



ENVIRONMENTAL INVESTIGATION SERVICES

REPORT

TO

PERUMAL PEDAVOLI PTY LTD

ON

PRELIMINARY ENVIRONMENTAL SITE ASSESSMENT (CONTAMINATION)

FOR

PROPOSED ALTERATIONS AND ADDITIONS TO EXISTING SCHOOL

AT

**PENSHURST PUBLIC SCHOOL, 510 FOREST ROAD,
PENSHURST, NSW**

14 FEBRUARY 2017

REF: E30104KPrptRev1



Postal Address: PO Box 976, North Ryde BC NSW 1670

Tel: 02 9888 5000 • Fax: 9888 5004

EIS is a division of Jeffery and Katauskas Pty Ltd • ABN 17 003 550 801

Document Distribution Record		
Report Reference	Distribution	Report Date
E30104KPrpt	Client via email	13 February 2017
E30104KPrptRev1	Client via email	14 February 2017

Report prepared by:



Brendan Page
Associate | Environmental Scientist

Report reviewed by:



Adrian Kingswell
Principal | Environmental Scientist

© Document Copyright of Environmental Investigation Services (EIS)

This Report (which includes all attachments and annexures) has been prepared by EIS for the Client, and is intended for the use only by that Client.

This Report has been prepared pursuant to a contract between EIS and the Client and is therefore subject to:

- a) EIS proposal in respect of the work covered by the Report;
- b) The limitations defined in the client's brief to EIS; and
- c) The terms of contract between EIS and the Client, including terms limiting the liability of EIS.

If the Client, or any person, provides a copy of this Report to any third party, such third party must not rely on this Report, except with the express written consent of EIS which, if given, will be deemed to be upon the same terms, conditions, restrictions and limitations as apply by virtue of (a), (b), and (c) above.

Any third party who seeks to rely on this Report without the express written consent of EIS does so entirely at their own risk and to the fullest extent permitted by law, EIS accepts no liability whatsoever, in respect of any loss or damage suffered by any such third party.

EXECUTIVE SUMMARY

Perumal Pedavoli Pty Ltd ('the client') commissioned Environmental Investigation Services (EIS)¹ to undertake a preliminary Environmental Site Assessment (ESA) for the proposed alterations and additions at Penshurst Public School, 510 Forest Road, Penshurst, NSW ('the site'). The site location is shown on Figure 1 and the assessment was confined to the site boundaries as shown on Figure 2.

EIS understand that the proposed development is in the early concept design phase and only limited details have been provided. From the initial brief provided by Woolacotts Consulting Engineers in December 2016, it was understood that the proposed development may include a building up to seven storeys in height with an associated asphaltic concrete car park. Subsequently, the client advised in February 2017 that all existing buildings may be demolished and replaced with buildings of one, two and three storeys, involving some excavation.

A geotechnical investigation was undertaken in conjunction with the ESA by JK Geotechnics². The results of the investigation are presented in a separate report (Ref: 30104Srpt³). This report should be read in conjunction with the JK report.

The primary aims of the assessment were to identify past or present potentially contaminating activities at the site, identify the potential for site contamination, make a preliminary assessment of the soil contamination conditions, and provide recommendations. The assessment objectives were to:

- Provide a preliminary appraisal of the past site use(s) based on a review of historical records;
- Assess the current site conditions and use via a site walkover inspection;
- Identify potential contamination sources/areas of environmental concern (AEC) and contaminants of potential concern (CoPC);
- Assess the soil contamination conditions via implementation of a preliminary sampling and analysis program;
- Prepare a conceptual site model (CSM);
- Assess the potential risks posed by contamination to the receptors identified in the CSM (Tier 1 assessment); and
- Assess whether further intrusive investigation is required and provide recommendations.

The scope of work included the following:

- Review of site information, including background and site history information from a Lotsearch Pty Ltd *Environmental Risk and Planning Report*;
- A walkover site inspection;
- Design and implementation of a sampling, analysis and quality plan (SAQP);
- Interpretation of the analytical results against the adopted site assessment criteria (SAC);
- Assessment of data quality; and
- Preparation of an ESA report presenting the results of the assessment, including a CSM and Tier 1 risk assessment.

At the time of the walkover inspection, the site was occupied by Penshurst Public School that comprised paved and grassed playground areas, and various buildings used as class rooms and offices. A number of fragments of fibre cement (suspected of containing asbestos) were observed at the ground surface during the inspection. All fragments were collected and analysed for the purpose of the ESA. There were no other visual or olfactory indicators of contamination observed during the inspection. Significant oil/fuel staining was not observed in the northern car park area.

Potential sources of contamination/AEC outlined in the CSM include fill material, use of pesticides and hazardous building materials.

¹ Environmental consulting division of Jeffery & Katauskas Pty Ltd (J&K)

² Geotechnical consulting division of J&K

³ Referred to as JK Report

The preliminary ESA included soil sampling from five geotechnical boreholes and four environmental test pits. The boreholes typically encountered fill over residual silty clay soil and shale bedrock. Fill was encountered at all sampling locations and was deeper in the south-eastern site area. Fill at several locations included trace quantities of building/demolition waste, and asbestos containing material (ACM) was identified in fill in TP104. No other visual or olfactory indicators of contamination were observed during drilling/test pitting.

A selection of fill samples were analysed for the CoPC identified in the CSM. Samples of fibre cement collected from the ground surface during the site inspection, and from the soil in TP104, were also analysed for asbestos. The fill was found to contain ACM in TP104 and elevated carcinogenic PAHs above the health-based SAC in BH3 and TP103. Total recoverable hydrocarbons (TRH) (F3), zinc and benzo(a)pyrene were also encountered in fill above the ecological SAC at a number of locations. Reference should be made to Section 10.2 of the report for further discussion regarding the potential risks associated with these contaminants.

Based on the scope of work undertaken for the ESA, EIS recommend the following:

- As an interim measure, the site should be inspected and all visible fragments of fibre cement at the ground surface should be removed by a licensed contractor (Class B) and disposed of to a licensed landfill facility. Following the removal, an asbestos clearance certificate should be provided by a licensed asbestos assessor or occupational hygienist;
- A detailed investigation (Stage 2), including asbestos quantification assessment, should be undertaken by a qualified environmental consultant⁴ to characterise the site contamination conditions. The potential for pesticides to have been applied beneath the buildings would need to be considered further for any buildings that are demolished for the proposed development;
- A waste classification should be undertaken for any soil to be excavated and disposed off-site as part of the development works;
- A remediation action plan (RAP) should be prepared (following the Stage 2 investigation) to document the strategy required to reduce the potential risks associated with the site contamination to an acceptable level, and to render the site suitable for the proposed development and on-going use as a primary school; and
- A hazardous building materials assessment should be completed (if not already available) for any parts of the buildings to be demolished. All buildings should be demolished appropriately and clearance certificates should be provided on completion.

The conclusions and recommendations should be read in conjunction with the limitations presented in the body of the report.

⁴ It would be prudent to utilise the services of a consultancy that is a current member of the Australian Contaminated Land Consultants Association (ACLCA), or an individual consultant that is an accredited practitioner under a recognised contaminated land accreditation scheme

TABLE OF CONTENTS

1	INTRODUCTION	1
1.1	Proposed Development Details	1
1.2	Aim and Objectives	1
1.3	Scope of Work	2
2	SITE INFORMATION	3
2.1	Site Identification	3
2.2	Site Location and Regional Setting	3
2.3	Topography	3
2.4	Site Inspection	3
2.5	Surrounding Land Use	5
2.6	Underground Services	6
3	GEOLOGY AND HYDROGEOLOGY	7
3.1	Regional Geology	7
3.2	Acid Sulfate Soil Risk and Planning	7
3.3	Hydrogeology	7
3.4	Receiving Water Bodies	7
4	SITE HISTORY INFORMATION	8
4.1	Review of Historical Aerial Photographs	8
4.2	NSW EPA Records	9
4.3	Historical Business Directory and Additional Lotsearch Information	9
4.4	Summary of Site History Information	10
4.5	Integrity of Site History Information	10
5	CONCEPTUAL SITE MODEL	11
5.1	Potential Contamination Sources/AEC and CoPC	11
5.2	Mechanism for Contamination, Affected Media, Receptors and Exposure Pathways	12
5.3	Assessment of Data Gaps	13
6	SAMPLING, ANALYSIS AND QUALITY PLAN	14
6.1	Data Quality Objectives (DQO)	14
6.2	Soil Sampling Plan and Methodology	16
6.3	Analytical Schedule	17
7	SITE ASSESSMENT CRITERIA (SAC)	19
8	INVESTIGATION RESULTS	20
8.1	Subsurface Conditions	20
8.2	Field Screening	21
8.3	Soil Laboratory Results	21
9	DATA QUALITY ASSESSMENT	23
10	DISCUSSION	25
10.1	Review of CSM	25
10.2	Decision Statements	25
11	CONCLUSION AND RECOMMENDATIONS	27
11.1	Regulatory Requirement	28
12	LIMITATIONS	29

List of In-Text Tables

Important Information About The Site Assessment Report

REPORT FIGURES:

Figure 1: Site Location Plan

Figure 2: Sample Location Plan

Figure 3: Site Contamination Data

LABORATORY SUMMARY TABLES:

Table A: Soil Laboratory Results Compared to HILs

Table B: Soil Laboratory Results Compared to HSLs

TABLE OF CONTENTS

Table C: Soil Laboratory Results Compared to EILs and ESLs

Table D: Soil Intra-Laboratory Duplicate Results & RPD Calculations

APPENDICES:

Appendix A: Lotsearch Report

Appendix B: Borehole / Test pit Logs

Appendix C: Laboratory Reports & COC Documents

Appendix D: Report Explanatory Notes

ABBREVIATIONS

Ambient Background Concentrations	ABC
Added Contaminant Limits	ACL
Asphaltic Concrete	AC
Asbestos Containing Material	ACM
Area of Environmental Concern	AEC
Australian Height Datum	AHD
Acid Sulfate Soil	ASS
Above-Ground Storage Tank	AST
Benzene, Toluene, Ethylbenzene, Xylene	BTEX
Cation Exchange Capacity	CEC
Contaminated Land Management	CLM
Contaminant(s) of Potential Concern	CoPC
Chain of Custody	COC
Conceptual Site Model	CSM
Data Quality Indicator	DQI
Data Quality Objective	DQO
Ecological Investigation Levels	EILs
Ecological Screening Level	ESL
Environmental Protection Agency	EPA
Environmental Investigation Services	EIS
Environmental Site Assessment	ESA
Ecological Screening Level	ESL
Health Investigation Level	HILs
Health Screening Level	HSLs
International Organisation of Standardisation	ISO
Lab Control Spike	LCS
Local Government Authority	LGA
Map Grid of Australia	MGA
National Association of Testing Authorities	NATA
National Environmental Protection Measure	NEPM
Organochlorine Pesticides	OCP
Organophosphate Pesticides	OPP
Polycyclic Aromatic Hydrocarbons	PAH
Photo-ionisation Detector	PID
Practical Quantitation Limit	PQL
Quality Assurance	QA
Quality Control	QC
Remediation Action Plan	RAP
Relative Percentage Difference	RPD
Site Assessment Criteria	SAC
Sampling, Analysis and Quality Plan	SAQP
Standard Penetration Test	SPT
Standard Sampling Procedure	SSP
Standing Water Level	SWL
Total Recoverable Hydrocarbons	TRH
Trip Spike	TS

ABBREVIATIONS

Upper Confidence Limit

United States Environmental Protection Agency

Underground Storage Tank

Virgin Excavated Natural Material

Volatile Organic Compounds

Work Health and Safety

UCL

USEPA

UST

VENM

VOC

WHS

1 INTRODUCTION

Perumal Pedavoli Pty Ltd ('the client') commissioned Environmental Investigation Services (EIS)⁵ to undertake a preliminary Environmental Site Assessment (ESA) for the proposed alterations and additions at Penshurst Public School, 510 Forest Road, Penshurst, NSW ('the site'). The site location is shown on Figure 1 and the assessment was confined to the site boundaries as shown on Figure 2.

A geotechnical investigation was undertaken in conjunction with the ESA by JK Geotechnics⁶. The results of the investigation are presented in a separate report (Ref: 30104Srpt⁷). This report should be read in conjunction with the JK report.

1.1 Proposed Development Details

EIS understand that the proposed development is in the early concept design phase and only limited details have been provided. From the initial brief provided by Woolacotts Consulting Engineers in December 2016, it was understood that the proposed development may include a building up to seven storeys in height with an associated asphaltic concrete car park. Subsequently, the client advised in February 2017 that all existing buildings may be demolished and replaced with buildings of one, two and three storeys, involving some excavation.

1.2 Aim and Objectives

The primary aims of the assessment were to identify past or present potentially contaminating activities at the site, identify the potential for site contamination, make a preliminary assessment of the soil contamination conditions, and provide recommendations. The assessment objectives were to:

- Provide a preliminary appraisal of the past site use(s) based on a review of historical records;
- Assess the current site conditions and use via a site walkover inspection;
- Identify potential contamination sources/areas of environmental concern (AEC) and contaminants of potential concern (CoPC);
- Assess the soil contamination conditions via implementation of a preliminary sampling and analysis program;
- Prepare a conceptual site model (CSM);
- Assess the potential risks posed by contamination to the receptors identified in the CSM (Tier 1 assessment); and
- Assess whether further intrusive investigation is required and provide recommendations.

⁵ Environmental consulting division of Jeffery & Katauskas Pty Ltd (J&K)

⁶ Geotechnical consulting division of J&K

⁷ Referred to as JK Report

1.3 Scope of Work

The assessment was undertaken generally in accordance with an EIS proposal (Ref: EP43974KP) of 14 December 2017 and written acceptance from the client of 8 January 2017. The scope of work included the following:

- Review of site information, including background and site history information from a Lotsearch Pty Ltd *Environmental Risk and Planning Report*;
- A walkover site inspection;
- Design and implementation of a sampling, analysis and quality plan (SAQP);
- Interpretation of the analytical results against the adopted site assessment criteria (SAC);
- Assessment of data quality; and
- Preparation of an ESA report presenting the results of the assessment, including a CSM and Tier 1 risk assessment.

The report was prepared with reference to regulations/guidelines outlined in the table below. Individual guidelines are also referenced within the text of the report.

Table 1-1: Guidelines

Guidelines/Regulations/Documents
Contaminated Land Management Act (1997) ⁸
State Environmental Planning Policy No.55 – Remediation of Land (1998) ⁹
Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land (1998) ¹⁰
Guidelines for Consultants Reporting on Contaminated Sites (2011) ¹¹
Guidelines for the NSW Site Auditor Scheme, 2nd Edition (2006) ¹²
National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) ¹³

⁸ NSW Government Legislation, (1997). *Contaminated Land Management Act 1997*. (referred to as CLM Act 1997)

⁹ NSW Government, (1998). *State Environmental Planning Policy No. 55 – Remediation of Land*. (referred to as SEPP55)

¹⁰ Department of Urban Affairs and Planning, and Environment Protection Authority, (1998). *Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land*. (SEPP55 Planning Guidelines)

¹¹ NSW Office of Environment and Heritage (OEH), (2011). *Guidelines for Consultants Reporting on Contaminated Sites*. (referred to as Reporting Guidelines 2011)

¹² NSW DEC, (2006). *Guidelines for the NSW Site Auditor Scheme, 2nd ed.* (referred to as Site Auditor Guidelines 2006)

¹³ National Environment Protection Council, (2013). *National Environmental Protection (Assessment of Site Contamination) Amendment Measure 1999* (as amended 2013). (referred to as NEPM 2013)

2 SITE INFORMATION

2.1 Site Identification

Table 2-1: Site Identification

Site Address:	510 Forest Road, Penshurst, NSW
Lot & Deposited Plan:	Lots 3-15 (inclusive) in DP8173
Current Land Use:	Primary School
Proposed Land Use:	Primary School
Local Government Authority (LGA):	Georges River Council (previously Hurstville Council)
Current Zoning:	SP2 (Infrastructure) – church and educational establishment
Site Area (m ²) (approx.):	10,050
RL (AHD in m) (approx.):	48-52
Geographical Location (decimal degrees) (approx.):	Latitude: -33.962648 Longitude: 151.087535

2.2 Site Location and Regional Setting

The site is located in a predominantly residential area of Penshurst and is bound by Forest Road and Arcadia Street to the south and east respectively. Penshurst Park and Hurstville Aquatic Leisure Centre are located approximately 200m to the east of the site.

2.3 Topography

The regional topography is undulating. The site lies on a gently sloping hillside that falls towards the east and south-east at approximately 3-4° in the vicinity of the site. The site levels appeared to have been altered to accommodate the existing buildings and pavements, however the general fall of the site was towards the east, consistent with the regional topography.

2.4 Site Inspection

A walkover inspection of the site was undertaken by EIS on 23 January 2017. The inspection was limited to accessible areas of the site and immediate surrounds. An internal inspection of the buildings was not undertaken (except for the maintenance shed).

At the time of the inspection, the site was occupied by Penshurst Public School that comprised paved and grassed playground areas, and various buildings used as class rooms and offices. Further summary of the findings are outlined in the following subsections:

2.4.1 Buildings, Structures and Roads

The site was occupied by two large buildings (one and two storey) along the Arcadia Street frontage (referred to as Building A and Building E) and another relatively large rectangular building that extended along the western boundary in the north-western section of the site (referred to as Building G). A number of smaller buildings, including one demountable building, were located in the south-western section of the site. A demountable building was also located in the vicinity of the northern boundary.

The larger buildings appeared to be constructed of brick and concrete. Fibre cement materials (potentially containing asbestos) may be present in parts of the larger buildings and were also observed on the façade of one of the smaller buildings.

There were no roads within the site, however the central and north-western site areas (outside the building footprints) were predominantly paved with concrete or asphaltic concrete. The northern paved area was utilised as a car park. Pavements were generally observed to be in good condition, with only minor cracks observed in some areas.

2.4.2 Boundary Conditions, Soil Stability and Erosion

The site was fenced along the boundaries. A brick retaining wall extended along the Arcadia Street frontage and appeared to retain the site between approximately 0.2-0.8m above the adjacent footpath/grassed verge.

Considering the site and regional topography, it was considered likely that the adjacent property to the west was retained above the site levels along the western boundary.

There were no obvious signs of soil instability or erosion observed during the inspection.

2.4.3 Visible or Olfactory Indicators of Contamination

A number of fragments of fibre cement (suspected of containing asbestos) were observed at the ground surface during the inspection. All fragments (identified as HLF1 to HLF4 inclusive) were collected and analysed for the purpose of the ESA. The fragment locations are shown on the attached Figures 2 and 3.

There were no other visual or olfactory indicators of contamination observed during the inspection. Significant oil/fuel staining was not observed in the northern car park area.

2.4.4 Presence of Drums/Chemicals, Waste and Fill Material

Small quantities of paint and weed killer were observed in the maintenance store. The quantities and storage practices were considered unlikely to pose a contamination risk to the site. Other drums, chemicals and/or undergrounds/above-ground fuel storage tanks were not observed.

Waste materials were not observed, however it was assumed that only small quantities of domestic and dry waste would be generated at the school and this would be disposed off-site regularly.

Obvious signs of fill were not observed at the ground surface, however EIS considered that fill was likely to have been imported historically in order to create the site levels required for the development of the school.

2.4.5 Drainage and Services

Stormwater drains were observed throughout the site. It was assumed these would connect to the local stormwater infrastructure along Arcadia Street and/or Forest Road. Other major services were not identified during the inspection.

2.4.6 Sensitive Environments

Sensitive environments such as wetlands, ponds, creeks or extensive areas of natural vegetation were not identified on site or in the immediate surrounds.

2.4.7 Landscaped Areas and Visible Signs of Plant Stress

The south-eastern section of the site included a grassed playground. Grass cover was relatively good with the exception of some isolated bare patches where soil was exposed at the ground surface. Landscaped garden beds and medium to large-size trees were established around the remainder of the school, predominantly adjacent to the boundaries. All vegetation appeared to be in good condition, with no obvious signs of dieback or plant stress observed.

A small vegetable patch was located in the south-eastern corner of the site.

2.5 Surrounding Land Use

During the site inspection, EIS observed the following land uses in the immediate surrounds:

- North – Residential dwellings;
- South – Mechanics (auto repairs) and residential apartments;
- East – Arcadia Street and residential apartments, with some commercial/light industrial activities along Forest Road (including mechanics and signage manufacturers); and
- West – Educational establishment (St Declan's Catholic Primary School).

EIS did not observe any land uses in the immediate surrounds that were identified as potential contamination sources for the site. The mechanics are considered to be located down/cross-gradient from the site and are unlikely to pose an off-site source of contamination.

2.6 Underground Services

The 'Dial Before You Dig' (DBYD) plans were reviewed for the assessment in order to establish whether any major underground services exist at the site or in the immediate vicinity could act as a preferential pathway for contamination migration.

The Hurstville Council plan indicated that stormwater infrastructure is located in the south-eastern corner of the site and extends along part of the eastern boundary and into the regional infrastructure beneath Arcadia Street. The Sydney Water Plan indicated that a sewer extends across the southern section of the site in a west to east direction. This infrastructure and the associated sub-surface trenches have the potential to act as preferential pathways for contaminant migration.

3 GEOLOGY AND HYDROGEOLOGY

3.1 Regional Geology

Regional geological information presented in the Lotsearch report (attached in the appendices) indicated that the site is underlain by Ashfield Shale of the Wianamatta Group, which typically consists of black to dark grey shale and laminite.

3.2 Acid Sulfate Soil Risk and Planning

The site is not located in an acid sulfate soil (ASS) risk area.

3.3 Hydrogeology

Hydrogeological information presented in the Lotsearch report (attached in the appendices) indicated that the regional aquifer on-site and in the areas immediately surrounding the site includes porous, extensive aquifers of low to moderate productivity. There were a total of 12 registered bores within the report buffer of 2,000m. In summary:

- The nearest registered bore was located approximately 1,400m from the site. This was utilised for monitoring purposes;
- The bores were registered for either monitoring or domestic purposes.

Considering the site geology and the proximity of the registered bores, the proposed development activities at the site (or any site-specific contamination issues) would not be expected to impact adjacent groundwater users. The potential for viable groundwater abstraction and use of groundwater at the site or in the immediate vicinity is considered to be low.

3.4 Receiving Water Bodies

Surface water bodies were not identified in the immediate vicinity of the site. The closest, down-gradient surface water body is Renown Creek located approximately 1km to the south of the site. This creek flows into the Georges River.

4 **SITE HISTORY INFORMATION**

4.1 **Review of Historical Aerial Photographs**

Historical aerial photographs were included in the Lotsearch report (attached in the appendices). EIS has reviewed the photographs and summarised relevant information in the following table:

Table 4-1: Summary of Historical Aerial Photographs

Year	Details
1943	The site was occupied by one large building positioned along the Arcadia Street frontage, and several smaller buildings in the north and south-western areas. The large building appeared similar in size and shape to the existing (2017) school Building A. Considering the site layout, it was suspected that the site was most likely used as a school at this time. Three zig-zag air raid trenches were located in the south-eastern site area, and four were located in the northern area. The land surrounding the site appeared to include residential and commercial properties (possibly include a school up-gradient and immediately to the west of the site).
1956	The zig-zag trenches had been infilled, and the south-eastern and northern parts of the school appeared to be grassed or surfaced with exposed soil. There was a general increase in development in the immediate surrounds (land uses appeared consistent with previous photograph).
1961	The site generally appeared to be similar to the previous photograph. Additional residential-type buildings were visible to the east of the site
1965	The central and northern site areas (beyond the building footprints) appeared to be paved. The remainder of the site and the immediate surrounds generally appeared to be similar to the previous photograph.
1970	The site generally appeared to be similar to the previous photograph. There was an increase in residential apartment developments to the east of the site.
1982	The site and the immediate surrounds generally appeared to be similar to the previous photograph.
1991	Additions had been made to the south-western side of Building A. The remainder of the site and the immediate surrounds generally appeared to be similar to the previous photograph.
2005	A number of additional buildings were visible, including a relatively large building in the northern site area (Building E) and several smaller (possibly demountable) buildings in the northern and south-eastern area. The surrounds generally appeared to be similar to the previous photograph.

Year	Details
2009	The site and the immediate surrounds generally appeared to be similar to the previous photograph.

4.2 NSW EPA Records

The Lotsearch report (attached in the appendices) included information from the NSW EPA databases for the following:

- Records maintained in relation to contaminated land under Section 58 of the CLM Act 1997;
- Records of notified sites under Section 60 of the CLM Act 1997 (Duty to Report Contamination); and
- Licensed activities under the Protection of the Environment Operations Act (1997¹⁴).

The search included the site area and surrounding areas in the report buffer of 1,000m. The search indicated the following:

- There were no records for the site or any properties in the report buffer under Section 58 of the CLM Act 1997;
- The site has not been notified as being contaminated under Section 60 of the CLM Act 1997. There were two contaminated sites in the report buffer that have been notified to the EPA. These included service stations located approximately 250m to the north-east and 670m to the west of the site. These are both listed as “under assessment”; and
- There were no records for licenced activities (current or former) at the site or in the immediate vicinity under the POEO Act 1997.

Considering the topography and the distance of the notified contaminated service stations referenced above, neither of these properties are likely to pose a contamination risk to the site.

4.3 Historical Business Directory and Additional Lotsearch Information

Historical business records for the site and surrounding areas in the report buffer were included in the Lotsearch report (attached in the appendices). The records indicated the following:

- Historical business directories dating back to 1950 identified a number of potentially contaminating land uses to the east of the site. These included mechanics, service stations and light industrial uses such as metal fabrication and other manufacturing; and
- The above mentioned land uses and dry cleaners were identified in the directories in the areas to the south and east of the site.

¹⁴ NSW Government Legislation, (1997). *Protection of the Environment Operations Act 1997*. (referred to as POEO Act 1997)

EIS are of the opinion that the historical businesses in the report buffer are unlikely to represent potential off-site sources of site contamination as they are located down or cross-gradient from the site.

EIS have reviewed additional information contained within the Lotsearch report and note the following:

- Penshurst Public School is listed as a local heritage item within the Hurstville Local Environmental Plan (2012);
- There were no state heritage items at the site or in the immediate surrounds; and
- There were no significant ecological constraints at the site or in the immediate surrounds.

4.4 Summary of Site History Information

The site appears to have been used as an educational establishment since the early 1900s. Zig-zag air raid shelters were evident at the site in 1943 and these were subsequently infilled prior to 1956. The site does not appear to have been used for any potentially contaminating activities, including those activities listed in Table 1 of the SEPP55 Planning Guidelines.

4.5 Integrity of Site History Information

The majority of the site history information has been obtained from government organisations as outlined and the relevant sections of this report. The veracity of the information from these sources is considered to be relatively high. A certain degree of information loss can be expected given the lack of specific land use details over time. EIS has relied upon the Lotsearch report and has not independently verified any information contained within. However, it is noted that the Lotsearch report is generated based on databases maintained by various government agencies and is expected to be reliable.

5 **CONCEPTUAL SITE MODEL**

NEPM (2013) defines a CSM as a representation of site related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM for the site is presented in the following sub-sections and is based on the site information (including the site inspection information) and the review of site history information. Reference should also be made to the figures attached in the appendices.

5.1 **Potential Contamination Sources/AEC and CoPC**

The potential contamination sources/AEC and CoPC are presented in the following table:

Table 5-1: Potential Contamination Sources/AEC and Contaminants of Potential Concern

Source / AEC	CoPC
<u>Fill material</u> - The site appears to have been historically filled to achieve the existing levels. The filling may have been undertaken over various phases, including filling prior to the initial development of the school, and subsequent filling of the zig-zag air raid trenches. The fill may have been imported from various sources and could be contaminated.	Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), petroleum hydrocarbons (referred to as total recoverable hydrocarbons – TRHs), benzene, toluene, ethylbenzene and xylene (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), polychlorinated biphenyls (PCBs) and asbestos.
<u>Hazardous Building Material</u> – Hazardous building materials may be present as a result of former building and demolition activities. These materials may also be present in the existing buildings/ structures on site. Fragments of fibre cement (potentially containing asbestos) were observed and collected from the ground surface at several locations during the EIS inspection.	Asbestos, lead and PCBs
<u>Use of pesticides</u> – Pesticides may have been used beneath the buildings and/or around the site.	Heavy metals, OCPs and OPPs

5.2 Mechanism for Contamination, Affected Media, Receptors and Exposure Pathways

The mechanisms for contamination, affected media, receptors and exposure pathways relevant to the potential contamination sources/AEC are outlined in the following CSM table:

Table 5-2: CSM

Potential mechanism for contamination	Potential mechanisms for contamination include: • Fill material – importation of impacted material, ‘top-down’ impacts (e.g. leaching from surficial material), or sub-surface release (e.g. impacts from buried material); • Use of pesticides – ‘top-down’ and spills (e.g. during normal use, application and/or improper storage); and • Hazardous building materials – ‘top-down’ (e.g. demolition resulting in surficial impacts in unpaved areas).
Affected media	Soil/soil vapour have been identified as potentially affected media. Groundwater is unlikely to be affected, however this would warrant further consideration in the event that mobile contaminants were identified in soil.
Receptor identification	Human receptors include site users (primary school children in K-6, teachers and support staff), construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users Ecological receptors include terrestrial organisms and plants within unpaved areas.
Potential Exposure pathways	Potential exposure pathways relevant to the human receptors include ingestion, dermal absorption and inhalation of dust (all contaminants) and vapours (volatile TRH, naphthalene and BTEX). The potential for exposure would typically be associated with the construction and excavation works, and use of unpaved areas (i.e. the gardens) and basements/buildings (if relevant, i.e. vapour inhalation). Potential exposure pathways for ecological receptors include primary contact and ingestion.
Presence of preferential pathways for contaminant movement	The sewer and stormwater infrastructure in the southern site area and the associated trench/trench backfill is a potential preferential pathway for contaminant migration. This could occur via groundwater/seepage if present, or via soil/vapour migration through the sewer and/or trench backfill.

5.3 Assessment of Data Gaps

EIS has undertaken a preliminary data gap analysis based on the findings of assessment. The data gaps and our comments are outlined in the following table:

Table 5-3: Data Gap Assessment

Data Gap	EIS Comments
The historical assessment excluded a variety of information including historical land title records, council records and SafeWork NSW records	The aerial photographs suggest that the site has most likely been used as an educational establishment from the early/mid 1900s. Assessment of additional historical information is considered unlikely to alter the CSM. However, it would be prudent to include this as part of any future assessment/investigation works to reduce any uncertainty associated with the historical land use(s).
Groundwater Sampling	Groundwater sampling and analysis was outside the scope of this assessment. The potential for groundwater contamination from on-site sources, or from adjacent off-site sources is considered to be unlikely. The requirement for groundwater assessment will be considered further based on the soil analysis results.

6 **SAMPLING, ANALYSIS AND QUALITY PLAN**

6.1 **Data Quality Objectives (DQO)**

The NEPM 2013 defines the DQO process as a seven step iterative planning tool used to define the type, quantity and quality of data needed to inform decisions relating to the environmental condition of the site. The DQO process is detailed in the Site Auditor Guidelines 2006 and the USEPA documents Data Quality Objectives Processes for Hazardous Waste Site Investigations (2000) and Guidance on Systematic Planning Using the Data Quality Objectives Process (2006). These seven steps are applicable to this assessment as summarised in the table below:

Table 6-1: DQOs – Seven Steps

Step	Input
State the Problem	The CSM has identified potential sources of contamination/AEC at the site which may pose a risk to the receptors.
Identify the Decisions/ Goal of the Study	The data collection is project specific and has been designed based on the following information: • Review of site information including site history; • AEC, CoPC, receptors, pathways and medium identified in the CSM; • Development of SAC for each media; and • The use of decision statements outlined below: 1. Are any of the results above the SAC? 2. Has the extent of contamination been identified? 3. Do any of the contaminants pose a risk to the site receptors? 4. Is further investigation required? The data will be assessed as above or below the SAC. Statistical analysis will not be undertaken due to the limited dataset and the preliminary nature of the sampling plan.
Identify Information Inputs	The following information will be collected: • Soil samples based on subsurface conditions; • Fibre cement fragments collected during the walkover inspection; • Surface water samples from receiving water bodies identified at the site; • The SAC will be designed based on the criteria outlined in NEPM 2013. Other criteria may be used as required and detailed in this report; • The samples will be analysed in accordance with the analytical methods outlined in NEPM 2013; • Field screening information (i.e. photo-ionisation detector (PID) data, presence of hydrocarbons etc.) will be taken into consideration in selecting the analytical schedule; and • Any additional information that may arise during the field work will also be used as data inputs.

Step	Input
Define the Study Boundary	The sampling will be confined to the site boundaries as shown in Figure 2.
Develop the analytical approach (or decision rule)	The following acceptable limits will be adopted for the data quality assessment: • The following acceptance criteria will be used to assess the RPD results: ➤ results > 10 times the practical quantitation limit (PQL), RPDs < 50% are acceptable; ➤ results between 5 and 10 times PQL, RPDs < 75% are acceptable; ➤ results < 5 times PQL, RPDs < 100% are acceptable; and ➤ An explanation is provided if RPD results are outside the acceptance criteria. • The following acceptance criteria will be used to assess the primary laboratory QA/QC results. Non-compliance to be documented: ➤ <u>RPDs</u>: - Results that are < 5 times the PQL, any RPD is acceptable; and - Results > 5 times the PQL, RPDs between 0-50% are acceptable; ➤ <u>LCS recovery and matrix spikes</u>: - 70-130% recovery acceptable for metals and inorganics; - 60-140% recovery acceptable for organics; and - 10-140% recovery acceptable for volatile organic compounds (VOCs); ➤ <u>Surrogate spike recovery</u>: - 60-140% recovery acceptable for general organics; and - 10-140% recovery acceptable for VOCs; ➤ <u>Blanks</u>: All less than PQL.
Specify the performance or acceptance criteria	NEPM 2013 defines decision errors as '<i>incorrect decisions caused by using data which is not representative of site conditions</i>'. This can arise from errors during sampling or analytical testing. A combination of these errors is referred to as '<i>total study error</i>'. The study error can be managed through the correct choice of sample design and measurement. Decision errors can be controlled through the use of hypothesis testing. The test can be used to show either that the baseline condition is false or that there is insufficient evidence to indicate that the baseline condition is false. The null hypothesis is an assumption that is assumed to be true in the absence of contrary evidence. In this case, for example, the CoPC identified in the CSM are considered to pose a risk to receptors unless proven not to. The null hypothesis has been adopted for this assessment.
Optimise the design for obtaining data	The most resource-effective design will be used in an optimum manner to achieve the assessment objectives.

6.2 Soil Sampling Plan and Methodology

The soil sampling plan and methodology adopted for this assessment is outlined in the table below:

Table 6-2: Soil Sampling Plan and Methodology

Aspect	Input
Sampling Density	The NSW EPA Contaminated Sites Sampling Design Guidelines (1995¹⁵) recommend a sampling density for an environmental assessment based on the size of the investigation area. The guideline provides a minimum number of sampling points required to identify a contamination hotspot to a 95% confidence level, based on a systematic sampling pattern. The guidelines recommend sampling from a minimum of 25 evenly spaced sampling points for sites up to 15,000m². Soil samples for this investigation were obtained from nine sampling points as shown on the attached Figure 2. The sampling density did not meet the minimum sampling density recommended by the EPA.
Sampling Plan	The sampling locations were placed on a judgemental sampling pattern to provide coverage across the site. This was based on access limitation and the presence/absence of pavements where samples were collected using hand equipment. Fibre cement samples were collected from the ground surface at four locations (see Figure 2).
Exclusion Areas (Data Gaps)	Sampling was not undertaken beneath existing buildings.
Sampling Equipment	Soil samples were obtained on 23 and 24 January 2017 in accordance with the standard sampling procedure (SSP) attached in the appendices. Sampling locations were set out using a tape measure and were cleared for underground services by an external contractor prior to sampling as outlined in the SSP. The sample locations were drilled/excavated using the following equipment as shown on the borehole and test pit logs attached in the appendices: • BH1 to BH5 inclusive - Hydraulically operated drill rig equipped with spiral flight augers. Soil samples were obtained from a Standard Penetration Test (SPT) sampler or directly from the auger when conditions did not allow use of the SPT sampler; • TP101 to TP104 inclusive - Hand equipment (shovel).
Sampling Collection and Field QA/QC	Soil samples were collected from the fill and natural profiles based on field observations. The sampling depths are shown on the logs attached in the appendices. Samples were generally obtained when there was a distinct change in lithology or based on the observations made during the investigation. During sampling, soil at selected depths was split into primary and duplicate samples for field QA/QC analysis.

¹⁵ NSW EPA, (1995), *Contaminated Sites Sampling Design Guidelines*. (referred to as EPA Sampling Design Guidelines 1995)

Aspect	Input
	Samples were placed in glass jars with plastic caps and teflon seals with minimal headspace. Samples for asbestos analysis were placed in zip-lock plastic bags. Sampling personnel used disposable nitrile gloves during sampling activities. The samples were labelled with the job number, sampling location, sampling depth and date in accordance with the SSP.
Field PID Screening for VOCs	A portable PID was used to screen the samples for the presence of VOCs and to assist with selection of samples for hydrocarbon analysis. The sensitivity of the PID is dependent on the organic compound and varies for different mixtures of hydrocarbons. Some compounds give relatively high readings and some can be undetectable even though present in identical concentrations. The portable PID is best used semi-quantitatively to compare samples contaminated by the same hydrocarbon source. The PID is calibrated before use by measurement of an isobutylene standard gas. All the PID measurements are quoted as parts per million (ppm) isobutylene equivalents. PID calibration records are maintained on file by EIS. PID screening for VOCs was undertaken on soil samples using the soil sample headspace method. VOC data was obtained from partly filled zip-lock plastic bags following equilibration of the headspace gases.
Decontamination and Sample Preservation	The decontamination procedure adopted during sampling is outlined in the SSP. Where applicable, the sampling equipment was decontaminated using a scrubbing brush and potable water and Decon 90 solution (phosphate free detergent) followed by rinsing with potable water. Soil samples were preserved by immediate storage in an insulated sample container with ice in accordance with the SSP. On completion of the fieldwork, the samples were delivered in the insulated sample container to a NATA registered laboratory for analysis under standard chain of custody (COC) procedures.

6.3 Analytical Schedule

The analytical schedule is outlined in the following table:

Table 6-3: Analytical Schedule

CoPC	Fill Samples	Fibre Cement Fragments
Heavy Metals	11	0
TRH/BTEX	11	0
PAHs	12	0
OCPs/OPPs	6	0

CoPC	Fill Samples	Fibre Cement Fragments
PCBs	6	0
Asbestos	11	5

6.3.1 Laboratory Analysis

The samples were analysed by the NATA Accredited laboratory using the analytical methods detailed in Schedule B(3) of NEPM 2013. Reference should be made to the laboratory reports attached in the appendices for further details.

Table 6-4: Laboratory Details

Samples	Laboratory	Report Reference
All primary samples and field QA/QC samples including (intra-laboratory duplicates)	EnviroLab Services Pty Ltd NSW, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	160953 and 160953-A

7 **SITE ASSESSMENT CRITERIA (SAC)**

The SAC adopted for the assessment is outlined in the table below. The SAC has been derived from the NEPM 2013 and other guidelines as applicable. The guideline values for individual contaminants are presented in the attached report tables.

Table 7-1: SAC Adopted for this Investigation

Guideline	Applicability
Health Investigation Levels (HILs)	The HIL-A criteria for 'residential with accessible soil' (which are applicable for primary schools) have been adopted for this assessment.
Health Screening Levels (HSLs)	The HSL-A criteria for 'residential with accessible soil' (which are applicable for primary schools) have been adopted for this assessment.
Ecological Assessment Criteria	The Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) for the 'urban residential and public open space' (URPOS) exposure setting have been adopted. Soil pH, cation exchange capacity (CEC); and clay content were not analysed by EIS. On this basis, the ecological criteria have been derived assuming the 'worst case' scenario for the land use setting based on the Added Contaminant Limit (ACL) values presented in Schedule B1 of NEPM 2103. Published Ambient Background Concentrations (ABC) were also adopted based on high traffic (25th percentiles) areas for old suburbs of NSW published in Olszowy et. al. (1995¹⁶).
Management and Direct Contact Limits for TRH	These guidelines have only been used after considering the relevant HSLs and ESLs for adverse effects of TRH contamination where necessary.
Asbestos in Soil	The 'presence/absence' of asbestos in soil has been adopted. The asbestos HSLs presented in NEPM (2013) can only be applied if a detailed asbestos quantification assessment is undertaken.

¹⁶ Olszowy, H., Torr, P., and Imray, P., (1995). *Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4.* Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission.

8 INVESTIGATION RESULTS

8.1 Subsurface Conditions

A summary of the subsurface conditions encountered during the investigation is presented in the table below. Reference should be made to the borehole and testpit logs attached in the appendices for further details.

Table 8-1: Summary of Subsurface Conditions

Profile	Description (in m below ground level)
Pavement	Asphaltic Concrete (AC) pavement was encountered in BH1 and BH2. The AC was 0.05m thick at both locations.
Fill	Fill material was encountered beneath the AC in BH1 and BH2, and at the surface in the remaining boreholes and test pits. Fill encountered in the boreholes typically comprised gravelly sand, clayey sand, silty sand and silty clay with various inclusions of gravel (shale, ironstone and igneous). Traces of brick, tile and AC fragments were encountered in fill in BH1, and traces of AC fragments were also encountered in fill in BH2. The fill depths varied from 0.04m to 1.6m and was generally deeper in the south-east section of the site. The fill at the test pit locations typically included silty sand with inclusions of igneous gravel, concrete gravel and root fibres. Trace quantities of AC fragments were encountered in TP103, and traces of timber, glass and ash were encountered in TP104. One fragment of fibre cement (FCF1) was also encountered in fill in TP103. All test pits were terminated in fill at depths ranging from 0.2m to 0.5m. Odours or staining were not observed during sampling.
Natural Soil	Residual silty clay soil was encountered beneath the fill in all boreholes and extended to depths ranging from 1m to 3.5m. Odours or staining were not observed during sampling.
Bedrock	Shale bedrock was encountered beneath the residual soil and extended to the termination depth of each borehole (maximum of 12.76m in BH2). The bedrock was typically encountered at shallower depths in the northern and central site area. Odours or staining were not observed during sampling.
Groundwater	All boreholes were dry on completion of auger drilling. Standing water levels were recorded two hours after completion of drilling in BH3 and BH5 at depths of approximately 7.2m and 7.4m respectively (approximately RL 41-42m).

8.2 Field Screening

PID soil sample headspace readings are presented in attached report tables and the COC documents attached in the appendices. All results were 0ppm equivalent isobutylene which indicates a lack of PID detectable VOCs.

8.3 Soil Laboratory Results

The soil laboratory results are compared to the relevant SAC in the attached report tables. A summary of the results assessed against the SAC is presented below.

Table 8-2: Summary of Soil Laboratory Results

Analyte	Results Compared to SAC
Heavy Metals	<u>HILs:</u> All heavy metal results were below the HIL-A criteria. <u>EILs:</u> An elevated concentration of zinc (200mg/kg), above the EIL-URPOS criterion of 192mg/kg, was encountered in fill in TP104 (0-0.2m). All remaining heavy metal results were below the EIL-URPOS criteria.
TRH	<u>HSLs:</u> All TRH results were below the HSL-A criteria. <u>ESLs:</u> Elevated concentrations of TRH (F3 >C₁₆-C₃₄) (maximum of 510mg/kg), above the ESL-URPOS criterion of 300mg/kg, were encountered in fill in TP103 (0-0.2m) and TP104 (0-0.2). All remaining TRH results were below the EIL-URPOS criteria.
BTEX	<u>HSLs:</u> All BTEXN results were below the HSL-A criteria. <u>ESLs:</u> All BTEX results were below the ESL-URPOS criteria.
PAHs	<u>HILs:</u> All total PAH results were below the HIL-A criteria. Elevated concentrations of carcinogenic PAHs (reported as benzo(a)pyrene TEQ) (maximum of 6.2mg/kg), above the HIL-A criterion of 3mg/kg, were encountered in fill in BH3 (0.8-1.0m) and TP103 (0-0.2m). All remaining carcinogenic PAH results were below the HIL-A criterion. <u>HSLs:</u> All naphthalene results were below the HSL-A criteria.

Analyte	Results Compared to SAC
	<u>ESLs:</u> Elevated concentrations of benzo(a)pyrene (maximum of 4.3mg/kg), above the ESL-URPOS SAC of 0.7mg/kg, were encountered in fill in approximately 40% of the samples analysed, including BH3 (0-0.2m), BH3 (0.8-1.0m), BH5 (0-0.2), TP103 (0-0.2m) and TP104 (0-0.2). All remaining benzo(a)pyrene results were below the ESL-URPOS criterion. <u>EILs:</u> All naphthalene results were below the EIL-URPOS criterion.
OCPs & OPPs	<u>HILs:</u> All OCP and OPP results were below the HIL-A criteria. <u>EILs:</u> All DDT results were below the EIL-URPOS criterion.
PCBs	<u>HILs:</u> All PCB results were below the HIL-A criterion.
Asbestos	Asbestos was not detected in the soil samples analysed for the investigation. Asbestos was detected in fibre cement fragments HLF3 collected from the ground surface in the south-western corner of the site, and in FCF1 identified in fill soil during excavation of TP104. Asbestos was not detected in the remaining fibre cement fragments.

9 DATA QUALITY ASSESSMENT

As part of the data quality assessment the following data quality indicators (DQIs) were assessed: precision, accuracy, representativeness, completeness and comparability as outlined in the table below. Reference should be made to the appendices for an explanation of the individual DQI.

Table 9-1: Assessment of DQIs

Completeness
<u>Field Considerations:</u> • The investigation was designed as a preliminary screening. Sample locations are shown on Figure 2; • Samples were obtained from various depths based on the subsurface conditions encountered at the sampling locations. All samples were recorded on the borehole/test pit logs; • Additional samples of fibre cement were observed and collected during the investigation as these were potential sources of contamination; • The investigation was undertaken by trained staff in accordance with the SSP; and • Appropriate documentation was maintained during the field work. <u>Laboratory Considerations:</u> • Selected samples were analysed for a range of CoPC to address the potential contamination sources listed in the CSM. The broad analysis suite for fill was considered adequate to account for the gaps in historical information for the purpose of the preliminary ESA; • All samples were analysed by NATA registered laboratory in accordance with the analytical methods outlined in NEPM 2013; • Appropriate analytical methods and PQLs were used by the laboratory; and • Appropriate sample preservation, handling, holding time and COC procedures were adopted for the investigation.
Comparability
<u>Field Considerations:</u> • The investigation was undertaken by trained staff in accordance with the SSP; • Similar climatic conditions were recorded on both days of the investigation; and • Consistency was maintained during sampling in accordance with the SSP. <u>Laboratory Considerations:</u> • All samples were analysed in accordance with the analytical methods outlined in NEPM 2013; • Appropriate PQLs were used by the laboratory for all analysis; • All primary and intra-laboratory duplicate samples were analysed by the same laboratory; and • The same units were used by the laboratory for all of the analysis.
Representativeness
<u>Field Considerations:</u> • The investigation was designed to obtain samples from appropriate media encountered during the field work as outlined in the SAQP. Dust and/or vapour sampling was outside the scope of this assessment,

however the potential for soil vapour impacts were assessed via the soil HSLs for BTEX, naphthalene and volatile TRH; and

- All soil media based on the subsurface conditions encountered during the field work was sampled.

Laboratory Considerations:

- Samples were analysed in accordance with the SAQP.

Precision

Field Considerations:

- The investigation was undertaken in accordance with the SSP.

Laboratory Considerations:

- Analysis of field QA/QC samples including one intra-laboratory duplicate;
- The field QA/QC frequency adopted for the investigation is outlined below;
- Calculation of the Relative Percentage Difference (RPD) from the primary and duplicate results (the RPD calculation equation is outlined in the attached appendices);
- Assessment of RPD results against the acceptance criteria.

Intra-laboratory RPD Results:

One intra-laboratory soil duplicate was analysed for heavy metals. The duplicate analysis frequency was approximately 9% of primary samples and was considered adequate to provide an indication of data precision for the preliminary ESA.

The intra-laboratory RPD results are included in the attached report tables. Marginally elevated RPDs were encountered for lead and nickel. These results were considered to be indicative of the heterogeneous nature of the fill material. As both the primary sample and duplicate sample concentrations for lead and nickel were both below the SAC, the elevated RPDs are not considered to be significant and do not affect the overall precision of the dataset.

Accuracy

Field Considerations:

- The investigation was undertaken in accordance with the SSP.

Laboratory Considerations:

- The analytical quality assessment adopted by the laboratory was in accordance with the NATA and NEPM 2013 requirements as outlined in the analytical reports; and
 - A review of the reports indicates that the analytical results were generally within the acceptance criteria adopted by the laboratory. Matrix spike results for some PAH compounds were not reported for one spike sample and the laboratory did not provide an explanation for this. However, it is possible that this was result of matrix interference.
-

10 DISCUSSION

10.1 Review of CSM

Potential sources of contamination/AEC outlined in the CSM include fill material, use of pesticides and hazardous building materials. Based on the results of the ESA, widespread or excessive use of pesticides across the site was not apparent.

Contamination from hazardous building materials in the form of fibre cement containing asbestos (i.e. asbestos containing material - ACM) was identified at the ground surface and in fill. The ACM was considered to be in reasonable condition and could not be broken easily or crushed by hand pressure. On this basis, the ACM is considered to be bonded asbestos. The ESA identified a range of fibre cement materials across the site, of which not all contained asbestos.

Fill was present across the site and was deeper in the south-eastern site area. It is considered likely that the site was filled in the early to mid-1900s prior to construction of the school, and subsequently during the late-1940s to early-1950s for the purpose of infilling the air raid trenches. The source of the fill is unknown.

The fill was found to contain ACM in TP104 and elevated carcinogenic PAHs above the health-based SAC in BH3 and TP103. TRH (F3), zinc and benzo(a)pyrene were also encountered in fill above the ecological SAC at a number of locations.

10.2 Decision Statements

10.2.1 Are any of the Results above the SAC?

The fill was found to contain ACM in TP104 and elevated carcinogenic PAHs above the health-based SAC in BH3 and TP103. TRH (F3), zinc and benzo(a)pyrene were also encountered in fill above the ecological SAC at a number of locations. EIS are of the opinion that the carcinogenic PAHs, benzo(a)pyrene and TRHs are likely to be associated with asphaltic concrete (AC) fragments and/or ash inclusions in the fill material.

10.2.2 Has the Extent of Contamination been Identified?

The extent of contamination has not been identified during the preliminary assessment. The results indicate that the fill is heterogeneous, and despite the limited scope of the assessment, there is no clear pattern to suggest that the contaminants are associated with a particular area, fill type or depth.

The contaminants associated with AC and ash (TRH and PAHs) are likely to be limited to the fill material and would not be expected to impact the underlying natural soil or groundwater due to their limited mobility in the AC/ash matrix.

10.2.3 Do any of the Contaminants Pose a Risk to the Receptors?

For a contaminant to represent a risk to a receptor, the following three conditions must be present:

1. Source – The presence of a contaminant;
2. Pathway – A mechanism or action by which a receptor can become exposed to the contaminant;
and
3. Receptor – The human or ecological entity which may be adversely impacted following exposure to contamination.

Based on the results of the preliminary assessment, EIS are of the opinion that there are potentially complete exposure pathways for asbestos, zinc, carcinogenic PAHs/benzo(a)pyrene and TRH contamination at the site. The potential risks are discussed further below:

- The potential health risks associated with the asbestos are considered to be moderate in view of the bonded nature of the ACM. The primary exposure pathway for this contaminant is via inhalation of airborne fibres. The potential for fibre generation may increase during disturbance of the soil during future sub-surface works (e.g. excavation during development), or as a result of weathering of ACM that remains exposed at the ground surface;
- The potential ecological risks associated with zinc are considered to be low. The zinc concentration was only marginally above the SAC which was derived based on conservative assumptions;
- The potential health risks associated with the carcinogenic PAHs are considered to be moderate to high. The primary exposure pathways are via ingestion and dermal absorption, however it is noted that the solubility and bioavailability of the PAHs within an AC or ash matrix are likely to be relatively low which can reduce the risk of exposure to these contaminants; and
- The potential ecological risks associated with the benzo(a)pyrene and TRHs are considered to be low. Solubility and bio-availability factors with regards to potential ecological exposure would also apply to these contaminants when they are associated with AC and ash.

10.2.4 Is Further Investigation Required?

Further investigation is required to characterise the site contamination conditions in order to develop appropriate and cost effective remediation and/or management strategies for the site.

11 CONCLUSION AND RECOMMENDATIONS

The preliminary ESA included soil sampling from five geotechnical boreholes and four environmental test pits. The boreholes typically encountered fill over residual silty clay soil and shale bedrock. Fill was encountered at all sampling locations and was deeper in the south-eastern site area. Fill at several locations included trace quantities of building/demolition waste, and ACM was identified in fill in TP104. No other visual or olfactory indicators of contamination were observed during drilling/test pitting.

A selection of fill samples were analysed for the CoPC identified in the CSM. Samples of fibre cement collected from the ground surface during the site inspection, and from the soil in TP104, were also analysed for asbestos. The fill was found to contain ACM in TP104 and elevated carcinogenic PAHs above the health-based SAC in BH3 and TP103. TRH (F3), zinc and benzo(a)pyrene were also encountered in fill above the ecological SAC at a number of locations.

Based on the scope of work undertaken for the ESA, EIS recommend the following:

- As an interim measure, the site should be inspected and all visible fragments of fibre cement at the ground surface should be removed by a licensed contractor (Class B) and disposed of to a licensed landfill facility. Following the removal, an asbestos clearance certificate should be provided by a licensed asbestos assessor or occupational hygienist;
- A detailed investigation (Stage 2), including asbestos quantification assessment, should be undertaken by a qualified environmental consultant¹⁷ to characterise the site contamination conditions. The potential for pesticides to have been applied beneath the buildings would need to be considered further for any buildings that are demolished for the proposed development;
- A waste classification should be undertaken for any soil to be excavated and disposed off-site as part of the development works;
- A remediation action plan (RAP) should be prepared (following the Stage 2 investigation) to document the strategy required to reduce the potential risks associated with the site contamination to an acceptable level, and to render the site suitable for the proposed development and on-going use as a primary school; and
- A hazardous building materials assessment should be completed (if not already available) for any parts of the buildings to be demolished. All buildings should be demolished appropriately and clearance certificates should be provided on completion.

¹⁷ It would be prudent to utilise the services of a consultancy that is a current member of the Australian Contaminated Land Consultants Association (ACLCA), or an individual consultant that is an accredited practitioner under a recognised contaminated land accreditation scheme

11.1 Regulatory Requirement

The regulatory requirements applicable for the site are outlined in the following table:

Table 11-1: Regulatory Requirement

Guideline	Applicability
Duty to Report Contamination (2015) ¹⁸	At this stage, EIS consider that there is no requirement to notify the NSW EPA of site contamination. This should be evaluated further as part of the detailed investigation and reporting process.
Waste Classification Guidelines - Part 1: Classifying Waste (2014) ¹⁹	A waste classification will be required for off-site disposal of any surplus materials excavated for the proposed development.
Protection of the Environment Operations (POEO) Act (1997) ²⁰	Section 143 of the POEO Act 1997 states that if waste is transported to a place that cannot lawfully be used as a waste facility for that waste, then the transporter and owner of the waste are each guilty of an offence. The transporter and owner of the waste have a duty to ensure that the waste is disposed of in an appropriate manner.
Work Health and Safety Code of Practice 2011 ²¹	Sites contaminated with asbestos become a 'workplace' when work is carried out there and require a register and asbestos management plan. Removal of bonded asbestos requires a Class B licensed contractor and notification to SafeWork NSW.

¹⁸ NSW EPA, (2015). *Guidelines on the Duty to Report Contamination under the Contamination Land Management Act 1997*. (referred to as Duty to Report Contamination 2015)

¹⁹ NSW EPA, (2014). *Waste Classification Guidelines, Part 1: Classifying Waste*. (referred to as Waste Classification Guidelines 2014)

²⁰ NSW Government, (1997)). *Protection of Environment Operations Act*. (referred to as POEO Act 1997)

²¹ WorkCover NSW, (2011). *WHS Regulation: Code of Practice – How to Manage and Control Asbestos in the Workplace*.

12 LIMITATIONS

The report limitations are outlined below:

- EIS accepts no responsibility for any unidentified contamination issues at the site. Any unexpected problems/subsurface features that may be encountered during development works should be inspected by an environmental consultant as soon as possible;
- Previous use of this site may have involved excavation for the foundations of buildings, services, and similar facilities. In addition, unrecorded excavation and burial of material may have occurred on the site. Backfilling of excavations could have been undertaken with potentially contaminated material that may be discovered in discrete, isolated locations across the site during construction work;
- This report has been prepared based on site conditions which existed at the time of the investigation; scope of work and limitation outlined in the EIS proposal; and terms of contract between EIS and the client (as applicable);
- The conclusions presented in this report are based on investigation of conditions at specific locations, chosen to be as representative as possible under the given circumstances, visual observations of the site and immediate surrounds and documents reviewed as described in the report;
- Subsurface soil and rock conditions encountered between investigation locations may be found to be different from those expected. Groundwater conditions may also vary, especially after climatic changes;
- The investigation and preparation of this report have been undertaken in accordance with accepted practice for environmental consultants, with reference to applicable environmental regulatory authority and industry standards, guidelines and the assessment criteria outlined in the report;
- Where information has been provided by third parties, EIS has not undertaken any verification process, except where specifically stated in the report;
- EIS has not undertaken any assessment of off-site areas that may be potential contamination sources or may have been impacted by site contamination, except where specifically stated in the report;
- EIS accept no responsibility for potentially asbestos containing materials that may exist at the site. These materials may be associated with demolition of pre-1990 constructed buildings or fill material at the site;
- EIS have not and will not make any determination regarding finances associated with the site;
- Additional investigation work may be required in the event of changes to the proposed development or landuse. EIS should be contacted immediately in such circumstances;
- Material considered to be suitable from a geotechnical point of view may be unsatisfactory from a soil contamination viewpoint, and vice versa; and
- This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose.

LIST OF IN-TEXT TABLES

Table 1-1: Guidelines	2
Table 2-1: Site Identification	3
Table 4-1: Summary of Historical Aerial Photographs	8
Table 5-1: Potential Contamination Sources/AEC and Contaminants of Potential Concern	11
Table 5-2: CSM	12
Table 5-3: Data Gap Assessment	13
Table 6-1: DQOs – Seven Steps	14
Table 6-2: Soil Sampling Plan and Methodology	16
Table 6-3: Analytical Schedule	17
Table 6-4: Laboratory Details	18
Table 7-1: SAC Adopted for this Investigation	19
Table 8-1: Summary of Subsurface Conditions	20
Table 8-2: Summary of Soil Laboratory Results	21
Table 9-1: Assessment of DQIs	23
Table 11-1: Regulatory Requirement	28

IMPORTANT INFORMATION ABOUT THIS REPORT

These notes have been prepared by EIS to assist with the assessment and interpretation of this report.

The Report is based on a Unique Set of Project Specific Factors

This report has been prepared in response to specific project requirements as stated in the EIS proposal document which may have been limited by instructions from the client. This report should be reviewed, and if necessary, revised if any of the following occur:

- The proposed land use is altered;
- The defined subject site is increased or sub-divided;
- The proposed development details including size, configuration, location, orientation of the structures or landscaped areas are modified;
- The proposed development levels are altered, eg addition of basement levels; or
- Ownership of the site changes.

EIS/J&K will not accept any responsibility whatsoever for situations where one or more of the above factors have changed since completion of the assessment. If the subject site is sold, ownership of the assessment report should be transferred by EIS to the new site owners who will be informed of the conditions and limitations under which the assessment was undertaken. No person should apply an assessment for any purpose other than that originally intended without first conferring with the consultant.

Changes in Subsurface Conditions

Subsurface conditions are influenced by natural geological and hydrogeological process and human activities. Groundwater conditions are likely to vary over time with changes in climatic conditions and human activities within the catchment (e.g. water extraction for irrigation or industrial uses, subsurface waste water disposal, construction related dewatering). Soil and groundwater contaminant concentrations may also vary over time through contaminant migration, natural attenuation of organic contaminants, ongoing contaminating activities and placement or removal of fill material. The conclusions of an assessment report may have been affected by the above factors if a significant period of time has elapsed prior to commencement of the proposed development.

This Report is based on Professional Interpretations of Factual Data

Site assessments identify actual subsurface conditions at the actual sampling locations at the time of the investigation. Data obtained from the sampling and subsequent laboratory analyses, available site history information and published regional information is interpreted by geologists, engineers or environmental scientists and opinions are drawn about the overall subsurface conditions, the nature and extent of contamination, the likely impact on the proposed development and appropriate remediation measures.

Actual conditions may differ from those inferred, because no professional, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an assessment indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimise the impact. For this reason, site owners should retain the services of their consultants throughout the development stage of the project, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

Assessment Limitations

Although information provided by a site assessment can reduce exposure to the risk of the presence of contamination, no environmental site assessment can eliminate the risk. Even a rigorous professional assessment may not detect all contamination on a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which showed no signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant which may occur; only the most likely contaminants are screened.

Misinterpretation of Site Assessments by Design Professionals

Costly problems can occur when other design professionals develop plans based on misinterpretation of an assessment report. To minimise problems associated with misinterpretations, the environmental consultant should be retained to work with appropriate professionals to explain relevant findings and to review the adequacy of plans and specifications relevant to contamination issues.

Logs Should not be Separated from the Assessment Report

Borehole and test pit logs are prepared by environmental scientists, engineers or geologists based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these should not be re-drawn for inclusion in site remediation or other design drawings, as subtle but significant drafting errors or omissions may occur in the transfer process. Photographic reproduction can eliminate this problem, however contractors can still misinterpret the logs during bid preparation if separated from the text of the assessment. If this occurs, delays, disputes and unanticipated costs may result. In all cases it is necessary to refer to the rest of the report to obtain a proper understanding of the assessment. Please note that logs with the 'Environmental Log' header are not suitable for geotechnical purposes as they have not been peer reviewed by a Senior Geotechnical Engineer.

To reduce the likelihood of borehole and test pit log misinterpretation, the complete assessment should be available to persons or organisations involved in the project, such as contractors, for their use. Denial of such access and disclaiming responsibility for the accuracy of subsurface information does not insulate an owner from the attendant liability. It is critical that the site owner provides all available site information to persons and organisations such as contractors.

Read Responsibility Clauses Closely

Because an environmental site assessment is based extensively on judgement and opinion, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, model clauses have been developed for use in written transmittals. These are definitive clauses designed to indicate consultant responsibility. Their use helps all parties involved recognise individual responsibilities and formulate appropriate action. Some of these definitive clauses are likely to appear in the environmental site assessment, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to any questions.

REPORT FIGURES



AERIAL IMAGE SOURCE: GOOGLE EARTH PRO 7.1.5.1557
AERIAL IMAGE ©: 2015 GOOGLE INC.

Title:

SITE LOCATION PLAN

Location:

PENSHURST PUBLIC SCHOOL
510 FOREST ROAD, PENSHURST, NSW

Report No:

E30104KP

Figure No:

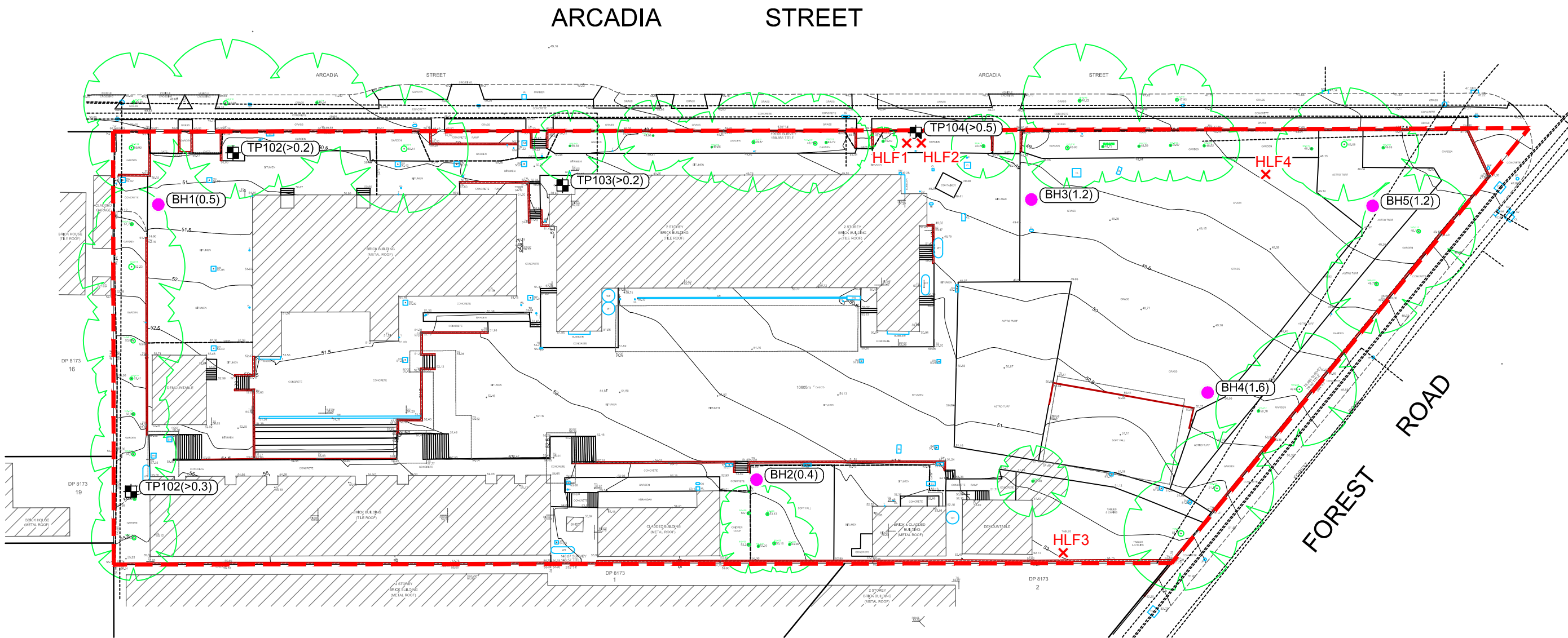
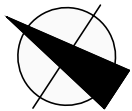
1

ENVIRONMENTAL INVESTIGATION SERVICES



This plan should be read in conjunction with the EIS report.

PLOT DATE: 9/02/2017 4:11:59 PM DWG FILE: S:\5 EIS\SC EIS JOBS\50000\5E30104KP PENSHURST\CAD\E30104KP.DWG



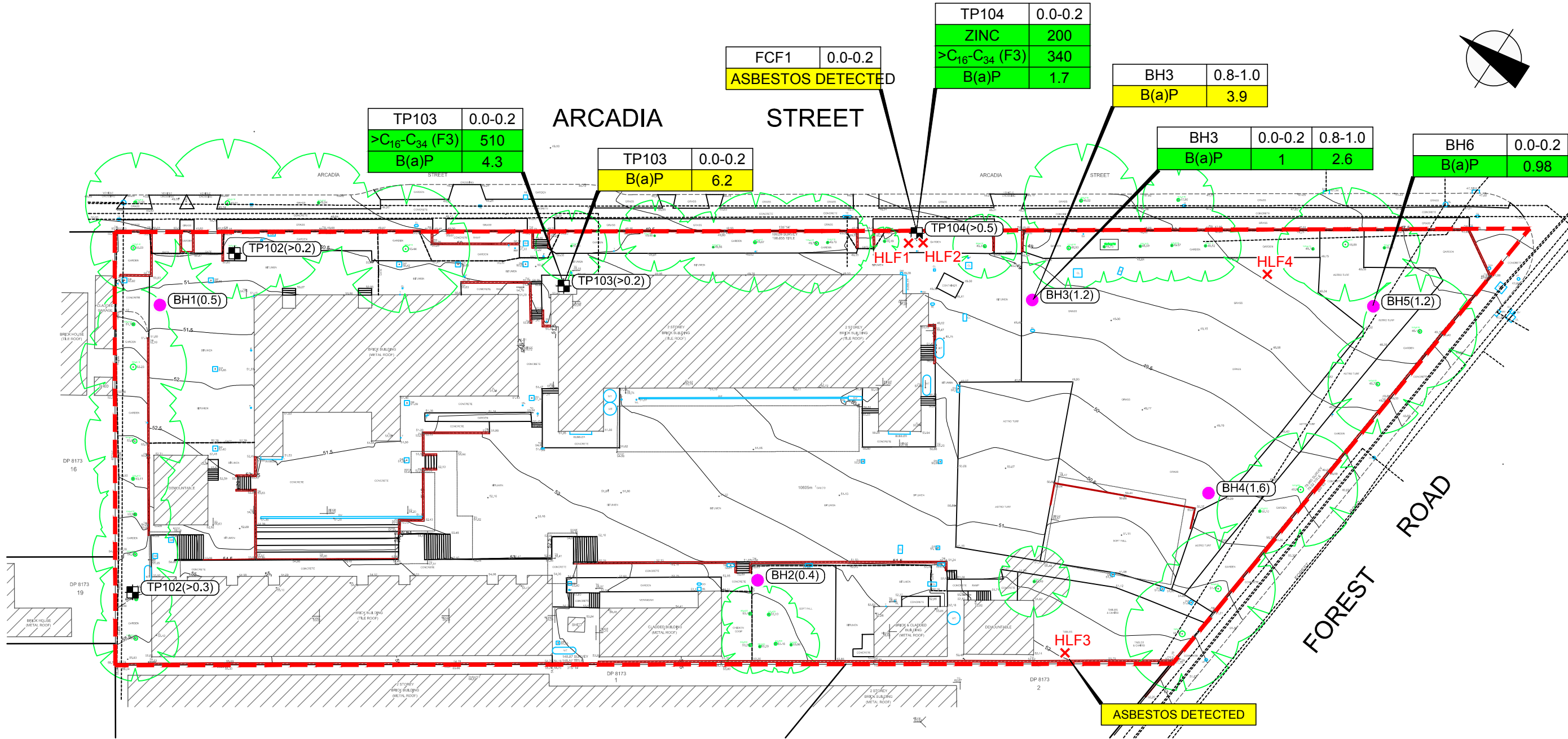
LEGEND

- APPROXIMATE SITE BOUNDARY
- BH (Fill Depth) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
- TP (Fill Depth) TESTPIT LOCATION, NUMBER AND DEPTH OF FILL (m)
- HLF SURFACE SAMPLE (SS) - FIBRE CEMENT FRAGMENT (FCF)

This plan should be read in conjunction with the EIS report.

Title: SAMPLE LOCATION PLAN	
Location: PENSURST PUBLIC SCHOOL 510 FOREST ROAD, PENSURST, NSW	
Report No: E30104KP	Figure No: 2
ENVIRONMENTAL INVESTIGATION SERVICES	



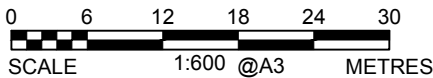


LEGEND

- APPROXIMATE SITE BOUNDARY
- BH (Fill Depth) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
- ⊕ TP (Fill Depth) TESTPIT LOCATION, NUMBER AND DEPTH OF FILL (m)
- ✕ HLF SURFACE SAMPLE (SS) - FIBRE CEMENT FRAGMENT (FCF)

SAMPLE ID	DEPTH (metres)
CHEMICAL	CONCENTRATION (mg/kg)

- SOIL CONTAMINATION ABOVE SAC FOR HUMAN HEALTH RISK
- SOIL CONTAMINATION ABOVE SAC FOR ENVIRONMENTAL RISK



This plan should be read in conjunction with the EIS report.

Title: CONTAMINATION DATA PLAN	
Location: PENSURST PUBLIC SCHOOL 510 FOREST ROAD, PENSURST, NSW	
Report No: E30104KP	Figure No: 3
ENVIRONMENTAL INVESTIGATION SERVICES	



LABORATORY SUMMARY TABLES

TABLE A
SOIL LABORATORY RESULTS COMPARED TO HILs
All data in mg/kg unless stated otherwise

			HEAVY METALS							PAHs		ORGANOCHLORINE PESTICIDES (OCPs)							OP PESTICIDES (OPPs)	TOTAL PCBs	ASBESTOS FIBRES	
			Arsenic	Cadmium	Chromium VI ²	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P TEQ ³	HCB	Endosulfan	Methoxychlor	Aldrin & Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor			Chlorpyrifos
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	100
Site Assessment Criteria (SAC) ¹			100	20	100	6000	300	40	400	7400	300	3	10	270	300	6	50	240	6	160	1	Detected/Not Detected
Sample Reference	Sample Depth	Sample Description																				
BH1	0.3-0.5	Fill: clayey sand	LPQL	LPQL	8	27	29	LPQL	8	48	2.9	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH2	0.05-0.2	Fill: silty clay	4	LPQL	8	39	12	LPQL	33	110	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH3	0-0.2	Fill: silty sand	NA	NA	NA	NA	NA	NA	NA	NA	9.6	1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH3	0.8-1.0	Fill: silty clay	4	LPQL	13	26	25	LPQL	3	24	33.4	3.9	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH4	0-0.3	Fill: silty sand	LPQL	LPQL	8	14	39	LPQL	4	65	2.5	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH4	0.8-1.0	Fill: silty clay	7	LPQL	11	21	23	LPQL	3	19	3.8	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH5	0-0.2	Fill: silty sand	LPQL	LPQL	10	18	28	LPQL	3	44	9.68	1.5	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
BH5	0.8-1.0	Fill: silty clay	4	LPQL	12	23	20	LPQL	3	28	2.5	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP101	0.1-0.2	Fill: silty sand	5	LPQL	17	27	57	LPQL	10	100	3.2	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP102	0-0.2	Fill: silty sand	5	LPQL	14	27	39	LPQL	16	92	5	0.8	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	Not Detected
TP103	0-0.2	Fill: silty sand	LPQL	LPQL	13	84	45	LPQL	12	140	33.4	6.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP104	0-0.2	Fill: silty sand	6	LPQL	19	42	67	0.2	8	200	14	2.6	LPQL	LPQL	LPQL	LPQL	0.1	LPQL	LPQL	LPQL	LPQL	Not Detected
HLF1	Surface	Fibre Cement Fragment	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
HLF2	Surface	Fibre Cement Fragment	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
HLF3	Surface	Fibre Cement Fragment	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Asbestos Detected
HLF4	Surface	Fibre Cement Fragment	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
FCF1	0-0.2	Fibre Cement Fragment	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Asbestos Detected
Total Number of Samples			11	11	11	11	11	11	11	11	12	12	6	6	6	6	6	6	6	6	6	16
Maximum Value			7	LPQL	19	84	67	0.2	33	200	33.4	6.2	LPQL	LPQL	LPQL	LPQL	0.1	LPQL	LPQL	LPQL	LPQL	NC

Explanation:

- 1 - Site Assessment Criteria (SAC): NEPM 2013, HIL-A: 'Residential with garden/accessible soils; children's day care centers; preschools; and primary schools'
- 2 - The results are for Total Chromium which includes Chromium III and VI. For initial screening purposes, we have assumed that the samples contain only Chromium VI unless demonstrated otherwise by additional analysis.
- 3 - B(a)P TEQ - Benzo(a)pyrene Toxicity Equivalence Quotient has been calculated based on 8 carcinogenic PAHs and their Toxic Equivalence Factors (TEFs) outlined in NEPM 2013

Concentration above the SAC

VALUE

Abbreviations:

- PAHs: Polycyclic Aromatic Hydrocarbons
- B(a)P: Benzo(a)pyrene
- PQL: Practical Quantitation Limit
- LPQL: Less than PQL
- OPP: Organophosphorus Pesticides
- OCP: Organochlorine Pesticides
- PCBs: Polychlorinated Biphenyls
- UCL: Upper Level Confidence Limit on Mean Value
- HILs: Health Investigation Levels
- NA: Not Analysed
- NC: Not Calculated
- NSL: No Set Limit
- SAC: Site Assessment Criteria
- NEPM: National Environmental Protection Measure

TABLE B SOIL LABORATORY RESULTS COMPARED TO HSLs All data in mg/kg unless stated otherwise												
					C ₆ -C ₁₀ (F1)	>C ₁₀ -C ₁₆ (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID ²
PQL - Envirolab Services					25	50	0.2	0.5	1	3	1	
HSL Land Use Category ¹					RESIDENTIAL WITH ACCESSIBLE SOIL							
Sample Reference	Sample Depth	Sample Description	Depth Category	Soil Category								
BH1	0.3-0.5	Fill: clayey sand	0m to < 1m	Sand	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH2	0.05-0.2	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH3	0-0.2	Fill: silty sand	0m to < 1m	Sand	NA	NA	NA	NA	NA	NA	LPQL	0
BH3	0.8-1.0	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH4	0-0.3	Fill: silty sand	0m to < 1m	Sand	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH4	0.8-1.0	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH5	0-0.2	Fill: silty sand	0m to < 1m	Sand	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
BH5	0.8-1.0	Fill: silty clay	0m to < 1m	Clay	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP101	0.1-0.2	Fill: silty sand	0m to < 1m	Sand	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP102	0-0.2	Fill: silty sand	0m to < 1m	Sand	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP103	0-0.2	Fill: silty sand	0m to < 1m	Sand	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
TP104	0-0.2	Fill: silty sand	0m to < 1m	Sand	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0
Total Number of Samples					11	11	11	11	11	11	12	12
Maximum Value					LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
Explanation: 1 - Site Assessment Criteria (SAC): NEPM 2013 2 - Field PID values obtained during the investigation Concentration above the SAC VALUE The guideline corresponding to the elevated value is highlighted in grey in the Site Assessment Criteria Table below Abbreviations: UCL: Upper Level Confidence Limit on Mean Value HSLs: Health Screening Levels NA: Not Analysed NC: Not Calculated NL: Not Limiting SAC: Site Assessment Criteria PQL: Practical Quantitation Limit LPQL: Less than PQL NEPM: National Environmental Protection Measure												

SITE ASSESSMENT CRITERIA											
					C ₆ -C ₁₀ (F1)	>C ₁₀ -C ₁₆ (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
PQL - Envirolab Services					25	50	0.2	0.5	1	3	1
HSL Land Use Category ¹					RESIDENTIAL WITH ACCESSIBLE SOIL						
Sample Reference	Sample Depth	Sample Description	Depth Category	Soil Category							
BH1	0.3-0.5	Fill: clayey sand	0m to < 1m	Sand	45	110	0.5	160	55	40	3
BH2	0.05-0.2	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH3	0-0.2	Fill: silty sand	0m to < 1m	Sand	NA	NA	NA	NA	NA	NA	3
BH3	0.8-1.0	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH4	0-0.3	Fill: silty sand	0m to < 1m	Sand	45	110	0.5	160	55	40	3
BH4	0.8-1.0	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
BH5	0-0.2	Fill: silty sand	0m to < 1m	Sand	45	110	0.5	160	55	40	3
BH5	0.8-1.0	Fill: silty clay	0m to < 1m	Clay	50	280	0.7	480	NL	110	5
TP101	0.1-0.2	Fill: silty sand	0m to < 1m	Sand	45	110	0.5	160	55	40	3
TP102	0-0.2	Fill: silty sand	0m to < 1m	Sand	45	110	0.5	160	55	40	3
TP103	0-0.2	Fill: silty sand	0m to < 1m	Sand	45	110	0.5	160	55	40	3
TP104	0-0.2	Fill: silty sand	0m to < 1m	Sand	45	110	0.5	160	55	40	3

TABLE C SOIL LABORATORY RESULTS COMPARED TO EILs AND ESLs All data in mg/kg unless stated otherwise																							
Land Use Category ¹				URBAN RESIDENTIAL AND PUBLIC OPEN SPACE																			
				pH	CEC (cmol _e /kg)	Clay Content (% clay)	AGED HEAVY METALS-EILs						EILs		ESLs								
							Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C ₆ -C ₁₀ (F1)	>C ₁₀ -C ₁₆ (F2)	>C ₁₆ -C ₃₄ (F3)	>C ₃₄ -C ₄₀ (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	0.1	0.1	25	50	100	100	0.2	0.5	1	3	0.05
Ambient Background Concentration (ABC) ²				-	-	-	NSL	13	28	163	5	122	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	Sample Depth	Sample Description	Soil Texture																				
BH1	0.3-0.5	Fill: clayey sand	Coarse	NA	NA	NA	LPQL	8	27	29	8	48	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.3
BH2	0.05-0.2	Fill: silty clay	Fine	NA	NA	NA	4	8	39	12	33	110	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL
BH3	0-0.2	Fill: silty sand	Coarse	NA	NA	NA	NA	NA	NA	NA	NA	NA	LPQL	NA	NA	NA	NA	NA	NA	NA	NA	NA	1
BH3	0.8-1.0	Fill: silty clay	Fine	NA	NA	NA	4	13	26	25	3	24	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	2.6
BH4	0-0.3	Fill: silty sand	Coarse	NA	NA	NA	LPQL	8	14	39	4	65	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.3
BH4	0.8-1.0	Fill: silty clay	Fine	NA	NA	NA	7	11	21	23	3	19	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.4
BH5	0-0.2	Fill: silty sand	Coarse	NA	NA	NA	LPQL	10	18	28	3	44	LPQL	LPQL	LPQL	LPQL	180	LPQL	LPQL	LPQL	LPQL	LPQL	0.98
BH5	0.8-1.0	Fill: silty clay	Fine	NA	NA	NA	4	12	23	20	3	28	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.3
TP101	0.1-0.2	Fill: silty sand	Coarse	NA	NA	NA	5	17	27	57	10	100	LPQL	LPQL	LPQL	LPQL	120	LPQL	LPQL	LPQL	LPQL	LPQL	0.3
TP102	0-0.2	Fill: silty sand	Coarse	NA	NA	NA	5	14	27	39	16	92	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	LPQL	0.6
TP103	0-0.2	Fill: silty sand	Coarse	NA	NA	NA	LPQL	13	84	45	12	140	LPQL	LPQL	LPQL	LPQL	510	180	LPQL	LPQL	LPQL	LPQL	4.3
TP104	0-0.2	Fill: silty sand	Coarse	NA	NA	NA	6	19	42	67	8	200	LPQL	LPQL	LPQL	LPQL	340	180	LPQL	LPQL	LPQL	LPQL	1.7
Total Number of Samples				0	0	0	11	11	11	11	11	11	12	11	11	11	11	11	11	11	11	11	12
Maximum Value				LPQL	LPQL	LPQL	7	19	84	67	33	200	LPQL	LPQL	LPQL	LPQL	510	180	LPQL	LPQL	LPQL	LPQL	4.3
Explanation: 1 - Site Assessment Criteria (SAC): NEPM 2013 2 - ABC Values for selected metals has been adopted from the published background concentrations presented in Olszowy et. al., (1995), Trace Element Concentrations in Soils from Rural and Urban New South Wales (the 25th percentile values for old suburbs with high traffic have been quoted)																							
Concentration above the SAC				VALUE																			
The guideline corresponding to the elevated value is highlighted in grey in the EIL and ESL Assessment Criteria Table below																							
Abbreviations: EILs: Ecological Investigation Levels B(a)P: Benzo(a)pyrene PQL: Practical Quantitation Limit UCL: Upper Level Confidence Limit on Mean Value ESLs: Ecological Screening Levels NA: Not Analysed LPQL: Less than PQL SAC: Site Assessment Criteria NEPM: National Environmental Protection Measure NC: Not Calculated NSL: No Set Limit ABC: Ambient Background Concentration																							

EIL AND ESL ASSESSMENT CRITERIA

Land Use Category ¹				URBAN RESIDENTIAL AND PUBLIC OPEN SPACE																			
				pH	CEC (cmol _e /kg)	Clay Content (% clay)	AGED HEAVY METALS-EILs					EILs		ESLs									
							Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C ₆ -C ₁₀ (F1)	>C ₁₀ -C ₁₆ (F2)	>C ₁₆ -C ₃₄ (F3)	>C ₃₄ -C ₄₀ (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				-	1	-	4	1	1	1	1	0.1	0.1	25	50	100	100	0.2	0.5	1	3	0.05	
Ambient Background Concentration (ABC) ²				-	-	-	NSL	13	28	163	5	122	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	
Sample Reference	Sample Depth	Sample Description	Soil Texture																				
BH1	0.3-0.5	Fill: clayey sand	Coarse	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	300	2800	50	85	70	105	0.7
BH2	0.05-0.2	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	60	105	125	45	0.7
BH3	0-0.2	Fill: silty sand	Coarse	NA	NA	NA	--	--	--	--	--	--	170	--	--	--	--	--	--	--	--	--	0.7
BH3	0.8-1.0	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	60	105	125	45	0.7
BH4	0-0.3	Fill: silty sand	Coarse	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	300	2800	50	85	70	105	0.7
BH4	0.8-1.0	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	60	105	125	45	0.7
BH5	0-0.2	Fill: silty sand	Coarse	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	300	2800	50	85	70	105	0.7
BH5	0.8-1.0	Fill: silty clay	Fine	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	1300	5600	60	105	125	45	0.7
TP101	0.1-0.2	Fill: silty sand	Coarse	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	300	2800	50	85	70	105	0.7
TP102	0-0.2	Fill: silty sand	Coarse	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	300	2800	50	85	70	105	0.7
TP103	0-0.2	Fill: silty sand	Coarse	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	300	2800	50	85	70	105	0.7
TP104	0-0.2	Fill: silty sand	Coarse	NA	NA	NA	100	203	88	1263	35	192	170	180	180	120	300	2800	50	85	70	105	0.7

TABLE D
SOIL INTRA-LABORATORY DUPLICATE RESULTS & RPD CALCULATIONS
All results in mg/kg unless stated otherwise

SAMPLE	ANALYSIS	Envirolab PQL	INITIAL	REPEAT	MEAN	RPD %
Sample Ref = Dup Ref = DUPHL1	Arsenic	4	4	4	4.0	0
	Cadmium	0.4	LPQL	LPQL	NC	NC
	Chromium	1	8	13	10.5	48
	Copper	1	39	27	33.0	36
	Lead	1	12	43	27.5	113
	Mercury	0.1	LPQL	LPQL	NC	NC
	Nickel	1	33	16	24.5	69
	Zinc	1	110	94	102.0	16

Explanation:

The RPD value is calculated as the absolute value of the difference between the initial and repeat results divided by the average value expressed as a percentage. The following acceptance criteria will be used to assess the RPD results:

Results > 10 times PQL = RPD value <= 50% are acceptable

Results between 5 & 10 times PQL = RPD value <= 75% are acceptable

Results < 5 times PQL = RPD value <= 100% are acceptable

If result is LPQL then 50% of the PQL is used for the calculation

RPD Results Above the Acceptance Criteria

VALUE

Abbreviations:

PQL: Practical Quantitation Limit

LPQL: Less than PQL

NC: Not Calculated

REPORT APPENDICES

Appendix A: Lotsearch Report



Environmental Risk and Planning Report

510 Forest Road, Penshurst, NSW 2222

Report Buffer: 1000m

Report Date: 11 Jan 2017 09:41:02

Disclaimer:

The purpose of this report is to provide an overview of some of the site history, environmental risk and planning information available, affecting an individual address or geographical area in which the property is located. It is not a substitute for an on-site inspection or review of other available reports and records. It is not intended to be, and should not be taken to be, a rating or assessment of the desirability or market value of the property or its features. You should obtain independent advice before you make any decision based on the information within the report. The detailed terms applicable to use of this report are set out at the end of this report.

Table of Contents

Location Confidences.....	2
Dataset Listings	3
Site Location Aerial	5
Contaminated Land & Waste Management Facilities.....	6
EPA Current Licensed Activities.....	9
EPA Delicensed & Former Licensed Activities.....	11
UPSS Sensitive Zones.....	13
Historical Business Activities.....	14
Historical Aerial Imagery & Maps	23
Topographic Features	32
Elevation Contours.....	38
Hydrogeology & Groundwater	39
Geology.....	42
Naturally Occurring Asbestos Potential.....	44
Soil Landscapes.....	45
Acid Sulfate Soils	47
Dryland Salinity	48
Mining Subsidence Districts	49
State Environmental Planning.....	50
Local Environmental Planning.....	51
Heritage	55
Natural Hazards	59
Ecological Constraints.....	60
Terms & Conditions.....	66

Location Confidences

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

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

Dataset Listing

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

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	Land and Property Information	11/01/2017	11/01/2017	Daily	-	-	-
Topographic Data	Land and Property Information	10/04/2015	01/04/2015	As required	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	04/01/2017	18/11/2016	Monthly	0	0	2
Contaminated Land: Records of Notice	Environment Protection Authority	10/01/2017	10/01/2017	Monthly	0	0	0
Former Gasworks	Environment Protection Authority	10/01/2017	29/12/2016	Monthly	0	0	0
National Waste Management Site Database	Geoscience Australia	01/11/2016	15/11/2012	Quarterly	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	04/01/2017	22/12/2016	Monthly	0	0	1
Delicensed POEO Activities still Regulated by the EPA	Environment Protection Authority	04/01/2017	22/12/2016	Monthly	0	0	1
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	04/01/2017	22/12/2016	Monthly	0	0	4
UPSS Environmentally Sensitive Zones	Department of Environment, Climate Change and Water (NSW)	14/04/2015	12/01/2010	As required	1	1	1
UBD Business to Business Directory 1991	Hardie Grant			Not required	0	18	22
UBD Business Directory 1991 Motor Garages/Service Stations	Hardie Grant			Not required	0	0	0
UBD Business Directory 1970	Hardie Grant			Not required	0	33	59
UBD Business Directory 1970 Drycleaners & Motor Garages/Service Stations	Hardie Grant			Not required	0	0	11
UBD Business Directory 1950	Hardie Grant			Not required	0	25	48
UBD Business Directory 1950 Drycleaners & Motor Garages/Service Stations	Hardie Grant			Not required	0	2	15
Points of Interest	Land and Property Information	10/04/2015	01/04/2015	Annually	1	4	49
Tanks (Areas)	Land and Property Information	10/04/2015	01/04/2015	Annually	0	0	0
Tanks (Points)	Land and Property Information	10/04/2015	01/04/2015	Annually	0	0	2
Major Easements	Land and Property Information	11/06/2014	11/06/2014	As required	0	0	20
State Forest	Land and Property Information	11/04/2016	23/01/2015	As required	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment and Heritage	11/04/2016	31/12/2015	Annually	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1	1	1
Groundwater Boreholes	NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corporation; Commonwealth of Australia (Bureau of Meteorology) 2015	21/03/2016	01/12/2015	Annually	0	0	8
Geological Units 1:100,000	NSW Department of Industry, Resources & Energy	20/08/2014		None planned	1	-	2
Geological Structures 1:100,000	NSW Department of Industry, Resources & Energy	20/08/2014		None planned	0	-	0
Naturally Occurring Asbestos Potential	NSW Department of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	0	0	0
Soil Landscapes	NSW Office of Environment and Heritage	12/08/2014		None planned	1	-	4
Standard Local Environmental Plan Acid Sulfate Soils	NSW Planning and Environment	07/10/2016	07/10/2016	As required	0	-	-
Dryland Salinity Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	0	0	0
Mining Subsidence Districts	Land and Property Information	31/08/2016	31/08/2016	As required	0	0	0
SEPP 14 - Coastal Wetlands	NSW Planning and Environment	17/12/2015	24/10/2008	Annually	0	0	0

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	No. Features Onsite	No. Features within 100m	No. Features within Buffer
SEPP 26 - Littoral Rainforest	NSW Planning and Environment	17/12/2015	05/02/1988	Annually	0	0	0
SEPP 71 - Coastal Protection	NSW Planning and Environment	17/12/2015	01/08/2003	Annually	0	0	0
SEPP Major Developments 2005	NSW Planning and Environment	09/03/2013	25/05/2005	Under Review	0	0	0
SEPP Strategic Land Use Areas	NSW Planning and Environment	06/07/2016	28/01/2014	Annually	0	0	0
Local Environmental Plan - Land Zoning	NSW Planning and Environment	03/01/2017	04/09/2016	Quarterly	1	12	64
Local Environmental Plan - Minimum Subdivision Lot Size	NSW Planning and Environment	03/01/2017	04/09/2016	Quarterly	0	-	-
Local Environmental Plan - Height of Building	NSW Planning and Environment	03/01/2017	04/09/2016	Quarterly	0	-	-
Local Environmental Plan - Floor Space Ratio	NSW Planning and Environment	03/01/2017	04/09/2016	Quarterly	0	-	-
Local Environmental Plan - Land Application	NSW Planning and Environment	03/01/2017	04/09/2016	Quarterly	1	-	-
Local Environmental Plan - Land Reservation Acquisition	NSW Planning and Environment	03/01/2017	04/09/2016	Quarterly	0	-	-
State Heritage Items	NSW Planning and Environment	03/01/2017	30/10/2015	Quarterly	0	0	2
Local Heritage Items	NSW Planning and Environment	03/01/2017	04/09/2016	Quarterly	1	6	45
Bushfire Prone Land	NSW Rural Fire Service	11/11/2016	12/08/2016	Quarterly	0	0	0
Native Vegetation of the Sydney Metropolitan Area	NSW Office of Environment and Heritage	08/10/2014	11/10/2013	As required	1	1	3
RAMSAR Wetlands	Commonwealth of Australia Department of the Environment	08/10/2014	24/06/2011	As required	0	0	0
ATLAS of NSW Wildlife	NSW Office of Environment and Heritage	11/01/2017	11/01/2017	Daily	-	-	-

Aerial Imagery 2015

510 Forest Road, Penshurst, NSW 2222



Google Earth

Legend

-  Site Boundary
-  Buffer 150m

Scale:
0 25 50 100
Meters

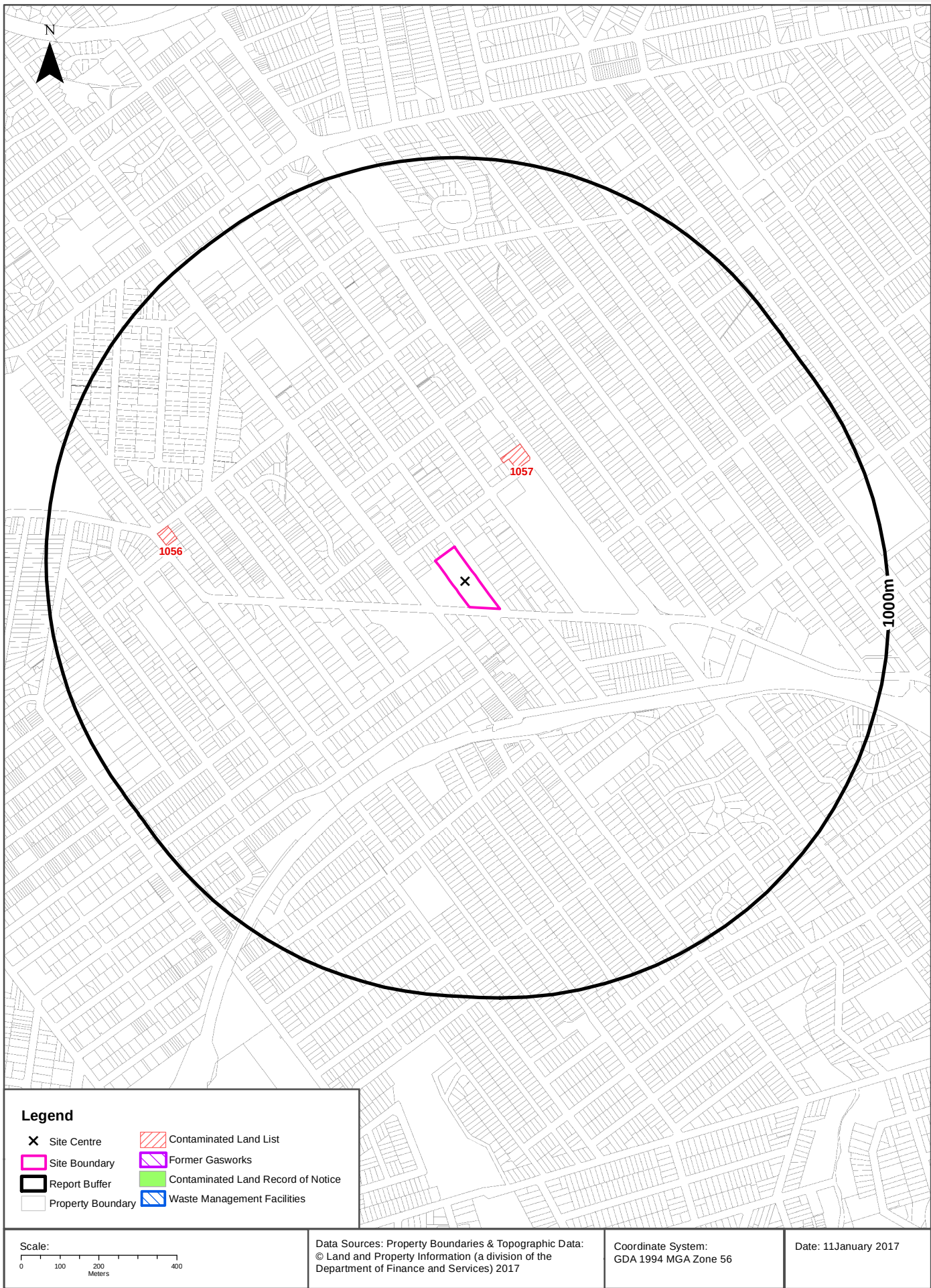
Data Sources: Aerial Imagery © 2016 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 10 January, 2017

Contaminated Land & Waste Management Facilities

510 Forest Road, Penshurst, NSW 2222



Contaminated Land & Waste Management Facilities

510 Forest Road, Penshurst, NSW 2222

List of NSW contaminated sites notified to EPA

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

Map Id	Site	Address	Suburb	Activity	EPA site management class	Status	Dist	Direction	LC
1057	Caltex Service Station	641 King Georges Road	Penshurst	Service Station	Under assessment	Current EPA List	250m	North East	1
1056	7-Eleven Service Station	612 Forest Road	Penshurst	Service Station	Under assessment	Current EPA List	667m	West	1

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

EPA site management class	Explanation
Contamination being managed via the planning process (EP&A Act)	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. The contamination of this site is managed by the consent authority under the Environmental Planning and Assessment Act 1979 (EP&A Act) planning approval process, with EPA involvement as necessary to ensure significant contamination is adequately addressed. The consent authority is typically a local council or the Department of Planning and Environment.
Contamination currently regulated under CLM Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). Management of the contamination is regulated by the EPA under the CLM Act. Regulatory notices are available on the EPA's Contaminated Land Public Record of Notices.
Contamination currently regulated under POEO Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. Management of the contamination is regulated under the Protection of the Environment Operations Act 1997 (POEO Act). The EPA's regulatory actions under the POEO Act are available on the POEO public register.
Contamination formerly regulated under the CLM Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). The contamination was addressed under the CLM Act.
Contamination formerly regulated under the POEO Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed under the Protection of the Environment Operations Act 1997 (POEO Act).
Contamination was addressed via the planning process (EP&A Act)	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed by the appropriate consent authority via the planning process under the Environmental Planning and Assessment Act 1979 (EP&A Act).
Ongoing maintenance required to manage residual contamination (CLM Act)	The EPA has determined that ongoing maintenance, under the Contaminated Land Management Act 1997 (CLM Act), is required to manage the residual contamination. Regulatory notices under the CLM Act are available on the EPA's Contaminated Land Public Record of Notices.
Regulation being finalised	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997. A regulatory approach is being finalised.
Regulation under the CLM Act not required	The EPA has completed an assessment of the contamination and decided that regulation under the Contaminated Land Management Act 1997 is not required.
Under assessment	The contamination is being assessed by the EPA to determine whether regulation is required. The EPA may require further information to complete the assessment. For example, the completion of management actions regulated under the planning process or Protection of the Environment Operations Act 1997. Alternatively, the EPA may require information via a notice issued under s77 of the Contaminated Land Management Act 1997 or issue a Preliminary Investigation Order.

NSW EPA Contaminated Land List Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Contaminated Land & Waste Management Facilities

510 Forest Road, Penshurst, NSW 2222

Contaminated Land: Records of Notice

Record of Notices within the report buffer:

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

Contaminated Land Records of Notice Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority
Terms of use and disclaimer for Contaminated Land: Record of Notices, please visit
<http://www.epa.nsw.gov.au/clm/clmdisclaimer.htm>

Former Gasworks

Former Gasworks within the report buffer:

Map Id	Location	Council	Further Info	Distance	Direction	LC
N/A	No records in buffer					

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

National Waste Management Site Database

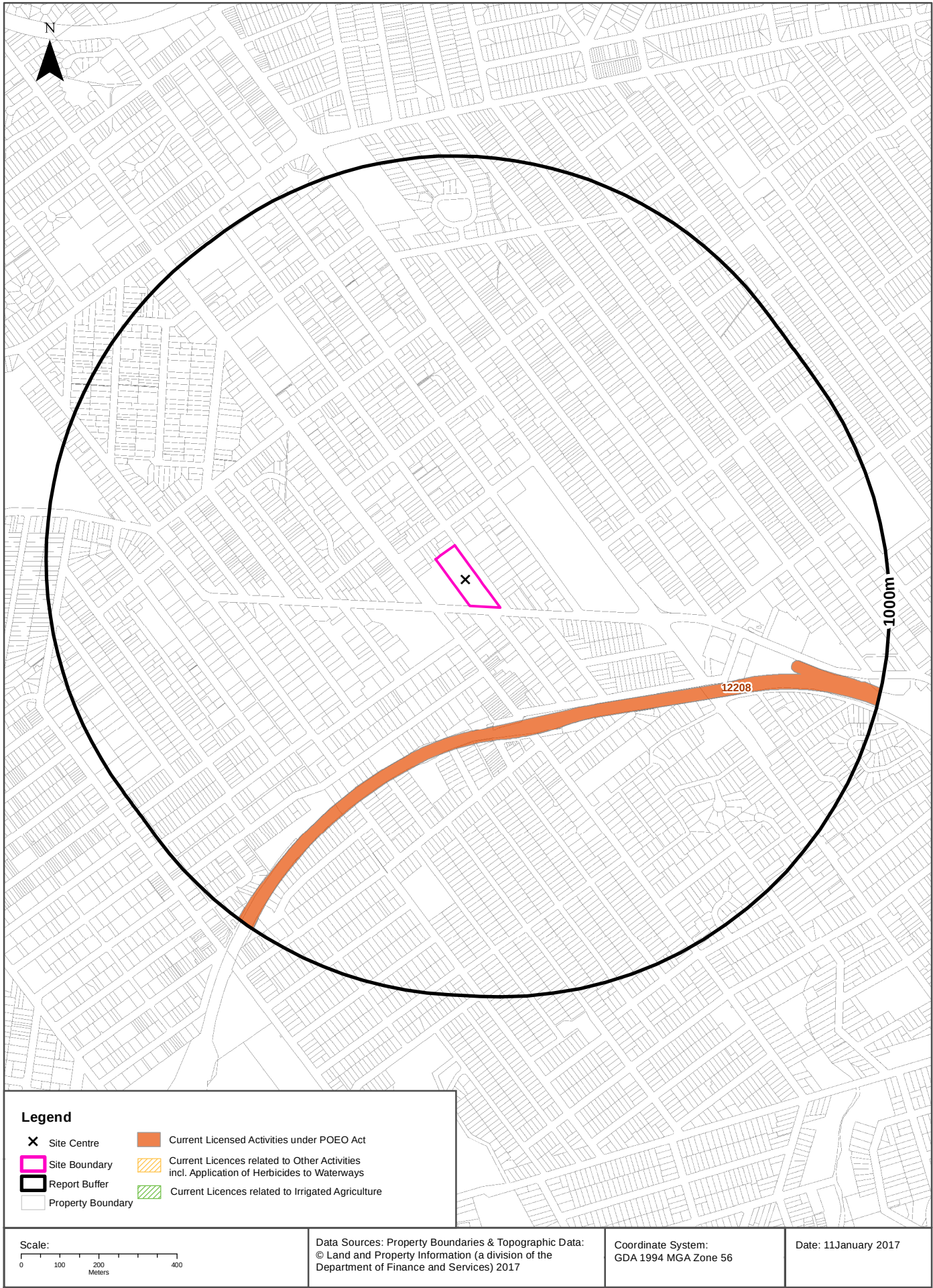
Sites on the National Waste Management Site Database within the report buffer:

Site Id	Owner	Name	Address	Suburb	Postcode	Landfill	Reprocess	Transfer	Distance	Direction	LC
N/A	No records in buffer										

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

Current EPA Licensed Activities

510 Forest Road, Penshurst, NSW 2222



EPA Activities

510 Forest Road, Penshurst, NSW 2222

Licensed Activities under the POEO Act 1997

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

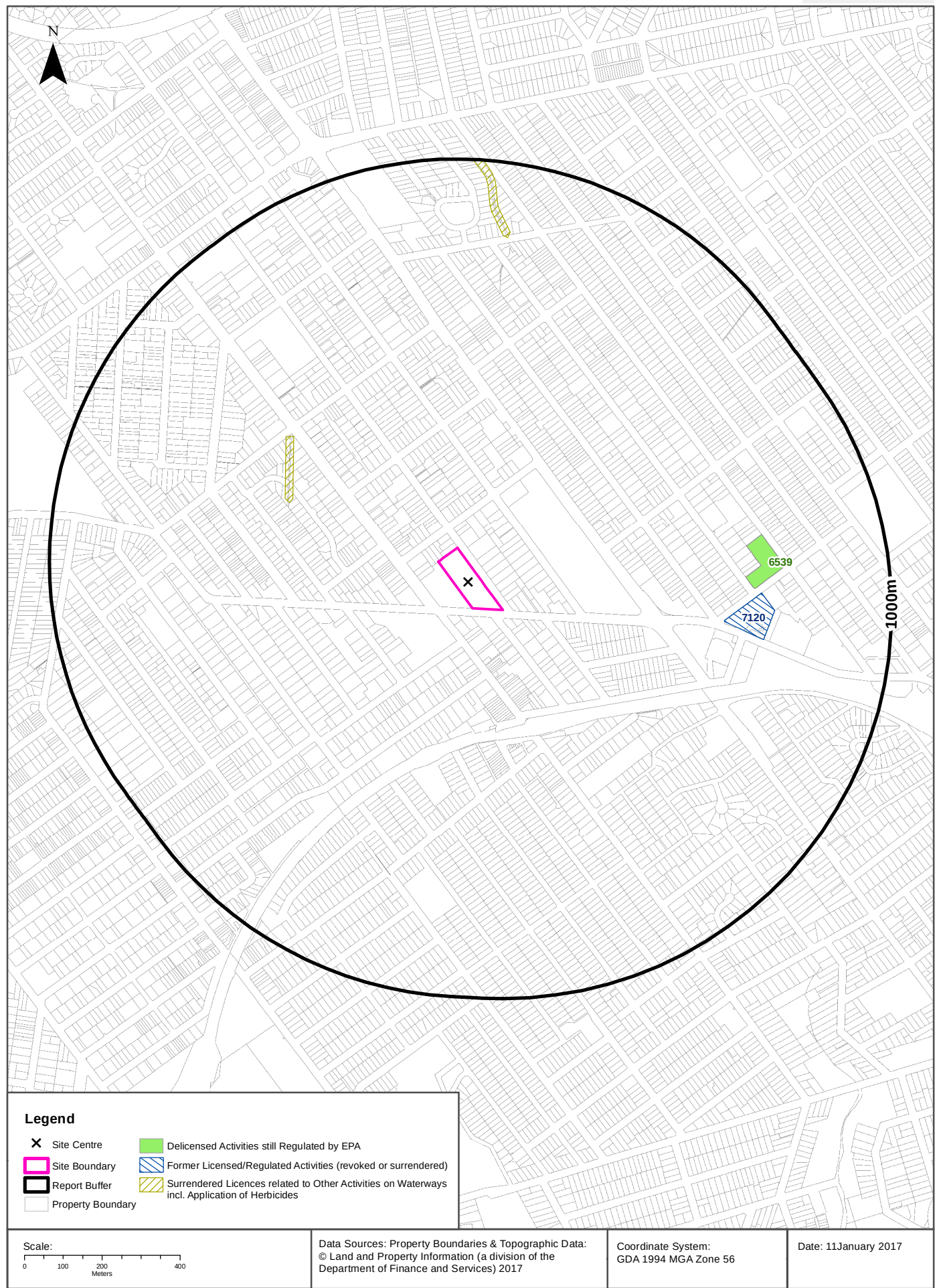
EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
12208	SYDNEY TRAINS		PO BOX K349, HAYMARKET, NSW 1238		Railway systems activities	3	293m	South

POEO Licence Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Delicensed & Former Licensed EPA Activities

510 Forest Road, Penshurst, NSW 2222



EPA Activities

510 Forest Road, Penshurst, NSW 2222

Delicensed Activities still regulated by the EPA

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

Licence No	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
6539	HURSTVILLE PRIVATE PTY LTD.	HURSTVILLE COMMUNITY PRIVATE HOSPITAL LIMITED	37 GLOUCESTER ROAD	HURSTVILLE	Hazardous, Industrial or Group A Waste Generation or Storage	1	629m	East

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

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

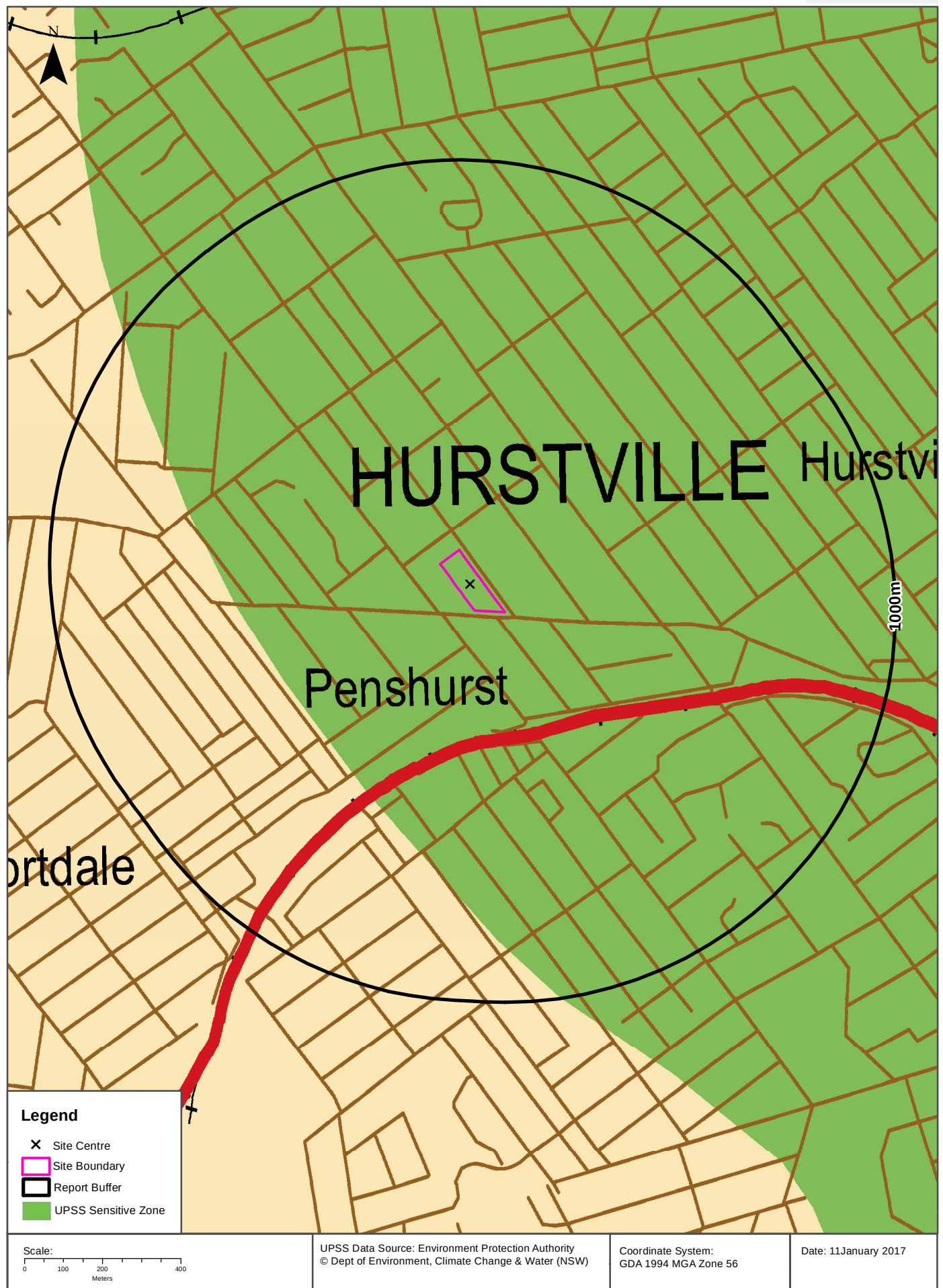
Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the report buffer:

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	7	407m	-
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	407m	-
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	407m	-
7120	DOMINELLI HURSTVILLE PTY LIMITED	CORNER FOREST ROAD & PEARL STREET, HURSTVILLE, NSW 2220	Surrendered	10/08/2000	Hazardous, Industrial or Group A Waste Generation or Storage	1	571m	East

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

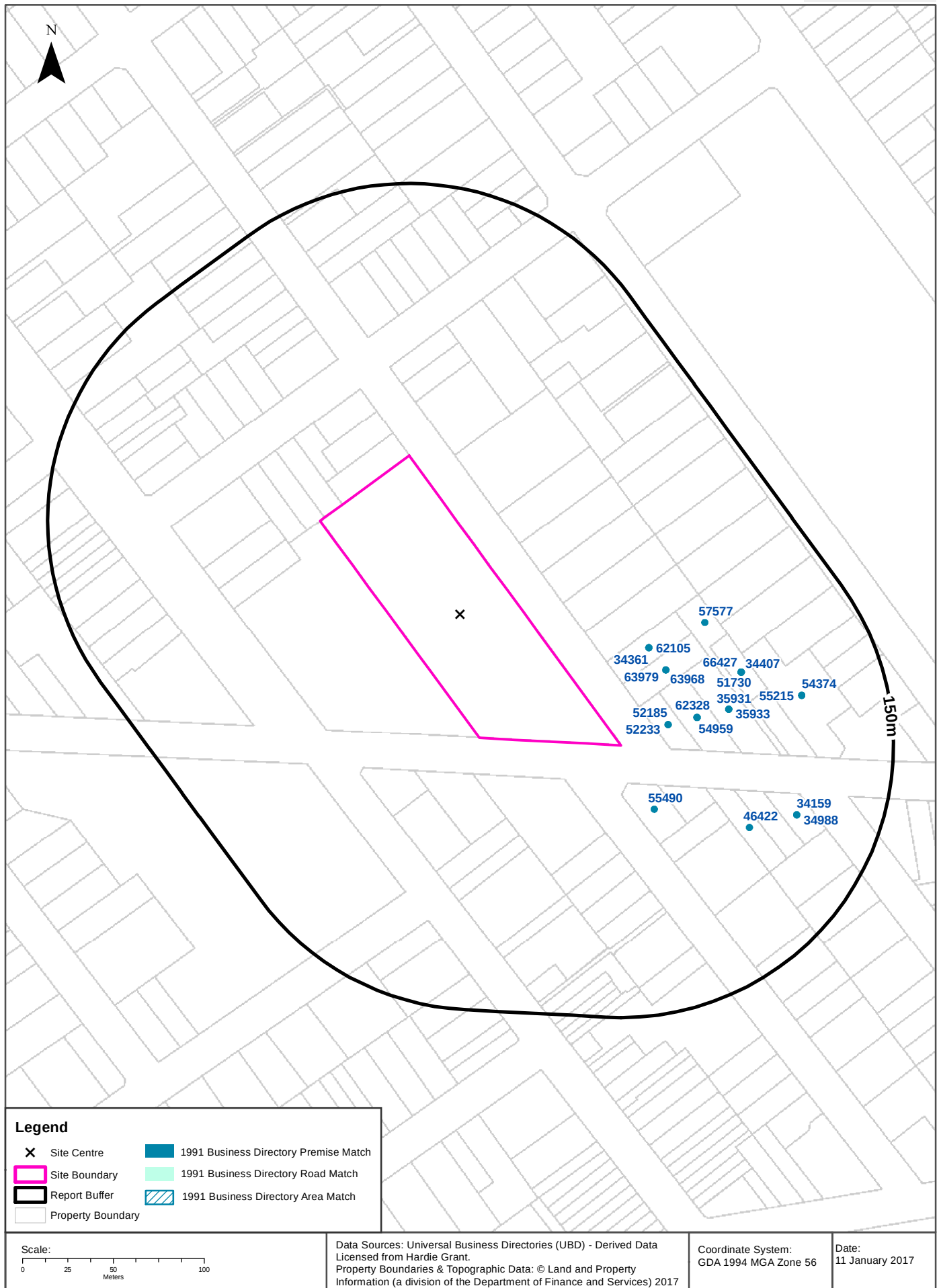
UPSS Sensitive Zones

510 Forest Road, Penshurst, NSW 2222



1991 Historical Business Directory Records

510 Forest Road, Penshurst, NSW 2222



Historical Business Directories

510 Forest Road, Penshurst, NSW 2222

1991 Business to Business Directory Records

Records from the 1991 UBD Business to Business Directory within 150m of the site:

Business Activity	Organisation	Address	Ref No.	Location Confidence	Distance	Direction
Motor Brake Lining Mfrs &/or Dists	Brabond Brakes Penshurst	504 Forest Rd Penshurst 2222	52185	Premise Match	26m	South East
Motor Brake Specialists	Brabond Brakes Penshurst	504 Forest Rd Penshurst 2222	52233	Premise Match	26m	South East
Motor Trimmers	Williams Car Upholstery	407 Forest Rd Penshurst 2222	55490	Premise Match	38m	South East
Television Antennae Mfrs &/or Suppliers &/or Installers	Electrocraft Mossburn	2 Arcadia S Penhurst 2222	63968	Premise Match	42m	East
Television Component Parts Mfrs &/or Dists	Electrocraft Mossburn	2 Arcadia S Penhurst 2222	63979	Premise Match	42m	East
Sheet Metal Workers	L C Metals Pty Ltd	Arcadla St Penshurst 2222	62105	Premise Match	42m	East
Aluminum Fabricators	L. C. Metals Pty Ltd	4 Arcadia St, Penshurst 2222	34361	Premise Match	42m	East
Windscreen Replacements &/or Repairs	Bricknell Radiators Rear	502 Forest Rd Penshurst 2222	66301	Premise Match	43m	South East
Motor Radiator Specialists &/or Repairers	Bricknell Radiators, Rear	502 Forest Rd., Penshurst 2222	54959	Premise Match	43m	South East
Shop &/or Office Fitters	Custom Shop Fitters Rear	502 Forest Rd Penshurst 2222	62328	Premise Match	43m	South East
Billiard Table &/or Accessories Mfrs &/or Dists &/or Repairers	Abrahamsen & Brown Pty Ltd	500 Forest Rd, Penshurst 2222	35931	Premise Match	61m	East
Billiard Table &/or Accessories Mfrs &/or Dists &/or Repairers	Olympic Billiards Table	500 Forest Rd, Penshurst 2222	35933	Premise Match	61m	East
Picture Frame Mfrs &/or Picture Framers	Outside Edge	498B Forest Rd Penhurst 2222	57577	Premise Match	75m	East
Metal Spinners	Penini J & Sons Pty Ltd	Rear 498A Forest Rd Penshurst 2222	51730	Premise Match	76m	East
Wire Products Mfrs &/or Dists	Pennini J & Sons Pty Ltd	498A Forest Rd Penshurst 2222	66427	Premise Match	76m	East
Metal Spinners	Pennini, J. & Sons Pty Ltd	Rear 498A Forest Rd Penshurst 2222	51731	Premise Match	76m	East
Aluminum Products Mfrs &/or Dists	Pennini, J. & Sons Pty Ltd	Rear, 498A Forest Rd, Penshurst 2222	34407	Premise Match	76m	East
Founders Non Ferrous	Turville Foundry Pty Ltd	403 Forest Rd Penshurst 2222	46422	Premise Match	82m	South East
Motor Panel Beaters &/or Spray Painters	Flaganan, TR Smash Repairs	496 Forest Rd, Penshurst 2222	54374	Premise Match	101m	East
Motor Towing Services	Flanagan, T.R. Smash Repairs	496 Forest Rd., Penshurst 2222	55215	Premise Match	101m	East
Airconditioning Automotive	O' Donnell's Auto Electrical Service	399 Forest Rd., Penshurst 2222	34159	Premise Match	102m	South East
Auto Electricians	O'Donnell Auto Electrical Services Pty Ltd	399 Forest Rd, Penshurst 2222	34988	Premise Match	102m	South East

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

1991 Business Directory Motor Garages & Service Stations

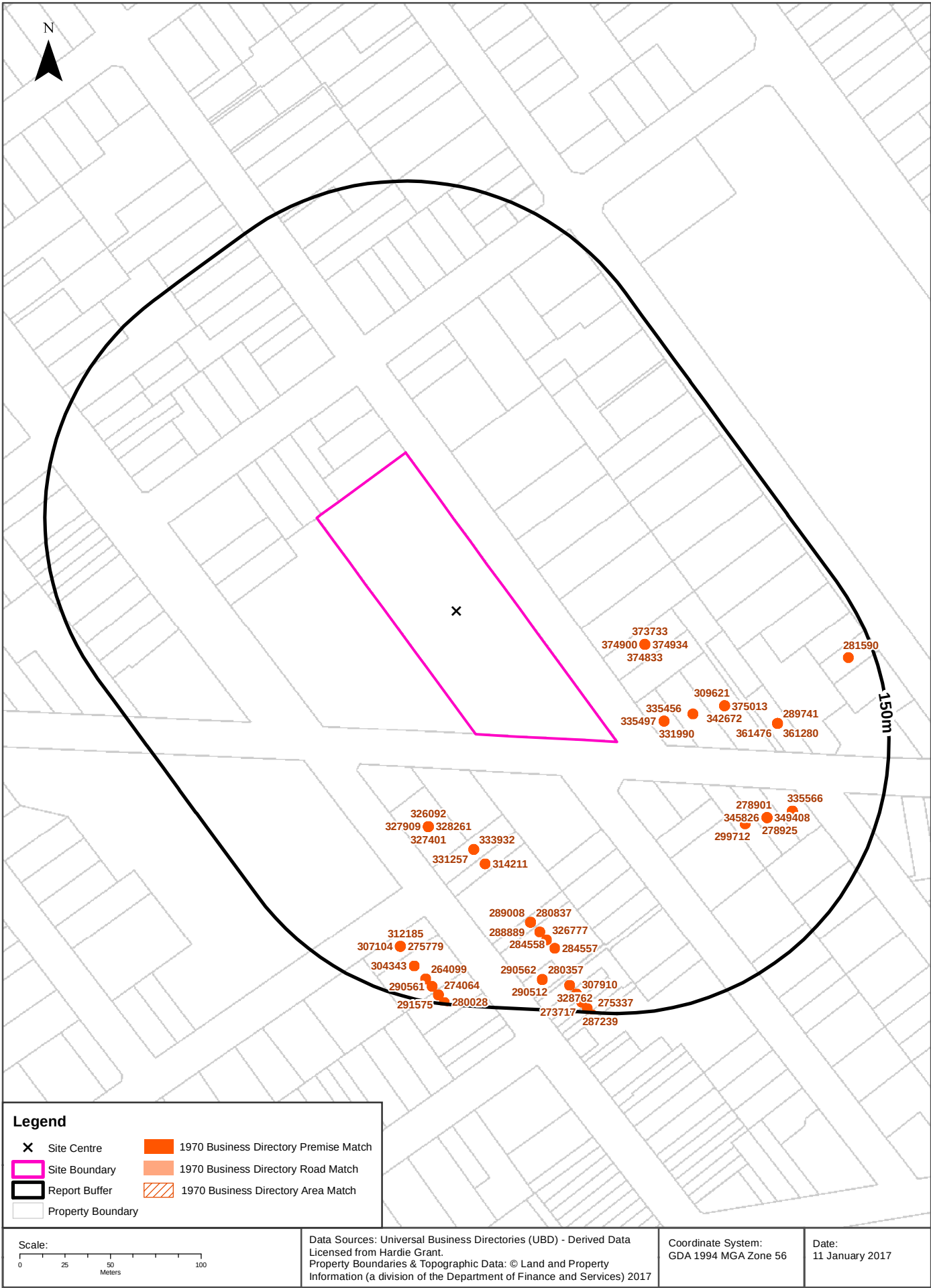
Motor Garages & Service Stations from the 1991 UBD Business Directory within 1km of the site:

Business Activity	Organisation	Address	Ref No.	Location Confidence	Distance	Direction
N/A	No records in buffer					

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

1970 Historical Business Directory Records

510 Forest Road, Penshurst, NSW 2222



Historical Business Directories

510 Forest Road, Penhurst, NSW 2222

1970 Business Directory Records

Records from the 1970 UBD Business Directory within 150m of the site:

Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
MIXED BUSINESSES (M408)	Anderson,C. & J.,510 Forest Rd.,Penhurst	331990	Premise Match	26m	South East
MOTOR BRAKE LINING SUPPLIERS (M508)	Brabond Brakes Pty. Ltd.,510 Forest Rd.,Penhurst,2222	335456	Premise Match	26m	South East
MOTOR BRAKE SERVICES (M512)	Brabond Brakes Pty. Ltd.,510 Forest Rd.,Penhurst,2222	335497	Premise Match	26m	South East
WIRE PRODUCTS MFRS.(W330)	Jackson Bros.Wireworks Pty.Ltd,4 Arcadia St,Penhurst	374833	Premise Match	42m	East
WIRE SHELF MFRS.(W350)	Jackson Bros.Wireworks Pty.Ltd,4 Arcadia St,Penhurst	374900	Premise Match	42m	East
WELDERS-ELECTRIC &/OR OXY(W145)	Jackson Bros.Wireworks Pty.Ltd.,4 Arcadia St.,Penhurst	373733	Premise Match	42m	East
WIREWOKERS-GENERAL (W365)	Jackson Bros.Wireworks Pty.Ltd.,4 Arcadia St.,Penhurst	374934	Premise Match	42m	East
MOTOR RADIATOR SPECIALISTS &/OR REPAIRERS (M700)	Bricknell,J. A.,502 Forest Rd.,Penhurst	340671	Premise Match	43m	South East
MEDICAL PRACTITIONERS (M216)	Ashby,G. W.,80 Penhurst St.,Penhurst	326092	Premise Match	55m	South
MEDICAL PRACTITIONERS (M216)	Latimer,Thelma,80 Penhurst St.,Penhurst	327401	Premise Match	55m	South
MEDICAL PRACTITIONERS (M216)	Pearson,B. C.,80 Penhurst St.,Penhurst	327909	Premise Match	55m	South
MEDICAL PRACTITIONERS (M216)	Smith,B.,80 Penhurst St.,Penhurst	328261	Premise Match	55m	South
MEDICAL PRACTITIONERS (M216)	Wilson,Lionel L.,80 Penhurst St.,Penhurst	328585	Premise Match	55m	South
MOTOR TRIMMERS (M748)	O'Brien,A. P.,500 Forest Rd.,Penhurst	342672	Premise Match	61m	East
WOODWARE MFRS.(W395)	Webb,F.D. & Son Pty.Ltd.,500 Forest Rd.,Penhurst	375013	Premise Match	61m	East
FURNITURE-HOUSEHOLD-RETAILERS RETAILERS (F740)	Webb,F.D.,500 Forest Rd.,Peakhurst	309621	Premise Match	61m	East
MILK,FRUIT JUICE BARS/CONFECTIONERS (M336)	Strange-Mure,I.,78 Penhurst St.,Penhurst	331257	Premise Match	62m	South
MIXED BUSINESSES (M408)	Strange-Mure,W.,78 Penhurst St.,Penhurst	333932	Premise Match	62m	South
HAIRDRESSERS (GENT.'S) (H070)	Moore,J.,76 Penhurst St.,Penhurst	314211	Premise Match	69m	South
ENGINEERS-GENERAL &/OR MFRG.&/OR MECHANICAL (E615)	Turville,H.F.Pty.Ltd.,403 Forest Rd.,Penhurst	299712	Premise Match	82m	South East
FOUNDERS-NON-FERROUS (F540)	Turville,H.F.Pty.Ltd.,403 Forest Rd., Penhurst	306157	Premise Match	82m	South East
SHOP/OFFICE FITTERS (S276)	Abrahamsen & Brown Pty. Ltd.,498 Forest Rd.,Penhurst	361280	Premise Match	87m	East
SHOWCASE/GLASS COUNTER MFRS. (S301)	Abrahamsen & Brown Pty. Ltd.,498 Forest Rd.,Penhurst	361476	Premise Match	87m	East
DISPLAY FITTINGS-MFRS.&/OR SUPPLIERS (D350)	Abrahamsen & Brown Pty.Ltd.,498 Forest Rd.,Penhurst	289741	Premise Match	87m	East
CELLULOSE PACKAGING SPECS. (C204)	Transparent Containers Pty. Ltd., 401 Forest Rd., Penhurst	278925	Premise Match	91m	South East
CELLULOSE BAG & WRAPPER MFRS. &/OR SUPPLIERS (C198)	Transparent Containers Pty. Ltd., 401 Forest Rd., Penhurst	278901	Premise Match	91m	South East
PACKAGING/PACKING SPEC. (P 004)	Transparent Containers Pty. Ltd.,401 Forest Rd.,Penhurst	345826	Premise Match	91m	South East
PLASTIC CONVERTERS (P550)	Transport Containers Pty. Ltd.,401 Forest Rd.,Penhurst	349408	Premise Match	91m	South East
PLASTIC FABRICATORS Cr VACUUM FORMERS (P556)	Transport Containers Pty. Ltd.,401 Forest Rd.,Penhurst	349568	Premise Match	91m	South East
PLASTIC GOODS MFRS. (P564)	Transport Containers Pty. Ltd.,401 Forest Rd.,Penhurst	349747	Premise Match	91m	South East
CHEMISTS-PHARMACEUTICAL (C286)	Morrissey, KA., 64a Penhurst St., Penhurst	280837	Premise Match	100m	South

Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
DENTISTS (D140)	Nash,R.P.,64 Penshurst St.,Penshurst	288889	Premise Match	100m	South
DENTISTS (D140)	Searie,H.,64 Penshurst St.,Penshurst	289008	Premise Match	100m	South
MOTOR BRAKE SERVICES (M512)	Stennett's Garage,399 Forest Rd.,Penshurst	335566	Premise Match	102m	South East
MOTOR ELECTRICIANS (M620)	Stennett's Garage,399 Forest Rd.,Penshurst	336961	Premise Match	102m	South East
MOTOR GARAGES & ENGINEERS (M6S6)	Stennett's Garage,399 Forest Rd.PENSHURST	338667	Premise Match	102m	South East
MOTOR ENGINE RECONDITIONERS (M624)	Stennett's Garage,399 Forest Rd.,Penshurst	337076	Premise Match	102m	South East
CLUBS & SPORTING BODIES (C487)	Penshurst R.S.S& A.I.L.A., 62 Penshurst St., Penshurst	284558	Premise Match	105m	South
MEDICAL PRACTITIONERS (M216)	Everingham,Clarence,60 Penshurst St.,Penshurst	326777	Premise Match	109m	South
CLUBS & SPORTING BODIES (C487)	Penshurst R.S.LClub, 58a Penshurst St., Penshurst	284557	Premise Match	114m	South
GROCERS-RETAIL (G655)	Barratt,R. J.,49 Penshurst St.,Penshurst	312185	Premise Match	122m	South
FRUITERERS/GREENGROCERS (F640)	Fruit King (The),49b Penshurst St.,Penshurst	307104	Premise Match	122m	South
CAFES, COFFEE LOUNGES, Etc. (C030)	Len Wan Cafe, 49a Penshurst St., Penshurst	275779	Premise Match	122m	South
FLORISTS-RETAIL (F335)	Lavegrove,M.,47 Penshurst St.PENSHURST	304343	Premise Match	130m	South
CHEMISTS-PHARMACEUTICAL (C286)	Feller, KH., 52a Penshurst St., Penshurst	280357	Premise Match	131m	South
DRAPERS-RETAIL (D540)	McLardies,52 Penshurst St.,Penshurst	290512	Premise Match	131m	South
DRAPERS-RETAIL (D540)	Penshurst Moaei Store,52 Penshurst St.,Penshurst	290562	Premise Match	131m	South
CHIROPODISTS (C316)	Duffy, TG., 3 Cambridge St., Penshurst	281590	Premise Match	134m	East
MERCERS-MEN'S & BOYS' OUTFITTERS(M232)	Bourke,R.,50 Penshurst St.,Penshurst	328762	Premise Match	134m	South
BABY & CHILDREN'S WEAR-RETAIL (B005)	Frances Baby Wear., 45 Penshurst St., Penshurst	264099	Premise Match	136m	South
FRUITERERS/GREENGROCERS (F640)	Scullino,R.,- 48 Penshurst St.,Penshurst	307910	Premise Match	138m	South
DRAPERS-RETAIL (D540)	Penshurst Fabrics Centre,43 Penshurst St.,Penshurst	290561	Premise Match	139m	South
BUTCHERS-RETAIL (B860)	Griggs, J., 46 Penshurst St., Penshurst	273717	Premise Match	143m	South
BUTCHERS-RETAIL (B860)	McEwen, R& D., 41 Penshurst St., Penshurst	274064	Premise Match	143m	South
DRESS SHOPS (D595)	My Favourite Fashions,41a Penshurst St.,Penshurst	291575	Premise Match	143m	South
DELICATESSENS (D080)	Casben,D.A.& L.M.,44 Penshurst St.,Penshurst	287239	Premise Match	146m	South
CHEMISTS-PHARMACEUTICAL (C286)	Barnes, CF., 39a Penshurst St., Penshurst	280028	Premise Match	147m	South
CAFES, COFFEE LOUNGES, Etc. (C030)	Aussie Hamburgers (The), 42 Penshurst St., Penshurst	275337	Premise Match	150m	South
CAFES, COFFEE LOUNGES, Etc. (C030)	Penshurst Espresso Cafe, 42 Penshurst St., Penshurst	275955	Premise Match	150m	South

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

1970 Business Directory Drycleaners & Service Stations

Drycleaners, Motor Garages & Service Stations from the 1970 UBD Business Directory within 1km of the site:

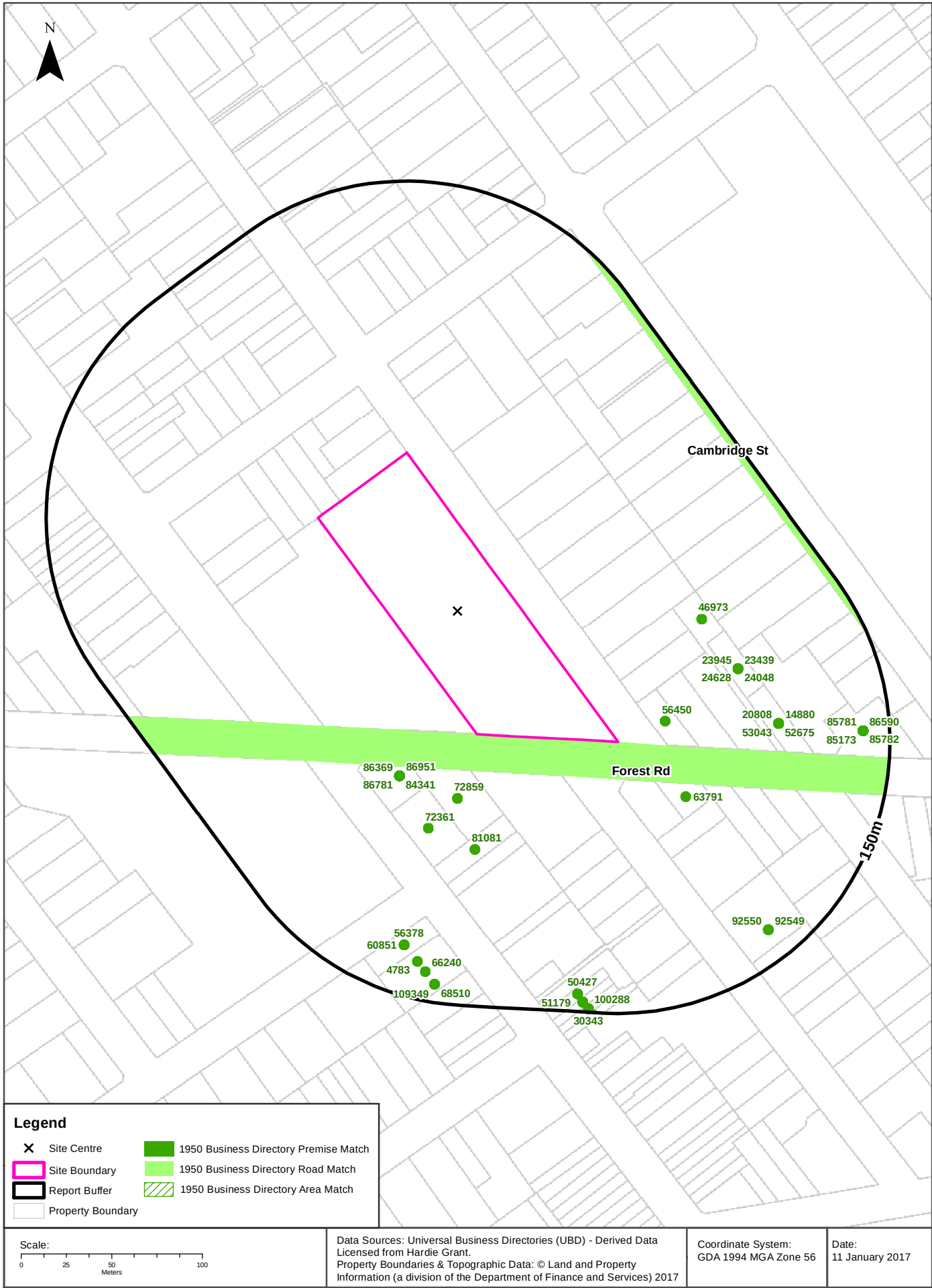
Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
MOTOR GARAGES & ENGINEERS (M6S6)	Stennett's Garage,399 Forest Rd.PENSHURST	338667	Building Match	102m	South East
DRY CLEANERS,PRESSERS/DYERS (D710)	Dapper Dry Cleaners,30 Penshurst St.,Penshurst	292267	Building Match	177m	South
DRY CLEANERS,PRESSERS/DYERS (D710)	Dapper Dry Cleaners,30 Penshurst St.,Penshurst	292266	Building Match	177m	South
MOTOR GARAGES & ENGINEERS (M6S6)	Esso Servicenter,8 Perouse Rd.RANDWICK	337765	Building Match	234m	South East

Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Esso Servicer,8 Perouse Rd.RANDWICK	341084	Building Match	234m	South East
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Inverness Service Station,556 Forest Rd.PENSHURST	341230	Building Match	438m	West
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Penshurst Motors,598 Forest Rd.PENSHURST	341394	Building Match	653m	West
MOTOR GARAGES & ENGINEERS (M6S6)	Penshurst Motors,598 Forest Rd.PENSHURST	338408	Building Match	653m	West
MOTOR GARAGES & ENGINEERS (M6S6)	Cooper's Service Station,612 Forest Rd.PENSHURST	337614	Building Match	691m	West
MOTOR GARAGES & ENGINEERS (M6S6)	Hurstville Service Station 396 Forest Rd.HURSTVILLE	338036	Building Match	981m	East
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Hurstville Service Station,396 Forest Rd.HURSTVILLE	341225	Building Match	981m	East

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

1950 Historical Business Directory Records

510 Forest Road, Penshurst, NSW 2222



Historical Business Directories

510 Forest Road, Peshurst, NSW 2222

1950 Business Directory Records

Records from the 1950 UBD Business Directory within 150m of the site:

Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
MILK VENDORS	Dunkley, A., Forest Rd., Peshurst	77736	Road Match	0m	West
FURNITURE REMOVAUSTS &/OR STORAGE	Knight, T., Forest Rd., Peshurst	53234	Road Match	0m	West
HATCHERIES	Newton Abbott Poultry Farm (D. Taylor and Sons), Forest Rd., Peshurst	61793	Road Match	0m	West
SCREW-METAL THREAD-MANUFACTURERS	Rosten, J. G., Forrest Rd., Peshurst	101048	Road Match	0m	West
GROCERS-RETAIL	Biddell, C. A., 510 Forest Rd., Peshurst	56450	Premise Match	26m	South East
MEDICAL PRACTITIONERS	Everingham, C., 417 Forest Rd., Peshurst	72859	Premise Match	35m	South
MOTOR CAR & TRUCK DEALERS-USED	Savell Bos., 419 Forest Rd., Peshurst	82550	Premise Match	46m	South
MOTOR CAR &/OR TRUCK DEALERS	Savell Bros., 419 Forest Rd., Peshurst	82648	Premise Match	46m	South
MOTOR SERVICE STATIONS-PETROL, Etc.	Savell Bros., 419 Forest Rd., Peshurst	86369	Premise Match	46m	South
MOTOR SPARE PARTS DEALERS-RETAIL	Savell Bros., 419 Forest Rd., Peshurst	86781	Premise Match	46m	South
MOTOR TOWING SERVICES	Savell Bros., 419 Forest Rd., Peshurst	86951	Premise Match	46m	South
MOTOR ACCESSORIES-DEALER	Savell Bros., 419 Forest Rd., Peshurst	81764	Premise Match	46m	South
MOTOR GARAGES &/OR ENGINEERS	Savell Bros., 419 Forest Rd., Peshurst	84341	Premise Match	46m	South
ICE CREAM SPOON & STICK MANUFACTURERS	C. and C. Wood Products, 405 Forest Rd., Peshurst	63791	Premise Match	46m	South East
MEDICAL PRACTITIONERS	Ashby, G. W., 80 Peshurst St., Peshurst	72361	Premise Match	56m	South
MIXED BUSINESSES & GENERAL STORES	Strange-Mure, W., 78 Peshurst St., Peshurst	81081	Premise Match	62m	South
FOOTWEAR MANUFACTURERS-BOOTS & SHOES	Wing-Step Shoe Co., 498b Forest Rd., Peshurst	46973	Premise Match	75m	East
CLOTHING MANUFACTURERS &/OR WHOLESALERS-LADIES' DRESSES & GOWNS	Margaret Young Pty. Ltd. (J. A. K. Forsyth, Propr.), 498a Forest Rd., Peshurst	23439	Premise Match	76m	East
CLOTHING MFRS. &/OR WHOLESALERS LADIES' MANTLES	Margaret Young, 498a Forest Rd., Peshurst	23945	Premise Match	76m	East
CLOTHING MFRS. &/OR WHOLESALERS-BABIES & CHILDREN'S	Young, Margaret Pty. Ltd. (J. A. K. Forsyth), 498a Forest Rd., Peshurst	24628	Premise Match	76m	East
CLOTHING MFRS. &/OR WHOLESALERS LADIES' MANTLES	Young, Margaret, 498a Forest Rd., Peshurst	24048	Premise Match	76m	East
CHAIR MANUFACTURERS	Dean, H., 498 Forest Rd., Peshurst	20808	Premise Match	87m	East
FURNITURE MANUFACTURERS & WHOLESALERS-GENERAL	Dean, Harry Pty. Ltd., 498 Forest Rd., Peshurst	52675	Premise Match	87m	East
FURNITURE MANUFACTURERS-OCCASIONAL	Dean, Harry Pty. Ltd., 498 Forest Rd., Peshurst	53043	Premise Match	87m	East
CABINETMAKERS	Dean, Harry Pty. Ltd., 498 Forest Rd., Peshurst	14880	Premise Match	87m	East
HARDWARE DEALERS &/OR IRONMONGERS	Barrat, R. J., 49 Peshurst St., Peshurst	60851	Premise Match	121m	South
GROCERS-RETAIL	Barratt, R. J., 49 Peshurst St., Peshurst	56378	Premise Match	121m	South
BABY & CHILDREN'S WEAR-RETAIL	Rock-A-Bye Baby Shop, 47 Peshurst St., Peshurst	4783	Premise Match	128m	South
PIANO TUNERS & REPAIRERS	Sowinski, W., 18 Connelly St., Peshurst	92550	Premise Match	131m	South East
PIANO TUNERS & REPAIRERS	Sowinski, W., 18 Connelly St., Peshurst	92549	Premise Match	131m	South East
JEWELLERS-RETAIL &/OR WATCHMAKERS	Marks, Percy, 45 Peshurst St., Peshurst	66240	Premise Match	132m	South

Business Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
MOTOR ACCESSORIES-DEALER	Bell Bros., 494 Forest Rd., Penshurst	81489	Premise Match	133m	East
MOTOR PANEL BEATERS	Bell Bros., 494 Forest Rd., Penshurst	85173	Premise Match	133m	East
MOTOR SERVICE STATIONS-PETROL, Etc.	Bell Bros., 494 Forest Rd., Penshurst	85781	Premise Match	133m	East
MOTOR SPARE PARTS DEALERS-RETAIL	Bell Bros., 494 Forest Rd., Penshurst	86590	Premise Match	133m	East
MOTOR SERVICE STATIONS-PETROL, Etc.	Bell Bros., H. E. & J. A., 494 Forest Rd., Penshurst	85782	Premise Match	133m	East
MOTOR CAR & TRUCK DEALERS-USED	Bell Bros., H. E. & J. A., 494 Forest Rd., Penshurst	82284	Premise Match	133m	East
MOTOR GARAGES &/OR ENGINEERS	Bell Bros.. 494 Forest Rd., Penshurst	83438	Premise Match	133m	East
TOY DEALERS-RETAIL	Blower, E., 43 Penshurst St., Penshurst	109349	Premise Match	138m	South
LIBRARIES-LENDING	Blower, E., 43 Penshurst St., Penshurst	68510	Premise Match	138m	South
FRUITERERS & GREENGROCERS	Kennedy, E. A., 48 Penshurst St., Penshurst	50427	Premise Match	138m	South
FRUITERERS & GREENGROCERS	Shade, J. M., 48 Penshurst St., Penshurst	51179	Premise Match	138m	South
BUTCHERS-RETAIL	Fitzgerald and Sweeney, 46 Penshurst St., Penshurst	13480	Premise Match	143m	South
BUTCHERS-RETAIL	Fitzgerald, A. G., 46 Penshurst St., Penshurst	13481	Premise Match	143m	South
FENCE & GATE MANUFACTURERS	Feeney, J. H., Cambridge St., Penshurst	43620	Road Match	146m	North
DELICATESSENS & SMALLGOODS DEALERS	Cole's Delicatessen, 44 Penshurst St., Penshurst	30343	Premise Match	146m	South
SANDWICH & LUNCHEON SHOPS	Cole's Delicatessen, 44 Penshurst St., Penshurst	100288	Premise Match	146m	South
CAKE SHOPS & PASTRYCOOKS	Helen's Sponge Kitchen, 42 Penshurst St., Penshurst	16772	Premise Match	150m	South

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

1950 Business Directory Drycleaners & Service Stations

Drycleaners, Motor Garages & Service Stations from the 1950 UBD Business Directory within 1km of the site:

Activity	Organisation & Premise	Ref No.	Location Confidence	Distance	Direction
MOTOR GARAGES &/OR ENGINEERS	Savell Bros., 419 Forest Rd., Penshurst	84341	Premise Match	46m	South
MOTOR SERVICE STATIONS-PETROL, Etc.	Savell Bros., 419 Forest Rd., Penshurst	86369	Premise Match	46m	South
MOTOR SERVICE STATIONS-PETROL, Etc.	Bell Bros., 494 Forest Rd., Penshurst	85781	Premise Match	133m	East
MOTOR SERVICE STATIONS-PETROL, Etc.	Bell Bros., H. E. & J. A., 494 Forest Rd., Penshurst	85782	Premise Match	133m	East
MOTOR GARAGES &/OR ENGINEERS	Bell Bros.. 494 Forest Rd., Penshurst	83438	Premise Match	133m	East
DRY CLEANERS, PRESSERS & DYERS	Lyke-Nu Dry Cleaning Co. Ltd. 40 Penshurst St., Penshurst	35477	Premise Match	156m	South
DRY CLEANERS, PRESSERS & DYERS	Abell, E. (Agent), 33a Penshurst St., Penshurst	35046	Premise Match	173m	South
MOTOR GARAGES &/OR ENGINEERS	Cortese, C. J., 55 Cambridge St., Penshurst	83630	Premise Match	236m	North
MOTOR GARAGES &/OR ENGINEERS	Francis, R., 449 Forest Rd., Penshurst	83768	Premise Match	319m	West
MOTOR GARAGES &/OR ENGINEERS	Amors Garage, 59Q Forest Rd., Penshurst	83376	Premise Match	614m	West
MOTOR SERVICE STATIONS-PETROL, Etc.	Smith, A. D. and C. W., 446 Forest Rd., Hurstville	86396	Premise Match	718m	East
DRY CLEANERS, PRESSERS & DYERS	Jeeves (1938) Pty. Ltd 433 Liverpool St., Penshurst	35318	Suburb Match	775m	North
DRY CLEANERS, PRESSERS & DYERS	At Your Service Dry Cleaners, 76 Carrington Ave, Hurstville	35096	Premise Match	868m	East
MOTOR SERVICE STATIONS-PETROL, Etc.	Potters Hurstville Station, 396 Forest Rd., Hurstville	86293	Premise Match	981m	East
MOTOR GARAGES &/OR ENGINEERS	Potter, Bert, 396-404 Forest Rd., Hurstville	84223	Premise Match	988m	East

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

Aerial Imagery 2009

510 Forest Road, Penshurst, NSW 2222

