bore	Monitoring Bore		12/04/2006	7.50	7.50		6.70			1325m	North East
GW108042	10BL600263	Bore		Monitoring Bore	Monitoring Bore		22/04/2006	8.00	8.00		6.40			1366m	North East
GW108043	10BL600263	Bore		Monitoring Bore	Monitoring Bore		22/04/2006	9.00	9.00		6.80			1395m	North East
GW108044	10BL600263	Bore		Monitoring Bore	Monitoring Bore		22/04/2006	9.50	9.50		6.60			1401m	North East
GW109866	10BL601223	Bore	Private	Monitoring Bore	Monitoring Bore		11/10/2006	12.50	12.50		9.72			1499m	North West
GW109865	10BL601223	Bore	Private	Monitoring Bore	Monitoring Bore		11/10/2006	12.00	12.00		9.59			1499m	North West
GW109863	10BL601223	Bore	Private	Monitoring Bore	Monitoring Bore		11/10/2006	11.60	11.60		9.29			1511m	North West
GW109864	10BL601223	Bore	Private	Monitoring Bore	Monitoring Bore		12/10/2006	11.85	11.85		9.63			1522m	North 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
GW106548	10BL157560, 10BL157701, 10WA112757	Bore		Recreation (groundwater), Test Bore	Recreation (groundwater)		02/04/1996	15.40	15.40	190	6.00	2.000		1524m	North West
GW109862	10BL601223	Bore	Private	Monitoring Bore	Monitoring Bore		10/10/2006	11.00	11.00		9.29			1526m	North West
21210087					UNK								20.00	1529m	North
GW109660	10BL602658	Bore	Private	Monitoring Bore	Monitoring Bore		01/08/2008	9.60	9.60		6.00			1532m	South West
GW109659	10BL602658	Bore	Private	Monitoring Bore	Monitoring Bore		30/07/2008	9.50	9.50		8.60			1537m	South West
GW109664	10BL602658	Bore	Private	Monitoring Bore	Monitoring Bore		01/08/2008	5.10	5.10		4.50			1548m	South West
GW109661	10BL602658	Bore	Private	Monitoring Bore	Monitoring Bore		01/08/2008	5.20	5.20		4.50			1560m	South West
GW040458		Well	Private		Irrigation			11.00					54.86	1566m	North
GW109662	10BL602658	Bore	Private	Monitoring Bore	Monitoring Bore		04/08/2008	12.00	12.00		9.00			1570m	South West
GW109663	10BL602658	Bore	Private	Monitoring Bore	Monitoring Bore		01/08/2008	9.50	9.50		9.00			1581m	South West
GW110649	10BL603493	Bore	Private	Monitoring Bore	Monitoring Bore		25/11/2009	10.00	10.00		8.70			1581m	North
GW059108	10BL118685	Excavation	Private	Domestic, Irrigation	General Use		01/06/1981	6.00						1584m	West
GW111130	10BL602387	Bore	Private	Monitoring Bore	Monitoring Bore		28/08/2007	11.80	11.80		8.50			1589m	South West
GW108829	10BL164175, 10WA112699	Bore	Private	Domestic, Stock	Domestic, Stock		31/01/2007	66.00	66.00	1500	25.00	1.200		1598m	West
GW111129	10BL602387	Well	Private	Monitoring Bore	Monitoring Bore		28/08/2007	10.00	10.00		8.00			1601m	South West
GW111132	10BL602387	Bore	Private	Monitoring Bore	Monitoring Bore		30/08/2007	12.50	12.50		9.00			1625m	South West
GW111131	10BL602387	Bore	Private	Monitoring Bore	Monitoring Bore		29/08/2007	11.50	11.50		8.50			1629m	South West
GW105509	10BL162624	Bore		Monitoring Bore	Monitoring Bore		27/08/2003	14.10	14.10		7.00			1638m	North
GW105512	10BL162624	Bore		Monitoring Bore	Monitoring Bore		12/05/2003	15.00	15.00		9.60			1663m	North
GW110647	10BL603493	Bore	Private	Monitoring Bore	Monitoring Bore		26/11/2009	10.00	10.00		8.10			1667m	North
GW110648	10BL603493	Bore	Private	Monitoring Bore	Monitoring Bore		26/11/2009	9.70	9.70		8.20			1672m	North
GW108897	10BL165844	Bore	Private	Monitoring Bore	Monitoring Bore		05/06/2008	15.50	15.50		11.00			1679m	North
GW021872	10BL014388	Well	Private	Commercial	General Use		01/05/1964	7.90	7.90	Hard				1717m	West
GW105514	10BL162624	Bore		Monitoring Bore	Monitoring Bore		29/08/2003	15.65	15.65		5.80			1755m	North
GW065927	10BL142951, 10WA112757	Bore	Private	Recreation (groundwater)	Recreation (groundwater)		29/01/1991	15.60		Excellent				1764m	North West
GW100759	10BL157492, 10BL157730, 10CA112749	Bore	Private	Irrigation, Recreation (groundwater)	Irrigation, Recreation (groundwater)		29/02/1996	10.00	10.00	Good	6.00	3.500		1792m	South West
GW070248		Bore	Private		Domestic		29/05/1992	48.00						1806m	West
GW105511	10BL162624	Bore		Monitoring Bore	Monitoring Bore		14/05/2003	14.10	14.50		8.30			1807m	North
GW109669	10BL602677	Well	Private	Monitoring Bore	Monitoring Bore		01/10/2008	15.60	15.60			0.020		1807m	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
GW105510	10BL162624	Bore		Monitoring Bore	Monitoring Bore		15/05/2003	14.50	14.50		7.00			1825m	North
GW109667	10BL602668	Well	Private	Monitoring Bore	Monitoring Bore		02/10/2008	13.70	13.70		13.40	0.100		1827m	North
GW108896	10BL165837	Battery Spears, Filter Pac	Private	Monitoring Bore	Monitoring Bore		05/06/2008	13.70	13.70		6.50			1838m	North
GW105513	10BL162624	Bore		Monitoring Bore	Monitoring Bore		28/08/2003	15.90	16.00		6.10			1860m	North
GW108898	10BL165844	Bore	Private	Monitoring Bore	Monitoring Bore		05/06/2008	14.60	14.60		9.50			1882m	North
GW108081	10BL165831	Bore		Monitoring Bore	Monitoring Bore		02/05/2006	14.35	14.35		7.50			1885m	North
GW040457		Well	Private		Not Known			10.20					55.93	1890m	North

Hydrogeology & Groundwater

36-38 Rodley Avenue, Penrith, NSW 2750

Driller's Logs

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

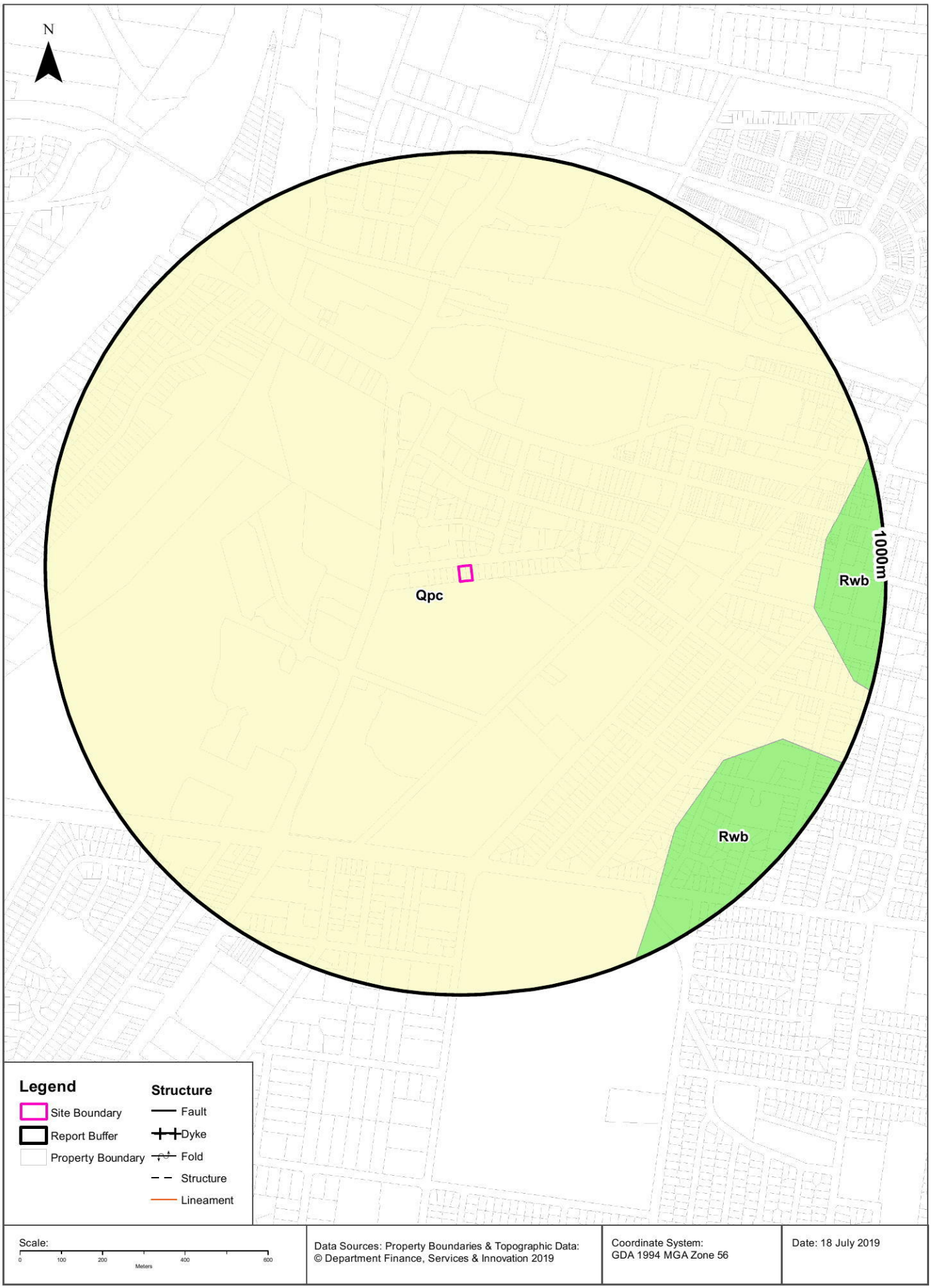
Groundwater No	Drillers Log	Distance	Direction
GW029710	0.00m-2.74m Loam Red 2.74m-7.92m Sand Gravel Water Supply	108m	North East
GW101178	0.00m-2.00m Sandy clay 2.00m-6.00m Grey sand 6.00m-10.50m Coarse gravel and cobbles (water bearing) 10.50m-11.20m Dark grey shale and clay	125m	West
GW111987	0.00m-3.00m CLAY MINOR SAND RED BROWN 3.00m-9.00m GRAVEL WITH MINOR SAND	291m	North East
GW108484	0.00m-6.00m CLAY 6.00m-8.50m SAND 8.50m-11.00m GRAVEL	292m	South West
GW111988	0.00m-3.00m CLAY MINOR SAND RED BROWN 3.00m-9.00m GRAVEL WITH MINOR SAND	308m	North East
GW111989	0.00m-3.00m CLAY MINOR SAND RED BROWN 3.00m-9.00m GRAVEL WITH MINOR SAND	313m	North East
GW026231	0.00m-4.26m Silt 0.00m-4.26m Loam Clay 4.26m-8.53m Gravel Alluvial Water Supply	492m	South West
GW105004	0.00m-0.50m FILL 0.50m-9.50m CLAY/GRAVEL 9.50m-11.50m GRAVEL 11.50m-50.30m SHALE/SANDSTONE 50.30m-164.60m SANDSTONE/SHALE SEAMS 164.60m-169.50m SANDSTONE/QUARTZITE 169.50m-174.50m SANDSTONE/SHALE 174.50m-183.00m SANDSTONE/QUARTZITE	933m	West
GW108041	0.00m-0.20m CONCRETE 0.20m-0.40m CLAY L/BROWN 0.40m-3.30m CLAY BECOMING ORANGE,BROWN 3.30m-7.50m GRAVEL,BROWN,WELL GRADED	1325m	North East
GW108042	0.00m-0.20m CONCRETE 0.20m-0.30m FILL,CLAY,GREY/BROWN 0.30m-2.50m CLAY,RED/BROWN 2.50m-7.50m GRAVELS,WELL GRADED 7.50m-8.00m COARSE GRAINED SAND BANDS	1366m	North East
GW108043	0.00m-4.80m CLAYEY SAND 4.80m-5.40m SAND,BROWN, LOOSE,DDRY 5.40m-9.00m GRAVEL	1395m	North East
GW108044	0.00m-0.20m CONCRETE 0.20m-0.30m FILL,CLAY,GREY 0.30m-6.40m SILTY CLAYEY SAND,ORANGE,BROWN 6.40m-9.50m GRAVELS,WET,MODERATE	1401m	North East
GW109865	0.00m-0.20m CONCRETE 0.20m-0.50m FILL 0.50m-4.20m CLAY 4.20m-12.00m SAND	1499m	North West
GW109866	0.00m-0.40m FILL 0.40m-12.50m SAND	1499m	North West
GW109863	0.00m-0.20m CONCRETE 0.20m-0.40m FILL 0.40m-5.20m CLAY 5.20m-11.60m SAND	1511m	North West
GW109864	0.00m-0.15m CONCRETE 0.15m-0.80m FILL 0.80m-5.20m SAND/CLAY 5.20m-11.85m SAND	1522m	North West

Groundwater No	Drillers Log	Distance	Direction
GW106548	0.00m-9.20m SANDY LOAM 9.20m-15.10m ALLUVIAL GRANELS 15.10m-15.40m DARK GREY SILTSTONE	1524m	North West
GW109862	0.00m-0.20m CONCRETE 0.20m-0.40m FILL 0.40m-8.20m SAND/CLAY 8.20m-11.00m SAND	1526m	North West
GW109660	0.00m-1.10m FILL,CLAYEY SAND 1.10m-4.50m CLAYEY SILT 4.50m-5.40m SAND 5.40m-9.60m GRAVELS	1532m	South West
GW109659	0.00m-0.30m FILL, CLAYEY SAND 0.30m-4.10m CLAYEY SILT 4.10m-4.50m CLAYEY SAND 4.50m-9.50m GRAVELS	1537m	South West
GW109664	0.00m-0.60m TOPSOIL 0.60m-2.50m CLAYEY SILT 2.50m-5.10m SAND	1548m	South West
GW109661	0.00m-0.40m FILL, CLAYEY SAND 0.40m-1.80m CLAYEY SAND 1.80m-4.40m CLAY 4.40m-5.20m SAND	1560m	South West
GW109662	0.00m-1.00m FILL,CLAYEY SAND 1.00m-4.30m CLAYEY SILT 4.30m-4.80m SAND 4.80m-12.00m GRAVELS	1570m	South West
GW109663	0.00m-0.40m FILL,CLAYEY SAND 0.40m-2.40m CLAYEY SAND 2.40m-4.60m CLAY 4.60m-9.50m GRAVELS	1581m	South West
GW110649	0.00m-0.20m SILTY LOAM 0.20m-1.70m SILT BROWN 1.70m-4.30m SANDY SILT BROWN LOOSE 4.30m-7.50m CLAYEY SILT DARK BROWN 7.50m-8.80m SILTY CLAY PALE BROWN 8.80m-10.00m CLAYEY SAND,BROWN FINE TO MED GRAINED	1581m	North
GW111130	0.00m-0.15m CONCRETE 0.15m-0.50m FILL,CLAY,ORANGE BROWN,MOIST 0.50m-4.00m SAND CLAYEY,ORANGE BROWN,DAMP,LOOSE 4.00m-11.80m GRAVEL,MIXED WITH SAND,RED YELLOW	1589m	South West
GW108829	0.00m-48.00m clay, shale 48.00m-66.00m gravel, slate	1598m	West
GW111129	0.00m-0.15m CONCRETE 0.15m-1.00m SAND,RED BROWN 1.00m-4.00m SAND CLAYEY,DAMP,LOOSE,ANGULAR 4.00m-5.00m SAND,MIXED,RED BROWN,MOIST,GRAVEL 5.00m-10.00m GRAVEL	1601m	South West
GW111132	0.00m-0.17m CONCRETE 0.17m-0.50m FILL,CLAYEY,BROWN,MOIST,SOFT 0.50m-3.00m SAND,CLAYEY,RED BROWN,DAMP,LOOSE 3.00m-12.50m GRAVEL,LITTLE SAND,HOMOGENOUS,DAMP	1625m	South West
GW111131	0.00m-0.15m CONCRETE 0.15m-4.00m SAND,CLAYEY,RED BROWN,DAMP,LOOSE 4.00m-11.50m GRAVEL,SOME SAND	1629m	South West
GW105509	0.00m-3.00m BROWN CLAY 3.00m-5.50m GREY CLAY ,STIFF 5.50m-8.00m L/BROWN CLAY 8.00m-9.80m SANDY CLAY 9.80m-10.40m FINE GRAVELS 10.40m-13.90m GRAVELS 13.90m-14.10m SHALE	1638m	North
GW105512	0.00m-0.50m topsoil 0.50m-4.70m sandy clay 4.70m-11.00m stiff clay 11.00m-14.50m large gravels 14.50m-15.00m soft shale	1663m	North
GW110647	0.00m-0.60m SILT,SANDY BROWN MINOR GRAVEL 0.60m-2.50m SILT,BROWN,DRY,FINE GRAINED SAND 2.50m-3.30m SILTY CLAY 3.30m-5.60m CLAY BROWN GREY,MOIST 5.60m-8.80m SILTY CLAY ORANGE BROWN,FINE GRAINED SAND 8.80m-10.00m CLAYEY SILTY SAND, PALE BROWN	1667m	North

Groundwater No	Drillers Log	Distance	Direction
GW110648	0.00m-0.70m LOAMY SILT,SAND AND CLAY 0.70m-1.50m SILT BROWN, MOIST,NO ODOUR 1.50m-4.40m CLAYEY SILT,DARK BROWN 4.40m-5.50m CLAY PLALE BROWN,FINE SAND 5.50m-8.40m SILTY CLAY,BROWN,FINE SANDS,MOIST 8.40m-9.70m CLAYEY SILTY SAND,BROWN, M/G	1672m	North
GW108897	0.00m-5.00m CLAY BROWN 5.00m-12.00m SANDY CLAY 12.00m-15.20m GRAVELS 15.20m-15.50m SHALE	1679m	North
GW021872	0.00m-0.60m Soil 0.60m-7.92m Sand Water Supply	1717m	West
GW105514	0.00m-1.00m CLAY D/BROWN 1.00m-2.50m SAND LOAMY 2.50m-3.50m SILT M/HARD 3.50m-4.50m SANDY CLAY 4.50m-7.50m L/B CLAY 7.50m-10.40m SILT HARD 10.40m-10.70m SANDY CLAY 10.70m-15.40m GRAVELS 15.40m-15.65m SHALE	1755m	North
GW100759	0.00m-3.00m clay 3.00m-7.00m sand 7.00m-10.00m river gravel	1792m	South West
GW105511	0.00m-0.50m TOPSOIL 0.50m-2.60m SANDY CLAY 2.60m-9.70m STIFF CLAY 9.70m-10.00m SMALL GRAVELS 10.00m-13.90m LARGE GRAVELS 13.90m-14.50m SOFT SHALE	1807m	North
GW109669	0.00m-3.00m CLAY AND ROCKS 3.00m-10.00m SILTY CLAY 10.00m-15.30m GRAVELS 15.30m-15.60m SHALE	1807m	North
GW105510	0.00m-0.30m TOPSOIL 0.30m-2.70m SANDY CLAY 2.70m-4.50m STIFF CLAY 4.50m-5.70m SMALL GRAVELS 5.70m-14.00m LARGE GRAVELS 14.00m-14.50m SOFT SHALE	1825m	North
GW109667	0.00m-4.00m CLAY BROWN 4.00m-5.50m SANDY CLAY 5.50m-13.40m GRAVELS 13.40m-13.70m SHALE GREY	1827m	North
GW108896	0.00m-7.60m SANDY CLAY 7.60m-13.40m GRAVELS 13.40m-13.70m SHALE	1838m	North
GW105513	0.00m-3.50m CLAY DARK BROWN 3.50m-4.20m SILT HARD 4.20m-5.30m CLAY L/BROWN 5.30m-7.00m SILT HARD 7.00m-8.80m CLAY L/BROWN 8.80m-9.80m SILT HARD 9.80m-15.70m GRAVELS 15.70m-16.00m SHALE	1860m	North
GW108898	0.00m-11.00m SANDY CLAY 11.00m-14.30m GRAVELS 14.30m-14.60m SHALE	1882m	North
GW108081	0.00m-1.00m FILL 1.00m-9.60m SANDY CLAY 9.60m-14.00m GRAVELS 14.00m-14.35m SHALE	1885m	North

Geology 1:100,000

36-38 Rodley Avenue, Penrith, NSW 2750



Geology

36-38 Rodley Avenue, Penrith, 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
Rwb	Shale, carbonaceous claystone,claystone, laminate, fine to medium-grained lithic sandstone, rare coal and tuff	Bringelly Shale	Wianamatta Group (undifferentiated)		Middle Triassic		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
No features				1:100,000

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

Naturally Occurring Asbestos Potential

36-38 Rodley Avenue, Penrith, NSW 2750

Naturally Occurring Asbestos Potential

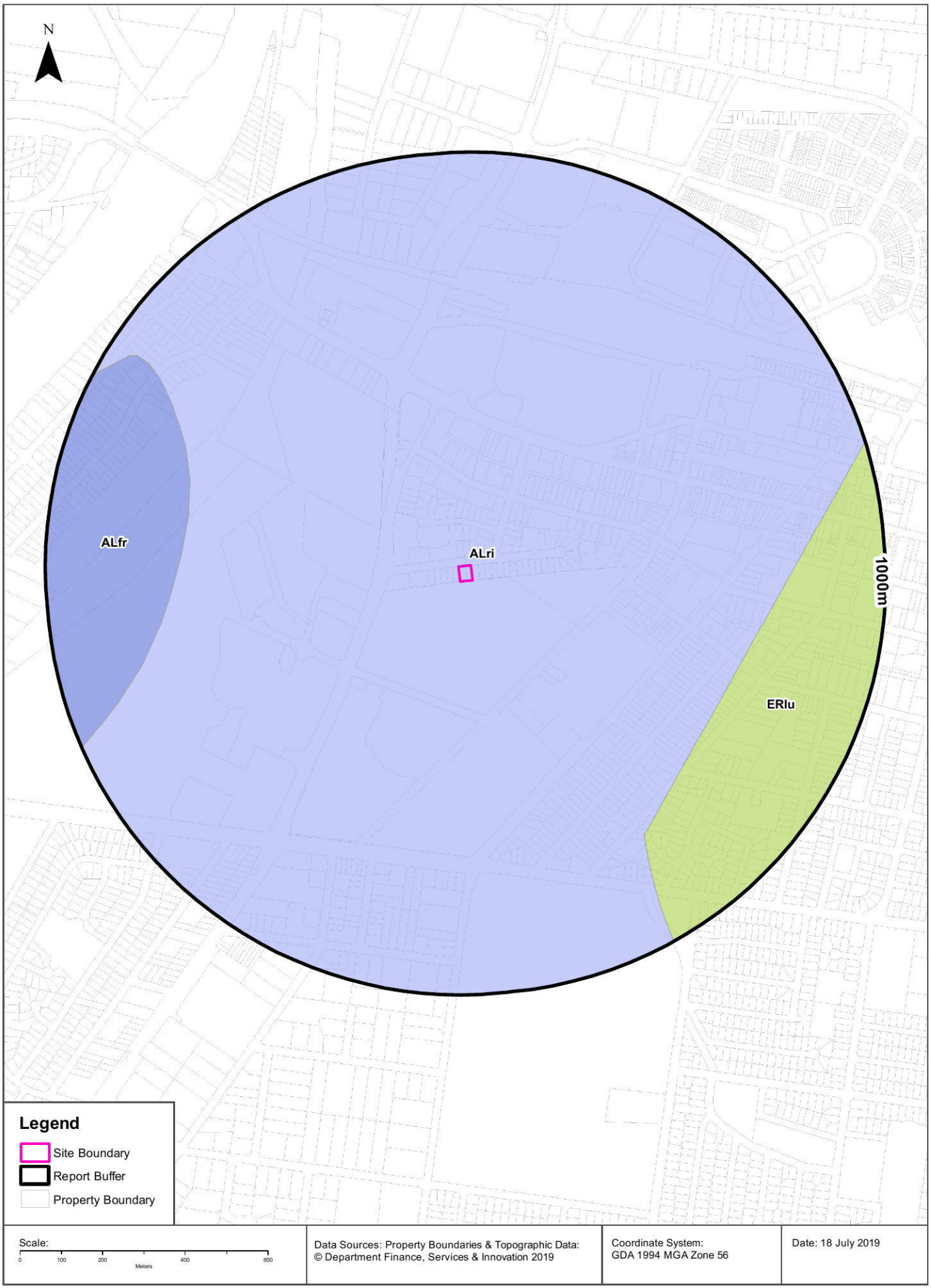
Naturally Occurring Asbestos Potential within the dataset buffer:

Potential	Sym	Strat Name	Group	Formation	Scale	Min Age	Max Age	Rock Type	Dom Lith	Description	Dist	Dir
No records in buffer												

Mining Subsidence District Data Source: © State of New South Wales through NSW Department of Industry, Resources & Energy

Soil Landscapes

36-38 Rodley Avenue, Penrith, NSW 2750



Soils

36-38 Rodley Avenue, Penrith, NSW 2750

Soil Landscapes

What are the onsite Soil Landscapes?

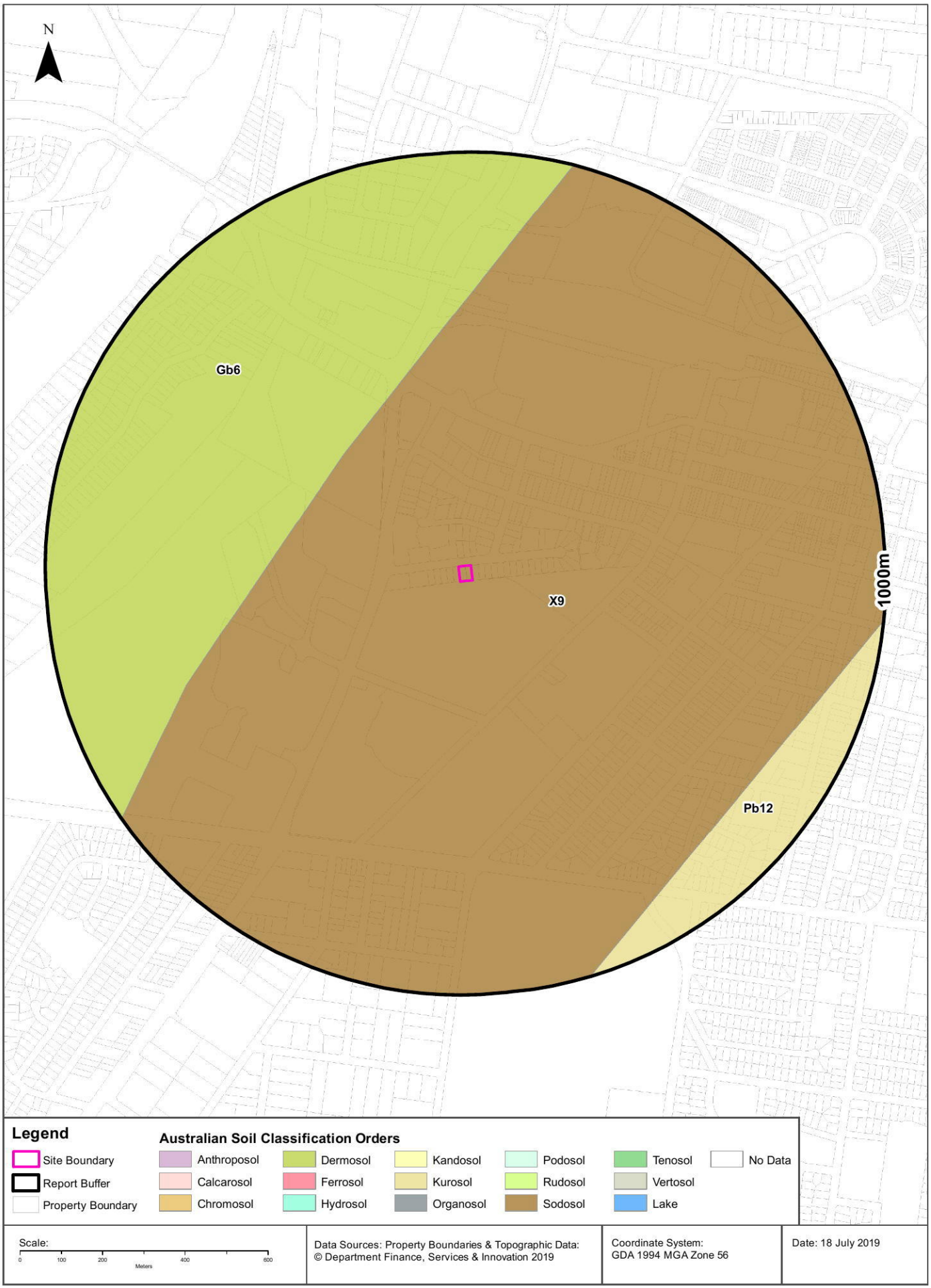
Soil Code	Name	Group	Process	Map Sheet	Scale
ALri	RICHMOND		ALLUVIAL	Penrith	1:100,000

What are the Soil Landscapes within the dataset buffer?

Soil Code	Name	Group	Process	Map Sheet	Scale
ALfr	FREEMANS REACH		ALLUVIAL	Penrith	1:100,000
ALri	RICHMOND		ALLUVIAL	Penrith	1:100,000
ERlu	LUDDENHAM		EROSIONAL	Penrith	1:100,000

Atlas of Australian Soils

36-38 Rodley Avenue, Penrith, NSW 2750



Soils

36-38 Rodley Avenue, Penrith, 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
X9	Sodosol	Plains--former river terraces and levees: chief soils are sandy neutral yellow mottled soils (Dy5.42) with leached sands (Uc2.3) on the broader plains. Associated are (Dy3.41, Dy3.42, and Dy3.43) soils, some containing ironstone gravels, in relatively low-lying areas and depressions, and (Dr2.2), (Gn2.15), and (Gn2.18) soils on levees. Areas of other soils, possibly including (Um4.31), occur throughout what is a complex unit. As mapped, areas of units Gb6 and Sp1 are included.	0m
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.	384m
Pb12	Kurosol	Gently rolling to rounded hilly country with some steep slopes and broad valleys: chief soils are hard acidic red soils (Dr2.21) with hard neutral and acidic yellow mottled soils (Dy3.42 and Dy3.41) on lower slopes and in valleys. Associated are small areas of various soils including (Gn3.54) on some ridges, (Dr3.31) on some slopes; (Dr2.23) in saddles and some mid-slope positions, and some low- lying swampy areas of (Uf6) soils and (Uc1.2) soils with peaty surfaces. Small areas of other soils such as (Db1.2) are likely throughout.	828m

Acid Sulfate Soils

36-38 Rodley Avenue, Penrith, NSW 2750

Environmental Planning Instrument - Acid Sulfate Soils

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

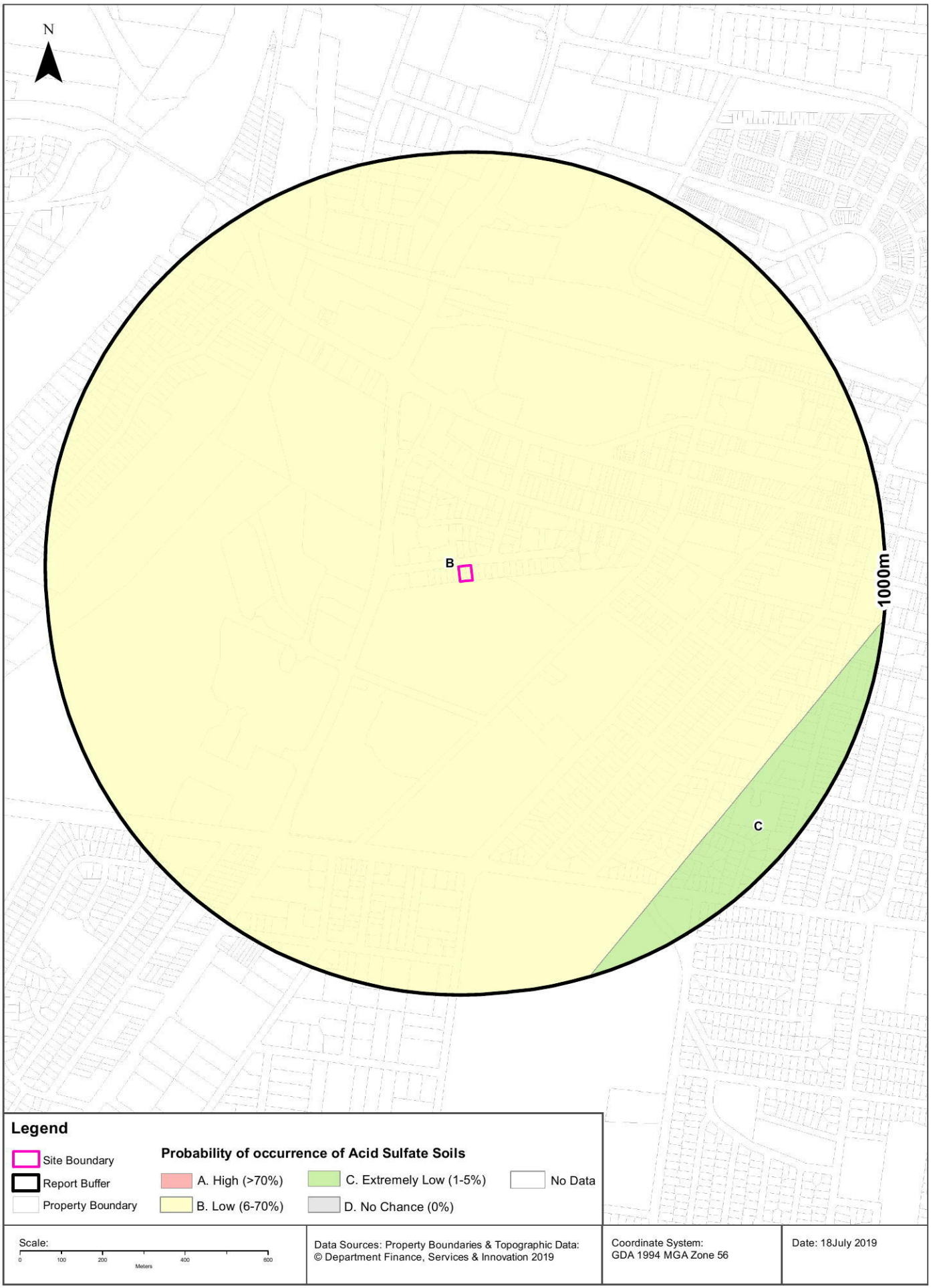
Soil Class	Description	EPI Name
N/A		

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

Soil Class	Description	EPI Name	Distance	Direction
N/A				

Atlas of Australian Acid Sulfate Soils

36-38 Rodley Avenue, Penrith, NSW 2750



Acid Sulfate Soils

36-38 Rodley Avenue, Penrith, NSW 2750

Atlas of Australian Acid Sulfate Soils

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

Class	Description	Distance
B	Low Probability of occurrence. 6-70% chance of occurrence.	0m
C	Extremely low probability of occurrence. 1-5% chance of occurrence with occurrences in small localised areas.	827m

Dryland Salinity

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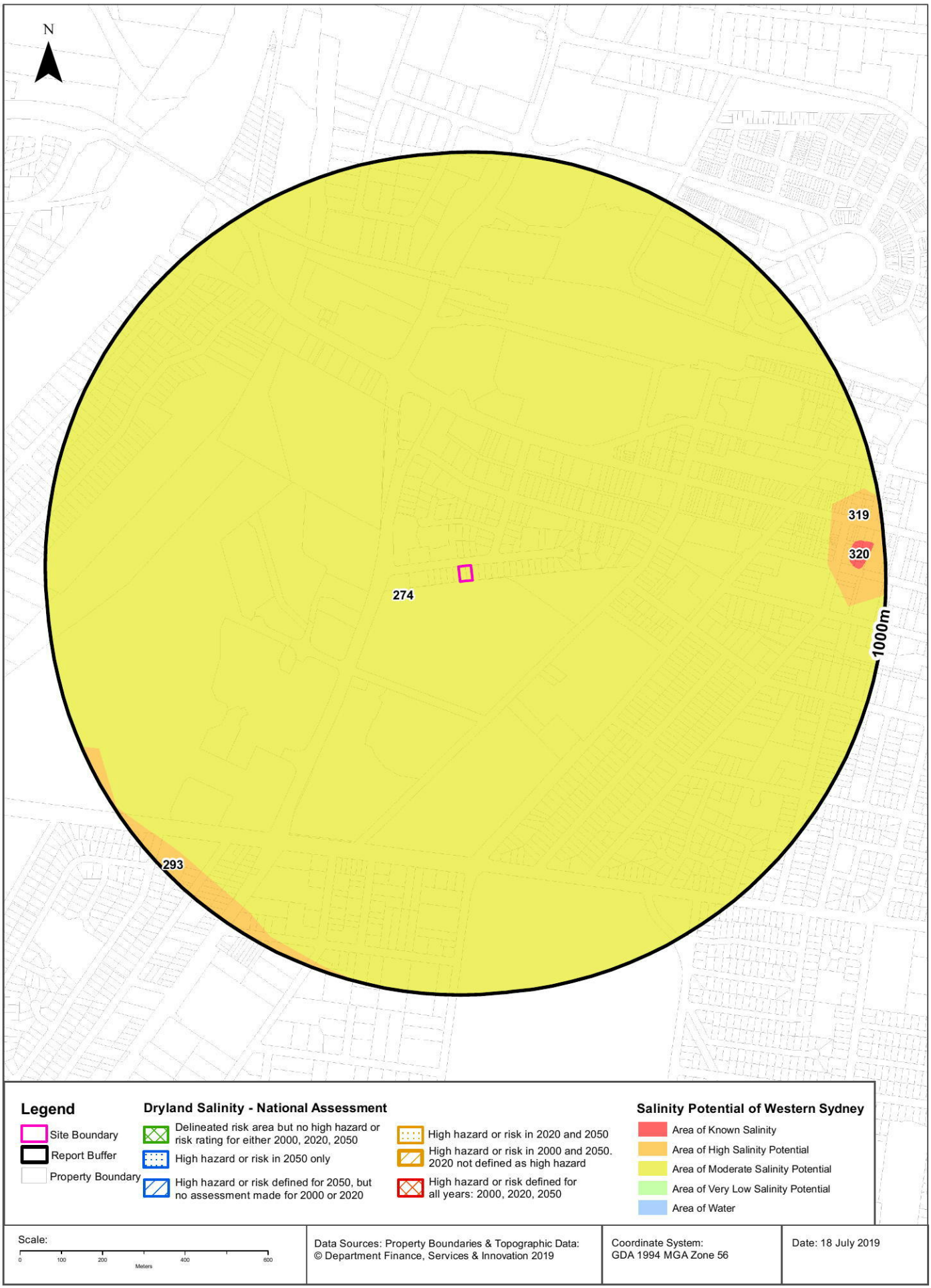


Dryland Salinity

36-38 Rodley Avenue, Penrith, 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?

No

What Dryland Salinity assessments are given?

Assessment 2000	Assessment 2020	Assessment 2050	Distance	Direction
N/A	N/A	N/A	N/A	N/A

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

Dryland Salinity Potential of Western Sydney

Dryland Salinity Potential of Western Sydney within the dataset buffer?

Feature Id	Classification	Description	Distance	Direction
274	MODERATE	Area of Moderate Salinity Potential	0m	Onsite
319	HIGH	Area of High Salinity Potential	857m	East
320	SALT	Area of Known Salinity	911m	East
293	HIGH	Area of High Salinity Potential	939m	South

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

Mining Subsidence Districts

36-38 Rodley Avenue, Penrith, 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

36-38 Rodley Avenue, Penrith, NSW 2750

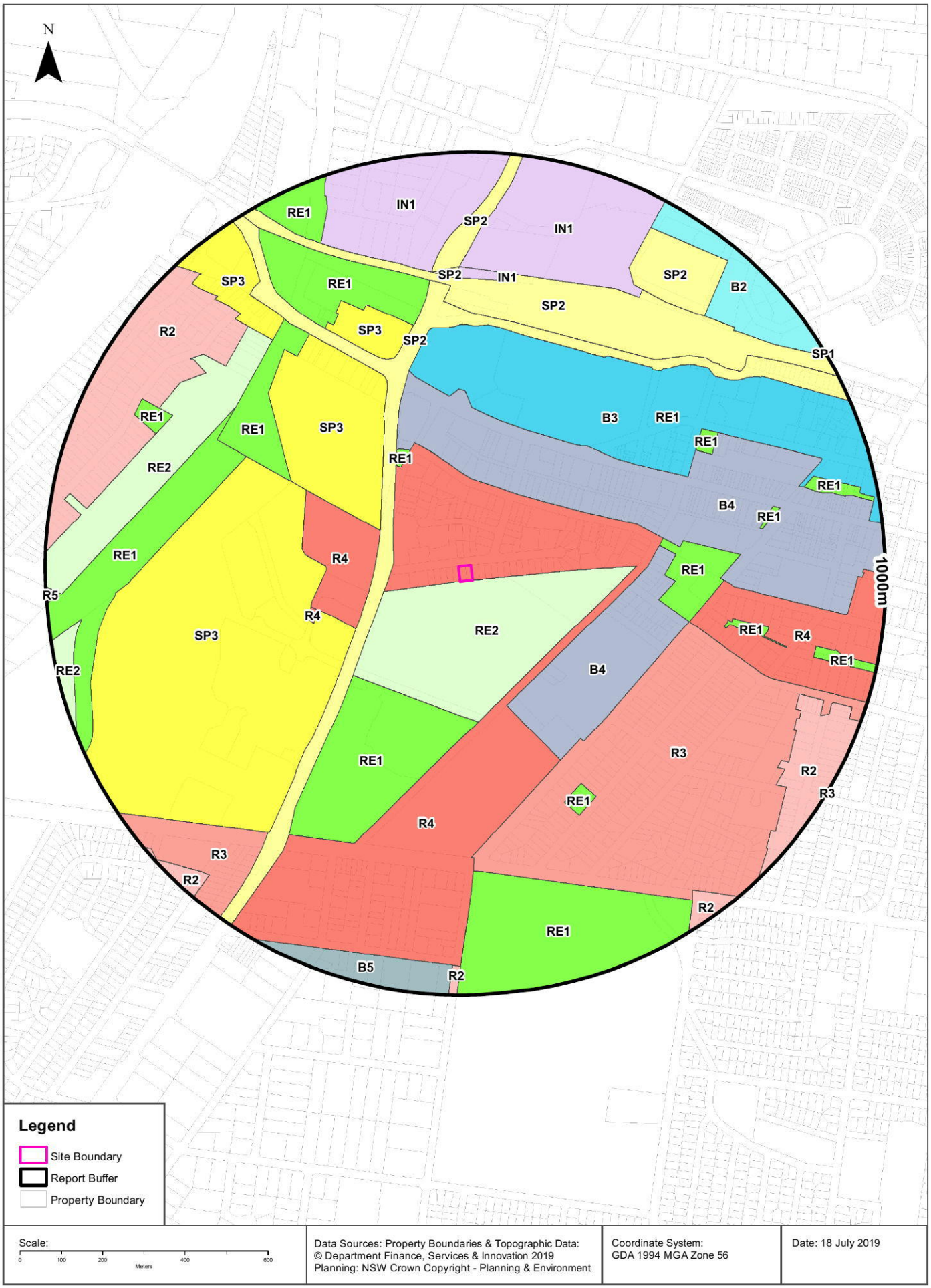
State Significant Precincts

What SEPP State Significant Precincts exist within the dataset buffer?

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

EPI Planning Zones

36-38 Rodley Avenue, Penrith, NSW 2750



Environmental Planning Instrument

36-38 Rodley Avenue, Penrith, NSW 2750

Land Zoning

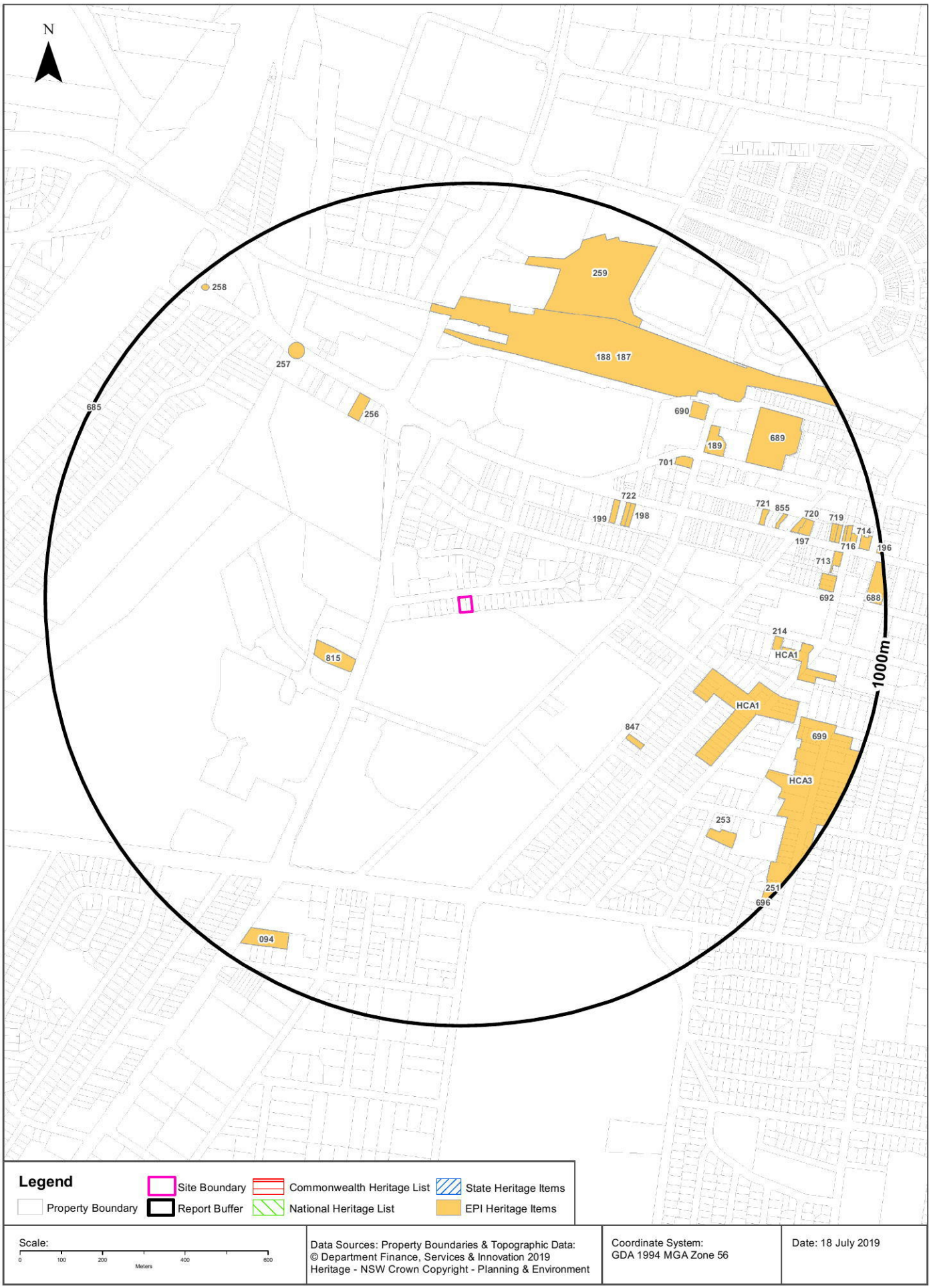
What EPI Land Zones exist within the dataset buffer?

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
R4	High Density Residential		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	0m	Onsite
RE2	Private Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	0m	South
SP2	Infrastructure	Classified Road	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	158m	South East
B4	Mixed Use		Penrith Local Environmental Plan 2010	26/04/2019	26/04/2019	26/04/2019	Amendment No 15	199m	East
R4	High Density Residential		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	200m	West
SP3	Tourist		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	209m	North West
B4	Mixed Use		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	273m	South East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	279m	North West
SP3	Tourist		Penrith Local Environmental Plan 2010	21/06/2013	21/06/2013	26/04/2019	Amendment No 2	279m	West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	304m	South West
B3	Commercial Core		Penrith Local Environmental Plan 2010	26/04/2019	26/04/2019	26/04/2019	Amendment No 15	353m	North East
R4	High Density Residential		Penrith Local Environmental Plan 2010	14/10/2016	14/10/2016	26/04/2019	Amendment No 11	354m	West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	451m	East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	456m	North West
R3	Medium Density Residential		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	459m	South East
SP3	Tourist		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	528m	North
R4	High Density Residential		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	532m	East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	556m	South East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	579m	North East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	21/06/2013	21/06/2013	26/04/2019	Amendment No 2	579m	West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	593m	North West
SP2	Infrastructure	Railway	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	594m	North East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	26/04/2019	26/04/2019	26/04/2019	Amendment No 15	613m	North East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	617m	East
RE2	Private Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	664m	West
IN1	General Industrial		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	692m	North
SP2	Infrastructure	Classified Road	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	697m	North
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	700m	South

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	702m	East
SP3	Tourist		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	709m	North West
IN1	General Industrial		Penrith Local Environmental Plan 2010	22/09/2010	22/09/2010	26/04/2019		711m	North
IN1	General Industrial		Penrith Local Environmental Plan 2010	22/09/2010	22/09/2010	26/04/2019		715m	North
SP2	Infrastructure	Classified Road	Penrith Local Environmental Plan 2010	22/09/2010	22/09/2010	26/04/2019		715m	North
R2	Low Density Residential		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	743m	West
R3	Medium Density Residential		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	764m	South West
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	782m	North West
SP2	Infrastructure	Car Park	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	784m	North East
B2	Local Centre		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	824m	North East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	826m	East
R2	Low Density Residential		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	836m	South
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	844m	East
RE1	Public Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	850m	North
RE2	Private Recreation		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	921m	West
B5	Business Development		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	923m	South
R2	Low Density Residential		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	935m	South West
R5	Large Lot Residential		Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	972m	West
SP1	Special Activities	Defence	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	26/04/2019	Amendment No 4	991m	North East

Heritage Items

36-38 Rodley Avenue, Penrith, NSW 2750



Heritage

36-38 Rodley Avenue, Penrith, NSW 2750

Commonwealth Heritage List

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

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

Heritage Data Source: Australian Government Department of the Environment and Energy - Heritage Branch

National Heritage List

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

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

Heritage Data Source: Australian Government Department of the Environment and Energy - Heritage Branch

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							

Heritage Data Source: NSW Crown Copyright - Office of Environment & Heritage

Environmental Planning Instrument - Heritage

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

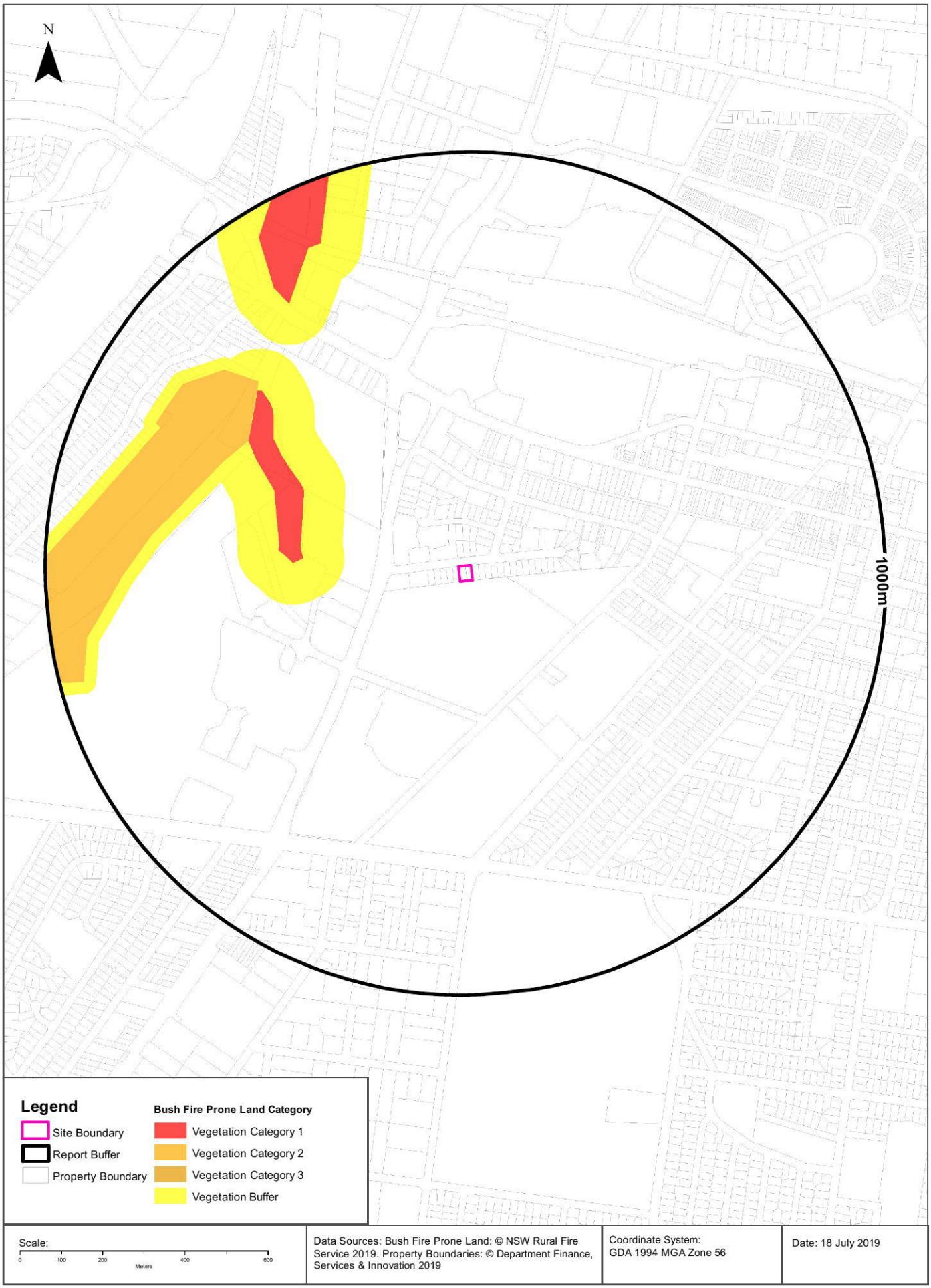
Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
815	The Willows - House	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	278m	West
199	High Street Shop	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	378m	North East
722	High Street Shop	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	399m	North East

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
198	High Street Shop	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	407m	North East
847	Cottage	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	480m	South East
256	Penrith Ambulance Station	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	491m	North West
HCA1	Hornseywood	Conservation Area - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	565m	East
701	Former Prospect Electricity Building	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	587m	North East
187	Station Masters House (former)	Item - General	State	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	593m	North East
188	Penrith Railway Station	Item - General	State	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	593m	North East
189	Penrith Council Chambers (former)	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	661m	North East
690	Red Cow Hotel	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	684m	North East
257	Peachtree Creek Bridge	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	695m	North West
259	Museum of Fire (former Penrith Power Station)	Item - General	Local	Penrith Local Environmental Plan 2010	22/09/2010	22/09/2010	11/08/2017	715m	North
721	High Street Shop	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	715m	East
214	Victorian Villa	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	729m	East
689	Tafe Building	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	737m	North East
HCA1	Hornseywood	Conservation Area - General	Local	Penrith Local Environmental Plan 2010	11/08/2017	11/08/2017	11/08/2017	751m	East
855	High Street Shop	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	752m	East
253	Victorian house	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	776m	South East
197	High Street Shop - Former Fultons Store	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	786m	East
720	High Street shop	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	786m	East
HCA3	Warwick Street	Conservation Area - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	811m	South East
692	Institute of Arts (Former)	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	837m	East
713	High Street Shop (Former Bank of NSW	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	868m	East
719	High Street Shop	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	875m	East
094	Workmens cottages	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	879m	South West

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
699	Victorian cottage	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	885m	East
718	High Street Shop	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	887m	East
717	High Street Shop	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	903m	East
716	High Street Shop	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	910m	East
715	High Street Shop	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	921m	East
714	High Street Shop	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	943m	East
688	Memorials and lamp stand , St Nicholas of Myra Catholic Church	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	947m	East
258	Explorers Memorial	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	961m	North West
251	The Cottage - dwelling and pine tree	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	965m	South East
696	Minnamurra - house	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	983m	South East
196	Arms of Australia Hotel	Item - General	Local	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	984m	East
685	Seidler House	Item - General	State	Penrith Local Environmental Plan 2010	25/02/2015	25/02/2015	11/08/2017	994m	North West

Natural Hazards - Bush Fire Prone Land

36-38 Rodley Avenue, Penrith, NSW 2750



Natural Hazards

36-38 Rodley Avenue, Penrith, NSW 2750

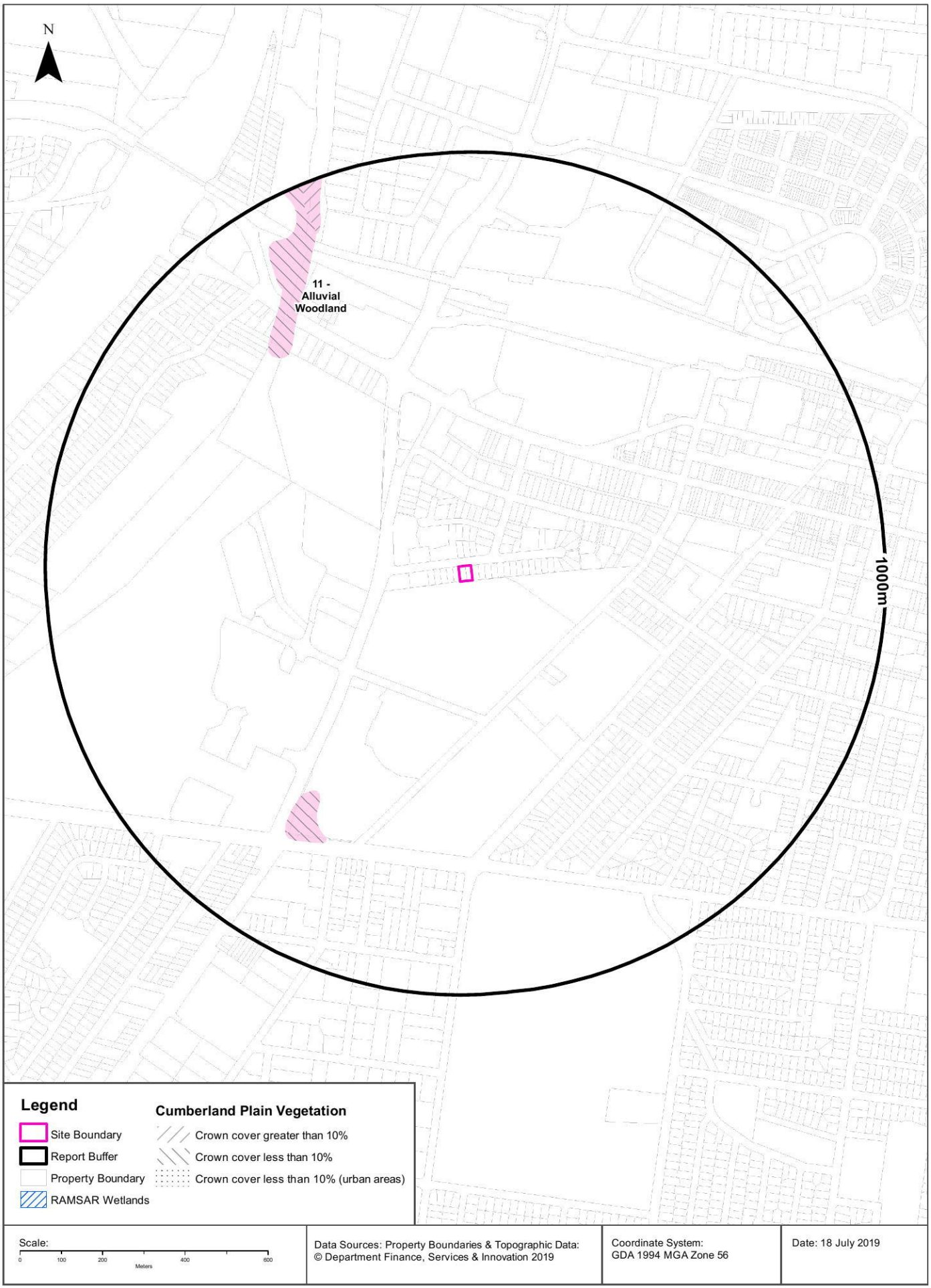
Bush Fire Prone Land

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

Bush Fire Prone Land Category	Distance	Direction
Vegetation Buffer	277m	West
Vegetation Category 1	377m	North West
Vegetation Category 2	592m	West

Ecological Constraints - Remnant Vegetation of the Cumberland Plain

36-38 Rodley Avenue, Penrith, NSW 2750



Ecological Constraints

36-38 Rodley Avenue, Penrith, 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%	613m	South West
11 - Alluvial Woodland	Crown cover greater than 10%	874m	North

Remnant Vegetation of the Cumberland Plain : NSW Office of Environment and Heritage

Ramsar Wetlands

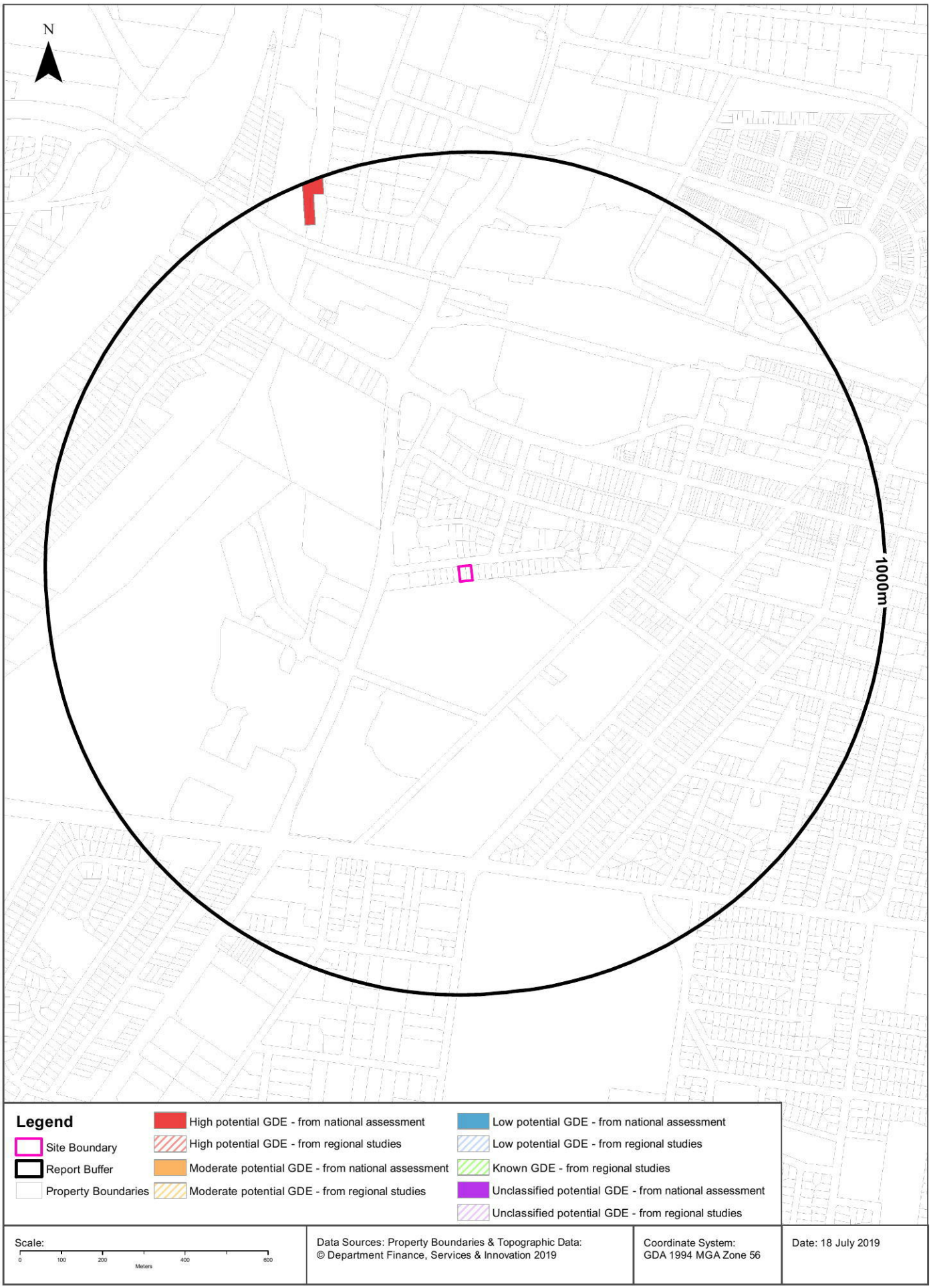
What Ramsar Wetland areas exist within the dataset buffer?

Map Id	Ramsar Name	Wetland Name	Designation Date	Source	Distance	Direction
N/A	No records in buffer					

Ramsar Wetlands Data Source: © Commonwealth of Australia - Department of Environment

Ecological Constraints - Groundwater Dependent Ecosystems Atlas

36-38 Rodley Avenue, Penrith, NSW 2750



Ecological Constraints

36-38 Rodley Avenue, Penrith, 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	896m

Ecological Constraints - Inflow Dependent Ecosystems Likelihood

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Ecological Constraints

36-38 Rodley Avenue, Penrith, NSW 2750

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
Terrestrial	9	Undulating to low hilly country, mainly on shale.	Vegetation	Unconsolidated sedimentary	896m

Ecological Constraints

36-38 Rodley Avenue, Penrith, 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	Amaurornis moluccana	Pale-vented Bush-hen	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Anseranas semipalmata	Magpie Goose	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Not Sensitive	Critically Endangered	
Animalia	Aves	Apus pacificus	Fork-tailed Swift	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Ardea ibis	Cattle Egret	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Ardenna tenuirostris	Short-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	ROKAMBA;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 banksii samueli	Red-tailed Black-Cockatoo (inland subspecies)	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Calyptorhynchus lathami	Glossy Black-Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Charadrius veredus	Oriental Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
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	Grantiella picta	Painted Honeyeater	Vulnerable	Not Sensitive	Vulnerable	
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

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Ixobrychus flavicollis	Black Bittern	Vulnerable	Not Sensitive	Not Listed	
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	Lophochroa leadbeateri	Major Mitchell's Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Lophoictinia isura	Square-tailed Kite	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	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	
Animalia	Aves	Ninox connivens	Barking Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Ninox strenua	Powerful Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Numenius minutus	Little Curlew	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Petroica boodang	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Petroica phoenicea	Flame Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pezoporus wallicus wallicus	Eastern Ground Parrot	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Phaethon lepturus	White-tailed Tropicbird	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Plegadis falcinellus	Glossy Ibis	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Pluvialis squatarola	Grey Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Rostratula australis	Australian Painted Snipe	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Stagonopleura guttata	Diamond Firetail	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Sterna hirundo	Common Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
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	Tringa nebularia	Common Greenshank	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	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	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Mammalia	Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus australis	Little Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus orianae oceanensis	Large Bent-winged Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Myotis macropus	Southern Myotis	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Petauroides volans	Greater Glider	Not Listed	Not Sensitive	Vulnerable	
Animalia	Mammalia	Petaurus australis	Yellow-bellied Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Petaurus norfolcensis	Squirrel Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	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	Antaresia stimsoni	Stimson's Python	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Caretta caretta	Loggerhead Turtle	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Chelonia mydas	Green Turtle	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Reptilia	Eulamprus leuraensis	Blue Mountains Water Skink	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Hoplocephalus bungaroides	Broad-headed Snake	Endangered	Category 2	Vulnerable	
Animalia	Reptilia	Tiliqua occipitalis	Western Blue-tongued Lizard	Vulnerable	Not Sensitive	Not Listed	
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	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	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
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	Rhodamnia rubescens	Scrub Turpentine	Critically Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Senna acclinis	Rainforest Cassia	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Syzygium paniculatum	Magenta Lilly Pilly	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Tetratheca glandulosa		Vulnerable	Not Sensitive	Not Listed	

Data does not include NSW category 1 sensitive species.

Data obtained 18/07/2019

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Site Photographs No.36 Rodley Avenue

Photo 1.	Single level brick dwelling with tile roof. Showing rear of the house.

Photo 2.	Brick garage. Looking south west corner

Photo 3.	Concrete driveway to the north off Rodley Avenue

Photo 4.	Concrete driveway covered by metal awning

ABN 70 106 810 708
T 1300 30 40 80
F 1300 64 46 89
E info@sesl.com.au
W sesl.com.au

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PO Box 357
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NSW 1715

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Thornleigh
NSW 2120

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15 Green Square Cl
Fortitude Valley
QLD 4006

Site Photographs No.36 Rodley Avenue

Photo 5.	Concrete footpath covering small area at the backyard

Photo 6.	Limited concrete covered area along eastern boundary

Photo 7.	Unsealed tress & grass covered area. Looking north east corner

Photo 8.	Minor oil staining on the surface of concrete driveway

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Site Photographs No.38 Rodley Avenue

Photo 9.	Single level fibro dwelling with tile roof. Looking south

Photo 10.	Potential asbestos containing material in the building

Photo 11.	Concrete driveway to the north off Rodley Avenue

Photo 12.	Limited concrete covered area along eastern boundary

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Photo 13.	Fibro garage sealed with concrete floor. Showing south west corner of backyard

Photo 14.	Fibro garage. Showing metal awning covering the front of the garage and concrete floor

Photo 15.	Oil staining and cracks on the surface of concrete within the fibro garage

Photo 16.	Lawn mowers keep inside the fibro garage

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W sesl.com.au

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LAB
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7 London Cct
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88 Mt Alexander Rd
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VIC 3031

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Photo 17.	Spray paint/oil and chemical containers within store in the fibro garage

Photo 18.	Fuel containers stored in the fibro garage

Photo 19.	Paint containers stored in the fibro garage

Photo 20.	Fibro dog house

Photo 21.	Wire mesh animal house

Photo 22.	Unsealed and grass covered area and limited footpath concrete covered areas

Photo 23.	Stormwater drainage located at the south west portion of the site

Photo 24.	Two stormwater drainages next to the fibro garage

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W sesl.com.au

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LAB
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ACT
Level 5
7 London Cct
Canberra
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Level 1
88 Mt Alexander Rd
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Level 10
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Fortitude Valley
QLD 4006

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1924157**	Page	: 1 of 12
Client	: **SESL Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: ERIC CHEN	Contact	: Customer Services ES
Address	: PO BOX 357 PENNANT HILLS NSW, AUSTRALIA 1715	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: J001922	Date Samples Received	: 31-Jul-2019 00:58
Order number	:	Date Analysis Commenced	: 01-Aug-2019
C-O-C number	: ----	Issue Date	: 07-Aug-2019 15:05
Sampler	: ERIC CHEN		
Site	: ----		
Quote number	: SYBQ/404/18		
No. of samples received	: 26		
No. of samples analysed	: 15		

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 Organics, Smithfield, NSW
Evie Sidarta	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200 '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: 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	BH1 0.05-0.15m	BH2 0.05-0.15m	BH3 0.05-0.15m	BH4 0.05-0.15m	BH5 0.05-0.15m
				Client sampling date / time	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924157-001	ES1924157-004	ES1924157-006	ES1924157-008	ES1924157-010
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		15.1	13.2	18.4	19.7	26.8
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	6	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		9	18	11	10	7
Copper	7440-50-8	5	mg/kg		12	44	14	12	17
Lead	7439-92-1	5	mg/kg		24	68	20	56	34
Nickel	7440-02-0	2	mg/kg		6	8	6	7	23
Zinc	7440-66-6	5	mg/kg		44	308	41	60	64
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	BH1 0.05-0.15m	BH2 0.05-0.15m	BH3 0.05-0.15m	BH4 0.05-0.15m	BH5 0.05-0.15m
				Client sampling date / time	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924157-001	ES1924157-004	ES1924157-006	ES1924157-008	ES1924157-010
					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
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH1 0.05-0.15m	BH2 0.05-0.15m	BH3 0.05-0.15m	BH4 0.05-0.15m	BH5 0.05-0.15m
				Client sampling date / time	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924157-001	ES1924157-004	ES1924157-006	ES1924157-008	ES1924157-010
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >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	%		**106**	**125**	**102**	**110**	**103**
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**92.5**	**72.7**	**88.4**	**87.7**	**89.2**
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**117**	**93.8**	**90.7**	**122**	**124**
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**94.5**	**92.8**	**92.3**	**85.5**	**81.3**
2-Chlorophenol-D4	93951-73-6	0.5	%		**103**	**103**	**99.1**	**96.8**	**87.0**
2.4.6-Tribromophenol	118-79-6	0.5	%		**64.3**	**72.1**	**73.3**	**72.8**	**57.2**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**108**	**104**	**106**	**103**	**103**
Anthracene-d10	1719-06-8	0.5	%		**100.0**	**98.0**	**102**	**98.0**	**99.2**
4-Terphenyl-d14	1718-51-0	0.5	%		**121**	**114**	**120**	**118**	**117**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**85.7**	**86.1**	**77.3**	**99.8**	**105**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH1 0.05-0.15m	BH2 0.05-0.15m	BH3 0.05-0.15m	BH4 0.05-0.15m	BH5 0.05-0.15m
				Client sampling date / time	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924157-001	ES1924157-004	ES1924157-006	ES1924157-008	ES1924157-010
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
Toluene-D8	2037-26-5	0.2	%		**88.6**	**92.4**	**80.4**	**103**	**104**
4-Bromofluorobenzene	460-00-4	0.2	%		**98.1**	**103**	**97.7**	**102**	**96.3**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH6 0.05_0.15m	BH7 0.05-0.1m	D1	BH1	BH2
				Client sampling date / time	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924157-012	ES1924157-014	ES1924157-018	ES1924157-019	ES1924157-020
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		22.2	10.3	28.2	----	----
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		----	----	----	638	684
APPROVED IDENTIFIER:	----	-	--		----	----	----	C.OWLER	C.OWLER
Synthetic Mineral Fibre	----	0.1	g/kg		----	----	----	No	No
Organic Fibre	----	0.1	g/kg		----	----	----	Yes	No
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	<5	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg		8	10	8	----	----
Copper	7440-50-8	5	mg/kg		18	15	19	----	----
Lead	7439-92-1	5	mg/kg		32	196	39	----	----
Nickel	7440-02-0	2	mg/kg		11	4	24	----	----
Zinc	7440-66-6	5	mg/kg		129	627	73	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH6 0.05_0.15m	BH7 0.05-0.1m	D1	BH1	BH2
				Client sampling date / time	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924157-012	ES1924157-014	ES1924157-018	ES1924157-019	ES1924157-020
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Dieldrin	60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	<0.05	<0.05	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH6 0.05_0.15m	BH7 0.05-0.1m	D1	BH1	BH2
				Client sampling date / time	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924157-012	ES1924157-014	ES1924157-018	ES1924157-019	ES1924157-020
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**119**	**128**	**120**	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**76.9**	**96.6**	**93.0**	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**84.8**	**81.4**	**93.6**	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**79.8**	**85.7**	**75.2**	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**92.1**	**97.1**	**82.8**	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**56.5**	**70.5**	**55.0**	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH6 0.05_0.15m	BH7 0.05-0.1m	D1	BH1	BH2
				Client sampling date / time	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924157-012	ES1924157-014	ES1924157-018	ES1924157-019	ES1924157-020
					Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		100	99.1	102	----	----
Anthracene-d10	1719-06-8	0.5	%		97.5	94.1	98.8	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		117	114	118	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		78.3	104	102	----	----
Toluene-D8	2037-26-5	0.2	%		82.7	102	101	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		86.3	101	95.1	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	BH3	BH4	BH5	BH6	BH7
				Client sampling date / time	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00	30-Jul-2019 00:00
Compound	CAS Number	LOR	Unit		ES1924157-021	ES1924157-022	ES1924157-023	ES1924157-024	ES1924157-025
					Result	Result	Result	Result	Result
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		**No**	**No**	**No**	**No**	**No**
Asbestos (Trace)	1332-21-4	5	Fibres		**No**	**No**	**No**	**No**	**No**
Asbestos Type	1332-21-4	-	--		**-**	**-**	**-**	**-**	**-**
Sample weight (dry)	----	0.01	g		**506**	**581**	**523**	**605**	**616**
APPROVED IDENTIFIER:	----	-	--		**C.OWLER**	**C.OWLER**	**C.OWLER**	**C.OWLER**	**C.OWLER**
Synthetic Mineral Fibre	----	0.1	g/kg		**No**	**No**	**No**	**No**	**No**
Organic Fibre	----	0.1	g/kg		**No**	**No**	**No**	**No**	**Yes**

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	BH1 - 30-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH2 - 30-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH3 - 30-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH4 - 30-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH5 - 30-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH6 - 30-Jul-2019 00:00	Mid brown soil.
EA200: Description	BH7 - 30-Jul-2019 00:00	Mid brown soil.

Surrogate Control Limits

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

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES1924157**	Page	: 1 of 10
Client	: **SESL Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: ERIC CHEN	Contact	: Customer Services ES
Address	: PO BOX 357 PENNANT HILLS NSW, AUSTRALIA 1715	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: J001922	Date Samples Received	: 31-Jul-2019
Order number	:	Date Analysis Commenced	: 01-Aug-2019
C-O-C number	: ----	Issue Date	: 07-Aug-2019
Sampler	: ERIC CHEN		
Site	: ----		
Quote number	: SYBQ/404/18		
No. of samples received	: 26		
No. of samples analysed	: 15		

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 Organics, Smithfield, NSW
Evie Sidarta	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2501753)									
ES1923686-012	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	20	16	27.4	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	17	29	50.5	No Limit
ES1924157-006	BH3 0.05-0.15m	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	11	9	23.2	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	6	5	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	14	14	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	20	23	15.1	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	41	47	15.1	No Limit
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2504267)									
ES1923655-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	13	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	7	6	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	10	9	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	15	15	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
ES1924021-024	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	16	11.4	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	9	12	21.5	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 2504267) - continued									
ES1924021-024	Anonymous	EG005T: Arsenic	7440-38-2	5	mg/kg	12	12	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	26	28	10.5	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	15	14	6.89	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	36	43	17.6	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2501755)									
ES1923686-014	Anonymous	EA055: Moisture Content	----	0.1	%	<1.0	<1.0	0.00	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 2504270)									
ES1923655-011	Anonymous	EA055: Moisture Content	----	0.1	%	27.8	27.7	0.00	0% - 20%
ES1924021-032	Anonymous	EA055: Moisture Content	----	0.1	%	12.8	12.9	0.00	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2501752)									
ES1923686-012	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1924157-006	BH3 0.05-0.15m	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2504266)									
ES1923655-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES1924021-024	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 2501690)									
ES1924157-001	BH1 0.05-0.15m	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 2501687)									
ES1924157-001	BH1 0.05-0.15m	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit

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: 2501689)									
ES1924157-001	BH1 0.05-0.15m	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: 2501688)									
ES1924157-001	BH1 0.05-0.15m	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: 2501707)									
ES1924157-001	BH1 0.05-0.15m	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1924196-024	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2502756)									
ES1924157-012	BH6 0.05_0.15m	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES1924170-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2501688)									
ES1924157-001	BH1 0.05-0.15m	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2501707)									
ES1924157-001	BH1 0.05-0.15m	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES1924196-024	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2502756)									
ES1924157-012	BH6 0.05_0.15m	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2502756) - continued									
ES1924170-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 2501707)									
ES1924157-001	BH1 0.05-0.15m	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
ES1924196-024	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
EP080: BTEXN (QC Lot: 2502756)									
ES1924157-012	BH6 0.05_0.15m	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
ES1924170-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2501753)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	117	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	94.4	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	108	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	118	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	114	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	118	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	96.8	80	122
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2504267)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	108	86	126
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	105	83	113
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	93.3	76	128
EG005T: Copper	7440-50-8	5	mg/kg	<5	32 mg/kg	110	86	120
EG005T: Lead	7439-92-1	5	mg/kg	<5	40 mg/kg	103	80	114
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55 mg/kg	103	87	123
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	104	80	122
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2501752)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	96.1	70	105
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2504266)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	82.7	70	105
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2501690)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	108	62	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 2501687)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	82.1	69	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	79.6	65	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	84.3	67	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	83.0	68	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	106	65	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	79.2	67	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	88.6	69	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	97.7	62	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	97.5	63	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	104	66	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	104	64	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	101	66	116

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP068A: Organochlorine Pesticides (OC) (QCLot: 2501687) - continued								
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	98.1	67	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	105	67	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	101	69	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	103	69	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	86.6	56	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	95.3	62	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	100	66	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	88.2	64	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	96.3	54	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2501689)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	109	77	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	107	72	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	108	73	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	108	72	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	106	75	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	88.8	77	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	116	73	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	108	74	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	95.3	69	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	97.1	75	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	92.6	68	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	111	74	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	101	70	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	85.7	61	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	82.6	62	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	83.8	63	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2501688)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	113	75	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	110	77	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	98.4	71	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2501707)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	100	68	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2502756)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	106	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2501688)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	110	77	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	108	74	138

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2501688) - continued								
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	87.1	63	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2501707)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	97.2	68	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2502756)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	102	68	128
EP080: BTEXN (QCLot: 2501707)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	105	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	95.7	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	96.8	65	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	95.7	66	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	96.3	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	87.9	63	119
EP080: BTEXN (QCLot: 2502756)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	112	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	102	67	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	104	65	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	101	66	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	103	68	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	94.2	63	119

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2501753)							
ES1923686-012	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	85.8	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	93.6	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	85.2	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	94.6	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	93.4	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	92.5	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	96.6	70	130
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2504267)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 2504267) - continued							
ES1923655-002	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	94.3	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	104	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	95.2	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	110	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	95.6	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	98.6	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	100	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2501752)							
ES1923686-012	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	100	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2504266)							
ES1923655-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	111	70	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 2501690)							
ES1924157-001	BH1 0.05-0.15m	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	99.0	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 2501687)							
ES1924157-001	BH1 0.05-0.15m	EP068: gamma-BHC	58-89-9	0.5 mg/kg	99.4	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	79.7	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	93.1	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	107	70	130
		EP068: Endrin	72-20-8	2 mg/kg	90.6	70	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	82.0	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 2501689)							
ES1924157-001	BH1 0.05-0.15m	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	102	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	104	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2501688)							
ES1924157-001	BH1 0.05-0.15m	EP071: C10 - C14 Fraction	----	523 mg/kg	92.1	73	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	112	53	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	125	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2501707)							
ES1924157-001	BH1 0.05-0.15m	EP080: C6 - C9 Fraction	----	32.5 mg/kg	98.5	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2502756)							
ES1924157-012	BH6 0.05_0.15m	EP080: C6 - C9 Fraction	----	32.5 mg/kg	95.4	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2501688)							
ES1924157-001	BH1 0.05-0.15m	EP071: >C10 - C16 Fraction	----	860 mg/kg	98.0	73	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	123	53	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	101	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2501707)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2501707) - continued							
ES1924157-001	BH1 0.05-0.15m	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	95.4	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2502756)							
ES1924157-012	BH6 0.05_0.15m	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	91.3	70	130
EP080: BTEXN (QCLot: 2501707)							
ES1924157-001	BH1 0.05-0.15m	EP080: Benzene	71-43-2	2.5 mg/kg	83.4	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	84.9	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	87.3	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	86.1	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	87.2	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	93.0	70	130
EP080: BTEXN (QCLot: 2502756)							
ES1924157-012	BH6 0.05_0.15m	EP080: Benzene	71-43-2	2.5 mg/kg	94.6	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	90.6	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	96.1	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	93.3	70	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	93.6	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	76.0	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1924157**	Page	: 1 of 7
Client	: **SESL Australia Pty Ltd**	Laboratory	: Environmental Division Sydney
Contact	: ERIC CHEN	Telephone	: +61-2-8784 8555
Project	: J001922	Date Samples Received	: 31-Jul-2019
Site	: ----	Issue Date	: 07-Aug-2019
Sampler	: ERIC CHEN	No. of samples received	: 26
Order number	:	No. of samples analysed	: 15

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type / Method	Count QC	Count Regular	Rate (%) Actual	Rate (%) Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
Moisture Content	3	33	9.09	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
BH1 0.05-0.15m, BH2 0.05-0.15m, BH3 0.05-0.15m, BH4 0.05-0.15m, BH5 0.05-0.15m	**30-Jul-2019**	**----**	----	----	**01-Aug-2019**	13-Aug-2019	✓
Soil Glass Jar - Unpreserved (EA055)							
BH6 0.05_0.15m, BH7 0.05-0.1m, D1	**30-Jul-2019**	**----**	----	----	**02-Aug-2019**	13-Aug-2019	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200)							
BH1, BH2, BH3, BH4, BH5, BH6, BH7	**30-Jul-2019**	**----**	----	----	**02-Aug-2019**	26-Jan-2020	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
BH1 0.05-0.15m, BH2 0.05-0.15m, BH3 0.05-0.15m, BH4 0.05-0.15m, BH5 0.05-0.15m	**30-Jul-2019**	**01-Aug-2019**	26-Jan-2020	✓	**01-Aug-2019**	26-Jan-2020	✓
Soil Glass Jar - Unpreserved (EG005T)							
BH6 0.05_0.15m, BH7 0.05-0.1m, D1	**30-Jul-2019**	**02-Aug-2019**	26-Jan-2020	✓	**05-Aug-2019**	26-Jan-2020	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
BH1 0.05-0.15m, BH2 0.05-0.15m, BH3 0.05-0.15m, BH4 0.05-0.15m, BH5 0.05-0.15m	**30-Jul-2019**	**01-Aug-2019**	27-Aug-2019	✓	**02-Aug-2019**	27-Aug-2019	✓
Soil Glass Jar - Unpreserved (EG035T)							
BH6 0.05_0.15m, BH7 0.05-0.1m, D1	**30-Jul-2019**	**02-Aug-2019**	27-Aug-2019	✓	**05-Aug-2019**	27-Aug-2019	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066)							
BH1 0.05-0.15m, BH2 0.05-0.15m, BH3 0.05-0.15m, BH4 0.05-0.15m, BH5 0.05-0.15m, BH6 0.05_0.15m, BH7 0.05-0.1m, D1	**30-Jul-2019**	**02-Aug-2019**	13-Aug-2019	✓	**05-Aug-2019**	11-Sep-2019	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
BH1 0.05-0.15m, BH2 0.05-0.15m, BH3 0.05-0.15m, BH4 0.05-0.15m, BH5 0.05-0.15m, BH6 0.05_0.15m, BH7 0.05-0.1m, D1	**30-Jul-2019**	**02-Aug-2019**	13-Aug-2019	✓	**05-Aug-2019**	11-Sep-2019	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
BH1 0.05-0.15m, BH2 0.05-0.15m, BH3 0.05-0.15m, BH4 0.05-0.15m, BH5 0.05-0.15m, BH6 0.05_0.15m, BH7 0.05-0.1m, D1	**30-Jul-2019**	**02-Aug-2019**	13-Aug-2019	✓	**03-Aug-2019**	11-Sep-2019	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
BH1 0.05-0.15m, BH2 0.05-0.15m, BH3 0.05-0.15m, BH4 0.05-0.15m, BH5 0.05-0.15m	**30-Jul-2019**	**01-Aug-2019**	13-Aug-2019	✓	**02-Aug-2019**	13-Aug-2019	✓
Soil Glass Jar - Unpreserved (EP080)							
BH1 0.05-0.15m, BH2 0.05-0.15m, BH3 0.05-0.15m, BH4 0.05-0.15m, BH5 0.05-0.15m, BH6 0.05_0.15m, BH7 0.05-0.1m, D1	**30-Jul-2019**	**02-Aug-2019**	13-Aug-2019	✓	**02-Aug-2019**	13-Aug-2019	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) BH1 0.05-0.15m, BH2 0.05-0.15m, BH3 0.05-0.15m, BH4 0.05-0.15m, BH5 0.05-0.15m	**30-Jul-2019**	**01-Aug-2019**	13-Aug-2019	✓	**02-Aug-2019**	13-Aug-2019	✓
Soil Glass Jar - Unpreserved (EP080) BH1 0.05-0.15m, BH2 0.05-0.15m, BH3 0.05-0.15m, BH4 0.05-0.15m, BH5 0.05-0.15m, BH6 0.05_0.15m, BH7 0.05-0.1m, D1	**30-Jul-2019**	**02-Aug-2019**	13-Aug-2019	✓	**02-Aug-2019**	13-Aug-2019	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) BH1 0.05-0.15m, BH2 0.05-0.15m, BH3 0.05-0.15m, BH4 0.05-0.15m, BH5 0.05-0.15m	**30-Jul-2019**	**01-Aug-2019**	13-Aug-2019	✓	**02-Aug-2019**	13-Aug-2019	✓
Soil Glass Jar - Unpreserved (EP080) BH6 0.05_0.15m, BH7 0.05-0.1m, D1	**30-Jul-2019**	**02-Aug-2019**	13-Aug-2019	✓	**02-Aug-2019**	13-Aug-2019	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	3	33	9.09	10.00	✖	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	33	12.12	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	4	33	12.12	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	33	6.06	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	8	12.50	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015A Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM amended 2013.
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270D. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260B. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM amended 2013.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.

Preparation Methods	Method	Matrix	Method Descriptions
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

070819

CHAIN OF CUSTODY DOCUMENTATION

CLIENT:		**BATCH Number:**	**J001922**
POSTAL ADDRESS:			
PH: 0431 075 936		**FAX:**	**EMAIL: eric@sesl.com.au**
SAMPLER:	**Eric Chen**	**PROJECT MANAGER: Eric Chen**	
REPORT NEEDED BY:	**Standard TAT**	**CC REPORT TO:**	
QUOTE NO.:		**COMMENTS/SPECIAL HANDLING/STORAGE:**	
PROJECT Location:	**Penrith**		
Job #:			
REPORT FORMAT			
HARD:	EMAIL: X	FAX:	

To: SESL Australia

16 Chilvers Road
Thornleigh NSW 2120
PHONE: 1300 30 40 80

SESL AUSTRALIA

ANALYSIS REQUIRED

SAMPLE ID		MATRIX	DATE	TIME	TYPE & PRESERVATIVE	NO.	8 heavy metals	TRH/BTEX	OCP/PCB	PAH	Asbestos
BH1 0.05-0.15m	1	soil	30-Jul		glass jar	1	x	x	x	x	
BH1 0.2m	2	soil	30-Jul		glass jar	1					
BH1 0.3-0.4m	3	soil	30-Jul		glass jar	1					
BH2 0.05-0.15m	4	soil	30-Jul		glass jar	1	x	x	x	x	
BH2 0.35-0.45m	5	soil	30-Jul		glass jar	1					
BH3 0.05-0.15m	6	soil	30-Jul		glass jar	1	x	x	x	x	
BH3 0.35-0.45m	7	soil	30-Jul		glass jar	1					
BH4 0.05-0.15m	8	soil	30-Jul		glass jar	1	x	x	x	x	
BH4 0.3-0.35m	9	soil	30-Jul		glass jar	1					
BH5 0.05-0.15m	10	soil	30-Jul		glass jar	1	x	x	x	x	
BH5 0.4-0.45m	11	soil	30-Jul		glass jar	1					
BH6 0.05-0.15m	12	soil	30-Jul		glass jar	1	x	x	x	x	
BH6 0.25-0.4m	13	soil	30-Jul		glass jar	1					
BH7 0.05-0.1m	14	soil	30-Jul		glass jar	1	x	x	x	x	
BH7 0.3-0.35m	15	soil	30-Jul		glass jar	1					
BH8 0.1-0.2m	16	soil	30-Jul		glass jar	1					
BH8 0.35-0.45m	17	soil	30-Jul		glass jar	1					
D1	18	soil	30-Jul		glass jar	1	x	x	x	x	

NOTES

Subcon / Forward Lab / Split WO
Lab / Analysis: ALS Newcastle
Organised By / Date: (19) (25) Asbestos
Relinquished By / Date:
Connote / Courier:
WO No: ES1924157
Attached By PO / Internal Sheet:

Please place other samples on hold

RELINQUISHED BY:			
NAME :	Eric Chen	DATE:	30/07/2019
OF :	SESL	TIME:	
NAME :			
OF :			

RECEIVED BY			
NAME :	Sangeeta	DATE:	31/07/2019
OF:	ALS	TIME:	1pm.
NAME :		DATE:	
OF:		TIME:	

SAMPLE CONDITION

Esky/Box sealed: Y / N
Sample Containers: Intact / Broken
Temperature: Cold / Rm Temp / Other ....

OF SHIPMENT
NT NOTE NO.
CO. NAME.

*Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinced Jar; S = Solvent Washed Acid Rinced Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric Acid Preserved Vial; BS = Sulfuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; H = Hydrochloric Acid Preserved Plastic Bottle; F = Formaldehyde Preserved; ST = Sterile Bottle; B = Plastic Bag; O = Other.

Environmental Division
Sydney
Work Order Reference
ES1924157

Telephone : + 61-2-8784 8555